

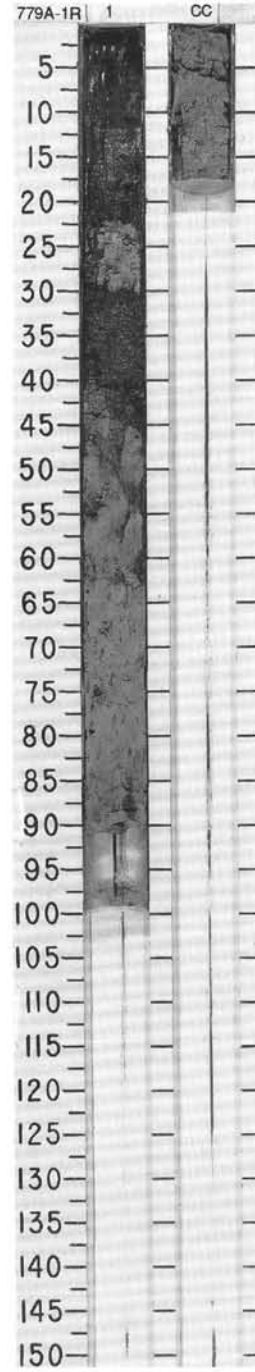


TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																																							
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS																																																	
MIDDLE PLEISTOCENE	N22	R/P							0.5				*	ARAGONITE-RICH SILT-SIZED SERPENTINE																																							
	CN14b	R/M							1				*	Major lithology: ARAGONITE-RICH SILT-SIZED SERPENTINE, dominantly light yellow (2.5Y 8/4) with orange (10Y 7/8 and 7Y 6/8) streaks and mottling. Includes several angular light blue (10G 6/2) to green (5B 4/1) serpentine grains up to 5 mm in diameter.																																							
	F/M													Minor lithology: Foraminifer-bearing serpentine-rich clay, dominantly brown (10YR 4/6 and 10YR 3/6). Laminated on a scale of 2 mm. Contains several light blue (10G 6/2) sub-mm serpentine grains which occur only at the margins of core (may be hole sloughing). This lithology occurs at the top of the core, from 0 to 22 cm and again from 29 to 40 cm. It also occurs as streaks and wisps within the silt-sized serpentine in the interval from 40 to 91 cm.																																							
														SMEAR SLIDE SUMMARY (%):																																							
														<table border="0"> <tr> <td></td> <td>1.7</td> <td>1.80</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> </tr> </table>		1.7	1.80	D	D	D																																	
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														TEXTURE:																																							
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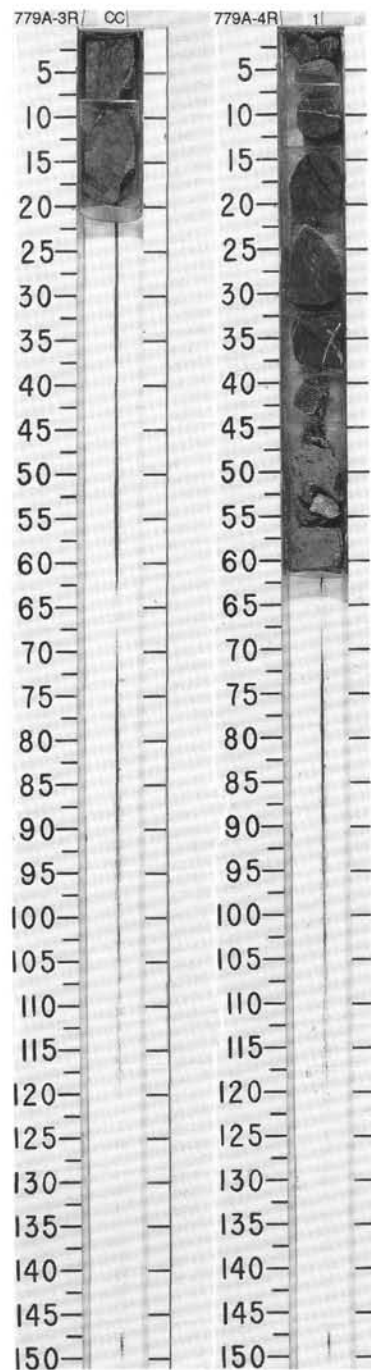


SITE 779 HOLE A CORE 3R CORED INTERVAL 3957.8-3967.3 mbsl; 10.6-20.1 mbsf


TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANOFOSSILS	RADIOLARIANS	DIATOMS										
					?	0-0.30 2-2.67		CC		IM				This core contained no sedimentary materials.

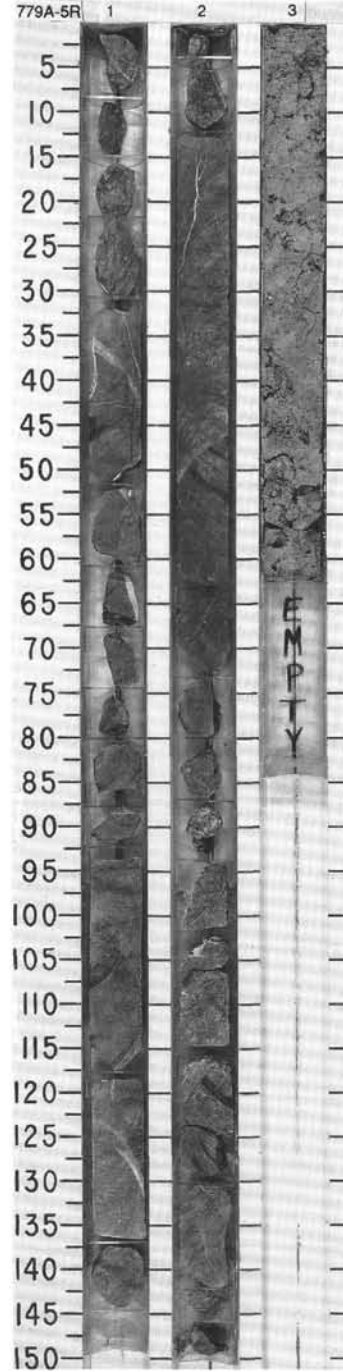
SITE 779 HOLE A CORE 4R CORED INTERVAL 3967.3-3976.8 mbsl; 20.1-29.6 mbsf

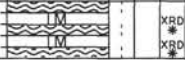
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION														
	FORAMINIFERS	NANOFOSSILS	RADIOLARIANS	DIATOMS																								
					?	0-0.1 0-2.29 0-4.3 1-1.95	WT. XCTC03 WT. X10C3	1	0.5	IM				<p>CLAYEY SILT-SIZED SERPENTINE</p> <p>Major lithology: CLAYEY SILT-SIZED SERPENTINE, very sticky, bluish gray (5B 5/1) with coarse-sand and granular-sized light greenish gray (10YR 7/4) to black (7.5YR 2/0) serpentinized(?) clasts scattered throughout the core. One pebble-sized, serpentinized ultramafic clast at 53 cm and one at 45 cm.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table style="margin-left: 20px;"> <tr><td>1, 57</td></tr> <tr><td>D</td></tr> </table> <p>TEXTURE:</p> <table style="margin-left: 20px;"> <tr><td>Sand</td><td>10</td></tr> <tr><td>Silt</td><td>60</td></tr> <tr><td>Clay</td><td>30</td></tr> </table> <p>COMPOSITION:</p> <table style="margin-left: 20px;"> <tr><td>Amphibole</td><td>5</td></tr> <tr><td>Opauques</td><td>5</td></tr> <tr><td>Serpentine</td><td>90</td></tr> </table>	1, 57	D	Sand	10	Silt	60	Clay	30	Amphibole	5	Opauques	5	Serpentine	90
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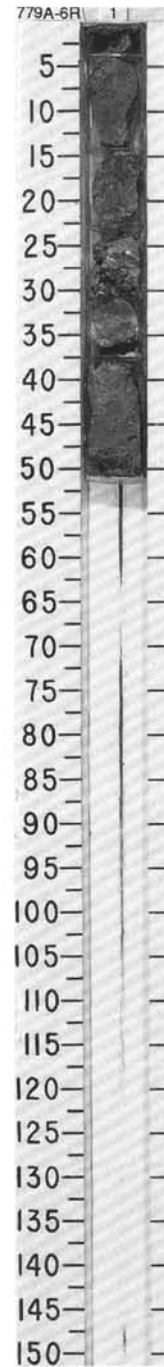


SITE 779 HOLE A CORE 5R CORED INTERVAL 3976.8-3986.3 mbsl; 29.6-39.1 mbsf

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	DIAZONIS																												
									0.5 1 1.5 2 2.5 3	1M 				<p>AMPHIBOLE-RICH SANDY SILT-SIZED SERPENTINE</p> <p>Major lithology: AMPHIBOLE-RICH SANDY SILT-SIZED SERPENTINE, bluish gray (5B 6/1) to light gray (N7) with scattered black (7.5YR 2/0) and pale green (10G 6/2) pebbles. Faint laminations (primary?) throughout the cored interval.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="0"> <tr> <td></td> <td>3.37</td> </tr> <tr> <td>D</td> <td></td> </tr> </table> <p>TEXTURE:</p> <table border="0"> <tr> <td>Sand</td> <td>30</td> </tr> <tr> <td>Silt</td> <td>50</td> </tr> <tr> <td>Clay</td> <td>20</td> </tr> </table> <p>COMPOSITION:</p> <table border="0"> <tr> <td>Amphibole</td> <td>5</td> </tr> <tr> <td>Garnet</td> <td>5</td> </tr> <tr> <td>Opaques</td> <td>15</td> </tr> <tr> <td>Serpentine</td> <td>75</td> </tr> </table>		3.37	D		Sand	30	Silt	50	Clay	20	Amphibole	5	Garnet	5	Opaques	15	Serpentine	75
	3.37																															
D																																
Sand	30																															
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Clay	20																															
Amphibole	5																															
Garnet	5																															
Opaques	15																															
Serpentine	75																															
					?	<p>0.0 P=2.83 V=5.1</p>																										
					?	<p>0.47.8 P=1.88 V=0</p>																										
						<p>WT.% CaCO₃ WT.% LOO₃</p>																										



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																																																			
								1				XRD * XRD *	<p>ZOISITE-BEARING SILT-SIZED SERPENTINE AND THULITE-RICH SILT-SIZED SERPENTINE</p> <p>Major lithology: ZOISITE-BEARING SILT-SIZED SERPENTINE and THULITE-RICH SILT-SIZED SERPENTINE intermixed in core. Bluish gray (5B 6/1) to light greenish gray (5G 7/1) and dark blue gray (5B 4/1) with rare pebble-sized clasts (serpentine?) and scattered coarse sand- to granule-sized clasts. The interval is slightly sheared and the basal 12 cm is faintly laminated.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="0"> <tr> <td></td> <td>1, 25</td> <td>1, 44</td> </tr> <tr> <td></td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="0"> <tr> <td>Sand</td> <td>5</td> <td>10</td> </tr> <tr> <td>Silt</td> <td>75</td> <td>90</td> </tr> <tr> <td>Clay</td> <td>20</td> <td>—</td> </tr> </table> <p>COMPOSITION:</p> <table border="0"> <tr> <td>Chlorite</td> <td>5</td> <td>—</td> </tr> <tr> <td>Epidote</td> <td>5</td> <td>—</td> </tr> <tr> <td>Olivine</td> <td>Tr</td> <td>—</td> </tr> <tr> <td>Opaques</td> <td>10</td> <td>10</td> </tr> <tr> <td>Serpentine</td> <td>75</td> <td>75</td> </tr> <tr> <td>Talc</td> <td>—</td> <td>15</td> </tr> <tr> <td>Zoisite</td> <td>10</td> <td>Tr</td> </tr> <tr> <td>Thulite</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Garnet</td> <td>—</td> <td>Tr</td> </tr> </table>		1, 25	1, 44		D	D	Sand	5	10	Silt	75	90	Clay	20	—	Chlorite	5	—	Epidote	5	—	Olivine	Tr	—	Opaques	10	10	Serpentine	75	75	Talc	—	15	Zoisite	10	Tr	Thulite	—	Tr	Garnet	—	Tr
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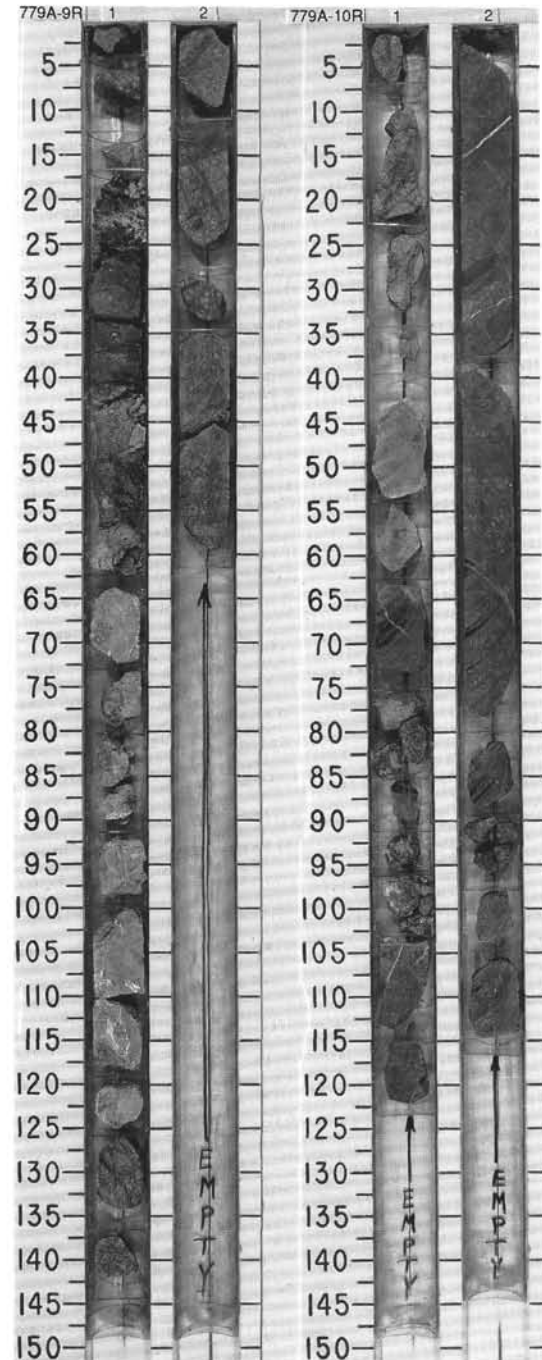


SITE 779 HOLE A CORE 9R CORED INTERVAL 4015.3-4024.9 mbsf; 68.1-77.7 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																																																																	
	FORAMINIFERS	NANOFOSSILS	RADIOLARIANS	DIATOMS																																																																											
					?	Q=3.4.9 P=1.8.9	0.2 0.31	1	0.5	IM			TS	CLAYEY SILT-SIZED SERPENTINE																																																																	
						V=3.0 W1:XCRCO ₃ W1:XTOC		2	1.0	IM			TS	Major lithology: CLAYEY SILT-SIZED SERPENTINE, gray green (5G 7/1), semi-consolidated with clasts of altered serpentine(?) and an interval of strongly disturbed bedding at 50 to 60 cm. SMEAR SLIDE SUMMARY (%): <table border="1"> <tr> <td></td> <td>1, 23</td> <td>1, 23</td> <td>1, 29</td> <td>1, 30</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> </tr> </table> TEXTURE: <table border="1"> <tr> <td>Sand</td> <td>5</td> <td>5</td> <td>10</td> <td>10</td> </tr> <tr> <td>Silt</td> <td>60</td> <td>60</td> <td>50</td> <td>60</td> </tr> <tr> <td>Clay</td> <td>35</td> <td>35</td> <td>40</td> <td>30</td> </tr> </table> COMPOSITION: <table border="1"> <tr> <td>Amphibole</td> <td>Tr</td> <td>5</td> <td>Tr</td> <td>Tr</td> </tr> <tr> <td>Aragonite</td> <td>—</td> <td>5</td> <td>—</td> <td>—</td> </tr> <tr> <td>Chlorite</td> <td>Tr</td> <td>3</td> <td>—</td> <td>—</td> </tr> <tr> <td>Garnet</td> <td>8</td> <td>—</td> <td>—</td> <td>1</td> </tr> <tr> <td>Opauques</td> <td>5</td> <td>15</td> <td>10</td> <td>10</td> </tr> <tr> <td>Serpentine</td> <td>62</td> <td>72</td> <td>90</td> <td>82</td> </tr> <tr> <td>Talc</td> <td>—</td> <td>—</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Zoisite</td> <td>25</td> <td>—</td> <td>—</td> <td>7</td> </tr> </table>		1, 23	1, 23	1, 29	1, 30	D	D	D	D	D	Sand	5	5	10	10	Silt	60	60	50	60	Clay	35	35	40	30	Amphibole	Tr	5	Tr	Tr	Aragonite	—	5	—	—	Chlorite	Tr	3	—	—	Garnet	8	—	—	1	Opauques	5	15	10	10	Serpentine	62	72	90	82	Talc	—	—	—	Tr	Zoisite	25	—	—	7
	1, 23	1, 23	1, 29	1, 30																																																																											
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Talc	—	—	—	Tr																																																																											
Zoisite	25	—	—	7																																																																											

SITE 779 HOLE A CORE 10R CORED INTERVAL 4024.9-4034.5 mbsf; 77.7-87.3 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANOFOSSILS	RADIOLARIANS	DIATOMS										
					?	Q=0.5 P=2.7.4		1	0.5	IM				CLAYEY-SILT-SIZED SERPENTINE
						V=5.4		2	1.0	IM				Major lithology: CLAYEY SILT-SIZED SERPENTINE, dark blue gray (5B 4/1) with pale green (5G 6/2), pebble-sized clasts of silt-sized serpentine and sand-sized clasts of serpentine(?).

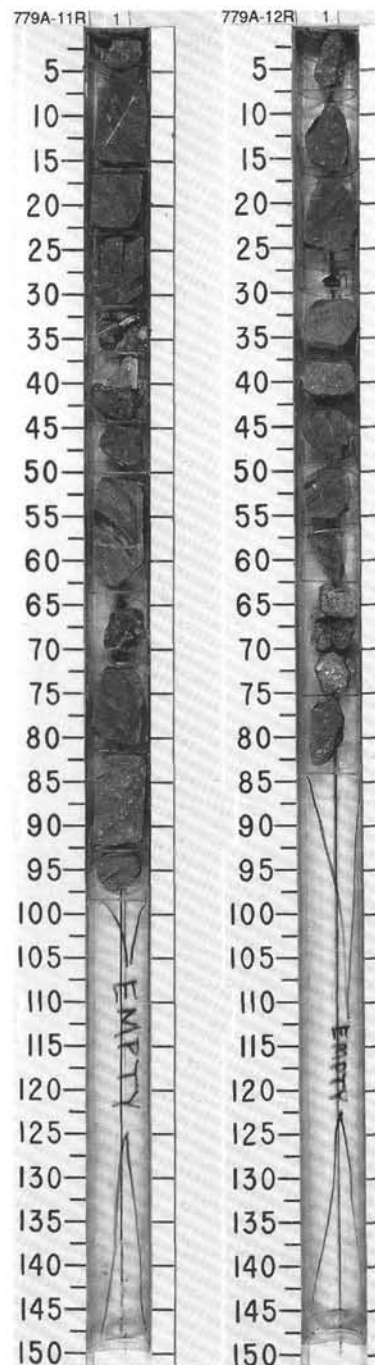


SITE 779 HOLE A CORE 11R CORED INTERVAL 4034.5-4044.1 mbsl; 87.3-96.9 mbsf

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																								
					?			1 0.5	IM IM	♦		<p>CLAYEY SILT-SIZED SERPENTINE</p> <p>Major lithology: CLAYEY SILT-SIZED SERPENTINE, dark blue gray (5B 4/1). Contains one pale green (5G 6/2) lithic clast at 38 cm.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table> <tr><td>1, 40</td></tr> <tr><td>D</td></tr> </table> <p>TEXTURE:</p> <table> <tr><td>Sand</td><td>20</td></tr> <tr><td>Silt</td><td>50</td></tr> <tr><td>Clay</td><td>30</td></tr> </table> <p>COMPOSITION:</p> <table> <tr><td>Opauques</td><td>5</td></tr> <tr><td>Serpentine</td><td>80</td></tr> <tr><td>Aragonite</td><td>5</td></tr> <tr><td>Epidote</td><td>10</td></tr> </table>	1, 40	D	Sand	20	Silt	50	Clay	30	Opauques	5	Serpentine	80	Aragonite	5	Epidote	10
1, 40																												
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Opauques	5																											
Serpentine	80																											
Aragonite	5																											
Epidote	10																											

SITE 779 HOLE A CORE 12R CORED INTERVAL 4044.1-4053.8 mbsl; 96.9-106.6 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								
					?			1 0.5	IM			This core contained no sedimentary material.

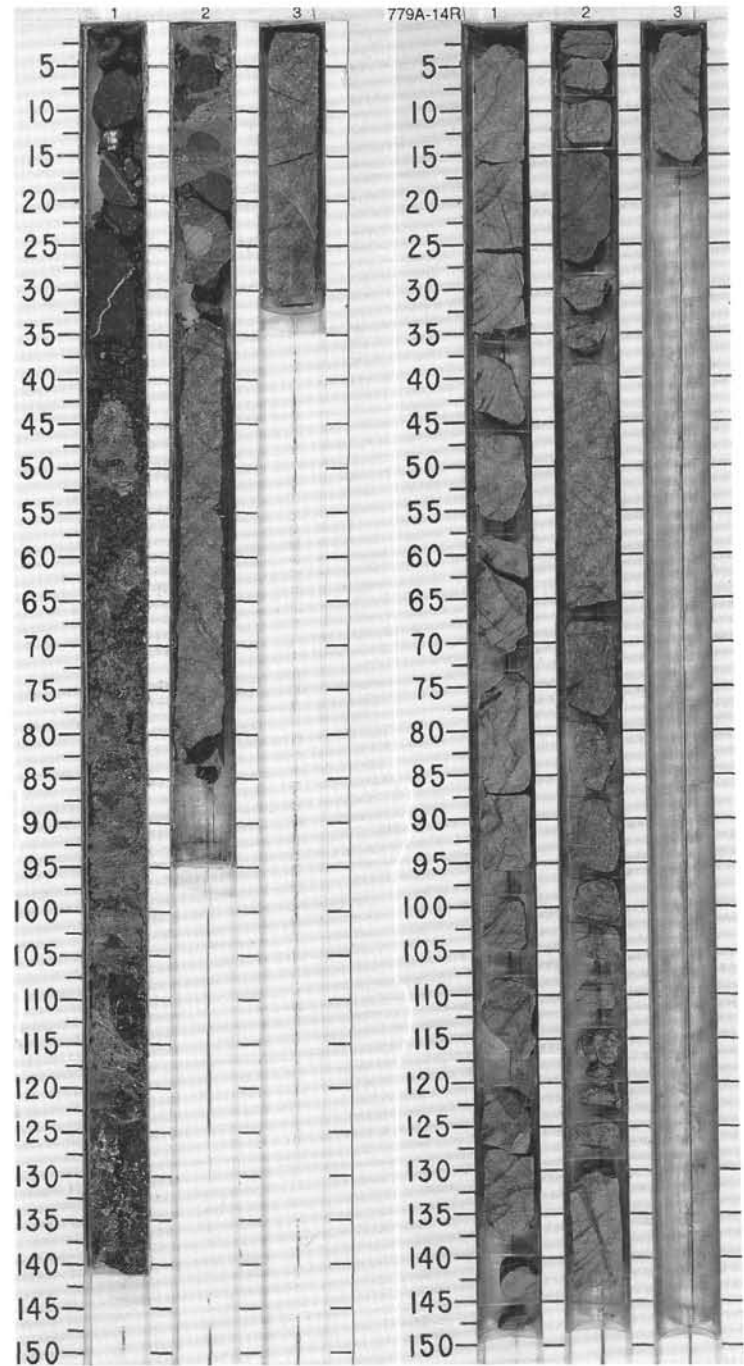


SITE 779 HOLE A CORE 13R CORED INTERVAL 4053.8-4063.4 mbsl; 106.6-116.2 mbsf

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																																									
					?	WT. % CaCO ₃ 54.6 WT. % SiO ₂ 2.86 WT. % TOC 0.5 WT. % TIC 0.27		0.5 1.0	IM	TS		SILT- AND SAND-SIZED SERPENTINE Major lithology: SILT- AND SAND-SIZED SERPENTINE, blue gray (5B 5/1) and light green (5G 7/2) in alternating laminations which are often not continuous across the core and are slightly disturbed by the presence of dark, coarse sand-to pebble-sized clasts (serpentine?). SMEAR SLIDE SUMMARY (%): <table style="margin-left: 20px;"> <tr> <td></td> <td>1.9</td> <td>2.10</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> </tr> </table> TEXTURE: <table style="margin-left: 20px;"> <tr> <td>Sand</td> <td>50</td> <td>30</td> </tr> <tr> <td>Silt</td> <td>45</td> <td>60</td> </tr> <tr> <td>Clay</td> <td>5</td> <td>10</td> </tr> </table> COMPOSITION: <table style="margin-left: 20px;"> <tr> <td>Amphibole</td> <td>—</td> <td>10</td> </tr> <tr> <td>Garnet</td> <td>Tr</td> <td>Tr</td> </tr> <tr> <td>Olivine</td> <td>2</td> <td>—</td> </tr> <tr> <td>Opaques</td> <td>5</td> <td>15</td> </tr> <tr> <td>Serpentine</td> <td>70</td> <td>65</td> </tr> <tr> <td>Zoisite</td> <td>23</td> <td>10</td> </tr> </table>		1.9	2.10	D	D	D	Sand	50	30	Silt	45	60	Clay	5	10	Amphibole	—	10	Garnet	Tr	Tr	Olivine	2	—	Opaques	5	15	Serpentine	70	65	Zoisite	23	10
	1.9	2.10																																											
D	D	D																																											
Sand	50	30																																											
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Opaques	5	15																																											
Serpentine	70	65																																											
Zoisite	23	10																																											
				?				2	IM																																				
								3	IM																																				

SITE 779 HOLE A CORE 14R CORED INTERVAL 4063.4-4073.1 mbsl; 116.2-125.9 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									
					?	WT. % CaCO ₃ 0.0 WT. % SiO ₂ 2.87 V=3.4 WT. % TOC 2.34		0.5 1.0	IM			This core contained no sedimentary material.	



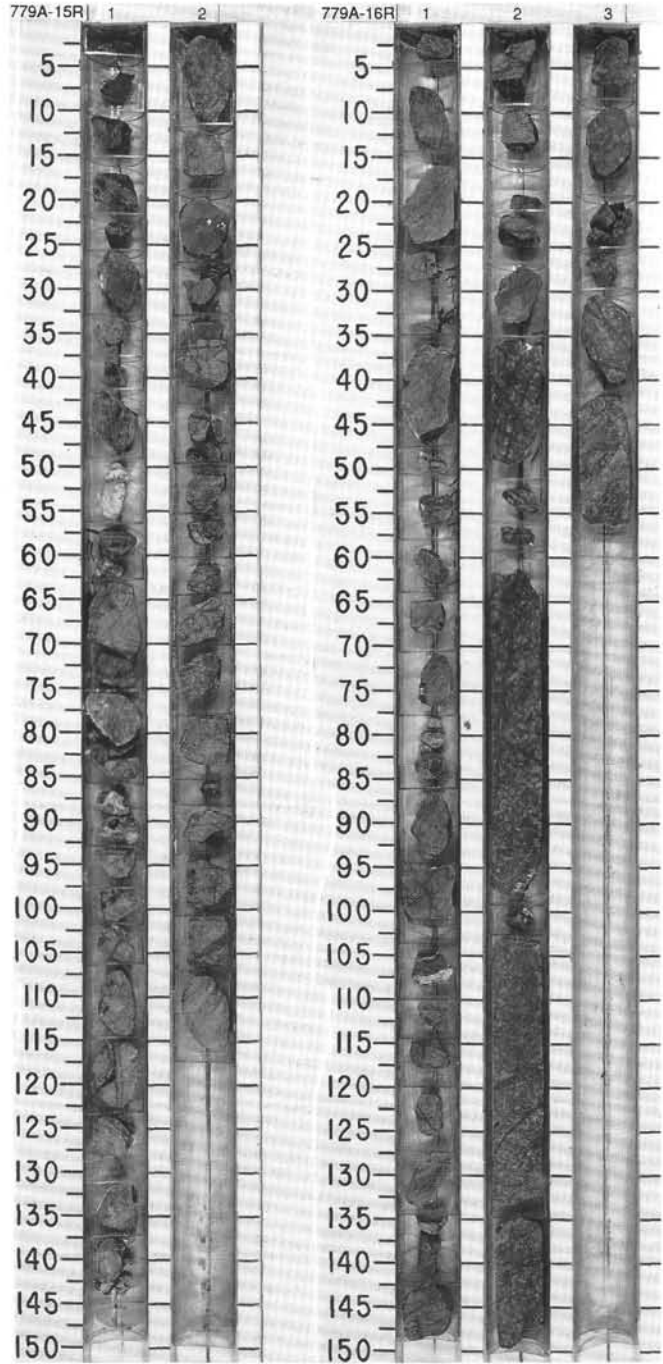
SITE 779

SITE 779 HOLE A CORE 15R CORED INTERVAL 4073.1-4082.7 mbsl; 125.9-135.5 mbsf

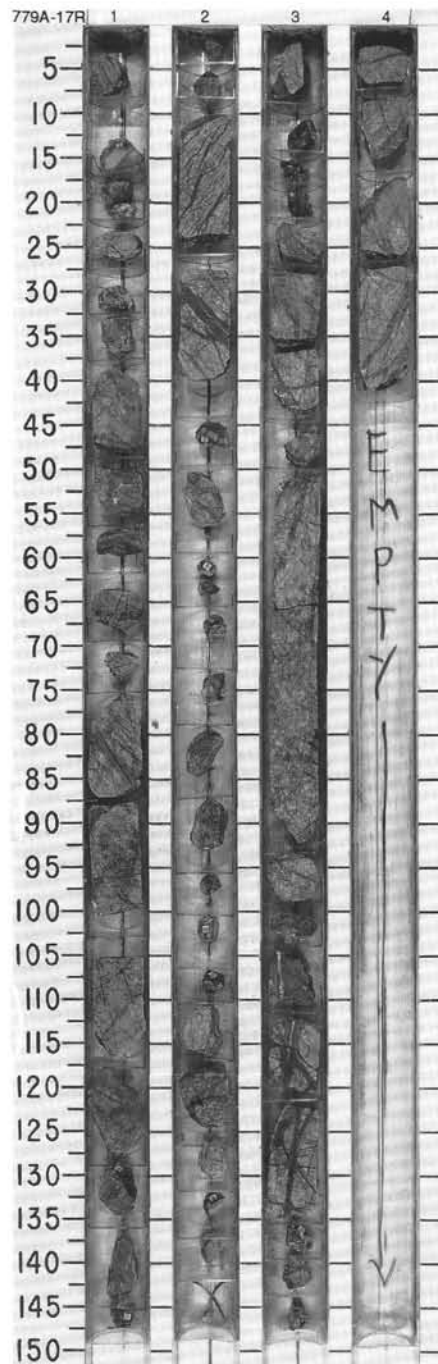
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER			PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS									
								0.5 1.0 1.5 2.0	IM			This core contained no sedimentary material.
				?			2					

SITE 779 HOLE A CORE 16R CORED INTERVAL 4082.7-4092.4 mbsl; 135.5-145.2 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									
								0.5 1.0 1.5 2.0	IM			This core contained no sedimentary material.
				?			2					
					● $\delta^*_{1.0}$ V=5.3 $\delta^*_{2.86}$		3					

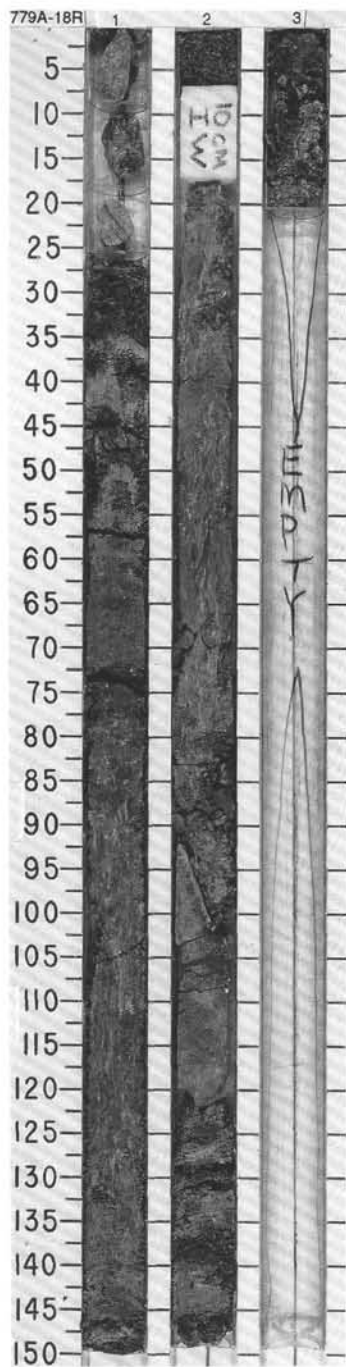


TIME - ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NAUPOSSIBLS	RADIOLARIANS	DIATOMS										
														This core contained no sedimentary material.
					• $\delta = 0.3$ $\beta = 2.99$			1						
					• $\delta = 0.0$ $\beta = 2.76$			2		IM				
								3						
								4						



SITE 779 HOLE A CORE 18R CORED INTERVAL 4102.1-4106.3 mbsi; 154.9-159.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION																																														
	FORAMINIFERS	STRASSFOSILS	RADIOLARIANS	DIACTONS																																																						
					0.0-0.5 0.5-1.0 1.0-1.5 1.5-2.0 2.0-2.5 2.5-3.0 3.0-3.5 3.5-4.0 4.0-4.5 4.5-5.0 5.0-5.5 5.5-6.0 6.0-6.5 6.5-7.0 7.0-7.5 7.5-8.0 8.0-8.5 8.5-9.0 9.0-9.5 9.5-10.0 10.0-10.5 10.5-11.0 11.0-11.5 11.5-12.0 12.0-12.5 12.5-13.0 13.0-13.5 13.5-14.0 14.0-14.5 14.5-15.0 15.0-15.5 15.5-16.0 16.0-16.5 16.5-17.0 17.0-17.5 17.5-18.0 18.0-18.5 18.5-19.0 19.0-19.5 19.5-20.0 20.0-20.5 20.5-21.0 21.0-21.5 21.5-22.0 22.0-22.5 22.5-23.0 23.0-23.5 23.5-24.0 24.0-24.5 24.5-25.0 25.0-25.5 25.5-26.0 26.0-26.5 26.5-27.0 27.0-27.5 27.5-28.0 28.0-28.5 28.5-29.0 29.0-29.5 29.5-30.0 30.0-30.5 30.5-31.0 31.0-31.5 31.5-32.0 32.0-32.5 32.5-33.0 33.0-33.5 33.5-34.0 34.0-34.5 34.5-35.0 35.0-35.5 35.5-36.0 36.0-36.5 36.5-37.0 37.0-37.5 37.5-38.0 38.0-38.5 38.5-39.0 39.0-39.5 39.5-40.0 40.0-40.5 40.5-41.0 41.0-41.5 41.5-42.0 42.0-42.5 42.5-43.0 43.0-43.5 43.5-44.0 44.0-44.5 44.5-45.0 45.0-45.5 45.5-46.0 46.0-46.5 46.5-47.0 47.0-47.5 47.5-48.0 48.0-48.5 48.5-49.0 49.0-49.5 49.5-50.0 50.0-50.5 50.5-51.0 51.0-51.5 51.5-52.0 52.0-52.5 52.5-53.0 53.0-53.5 53.5-54.0 54.0-54.5 54.5-55.0 55.0-55.5 55.5-56.0 56.0-56.5 56.5-57.0 57.0-57.5 57.5-58.0 58.0-58.5 58.5-59.0 59.0-59.5 59.5-60.0 60.0-60.5 60.5-61.0 61.0-61.5 61.5-62.0 62.0-62.5 62.5-63.0 63.0-63.5 63.5-64.0 64.0-64.5 64.5-65.0 65.0-65.5 65.5-66.0 66.0-66.5 66.5-67.0 67.0-67.5 67.5-68.0 68.0-68.5 68.5-69.0 69.0-69.5 69.5-70.0 70.0-70.5 70.5-71.0 71.0-71.5 71.5-72.0 72.0-72.5 72.5-73.0 73.0-73.5 73.5-74.0 74.0-74.5 74.5-75.0 75.0-75.5 75.5-76.0 76.0-76.5 76.5-77.0 77.0-77.5 77.5-78.0 78.0-78.5 78.5-79.0 79.0-79.5 79.5-80.0 80.0-80.5 80.5-81.0 81.0-81.5 81.5-82.0 82.0-82.5 82.5-83.0 83.0-83.5 83.5-84.0 84.0-84.5 84.5-85.0 85.0-85.5 85.5-86.0 86.0-86.5 86.5-87.0 87.0-87.5 87.5-88.0 88.0-88.5 88.5-89.0 89.0-89.5 89.5-90.0 90.0-90.5 90.5-91.0 91.0-91.5 91.5-92.0 92.0-92.5 92.5-93.0 93.0-93.5 93.5-94.0 94.0-94.5 94.5-95.0 95.0-95.5 95.5-96.0 96.0-96.5 96.5-97.0 97.0-97.5 97.5-98.0 98.0-98.5 98.5-99.0 99.0-99.5 99.5-100.0 100.0-100.5 100.5-101.0 101.0-101.5 101.5-102.0 102.0-102.5 102.5-103.0 103.0-103.5 103.5-104.0 104.0-104.5 104.5-105.0 105.0-105.5 105.5-106.0 106.0-106.3			PHACOIDAL SHEARED SERPENTINE Major lithology: PHACOIDAL SHEARED SERPENTINE, dark green (5G 3/2) to light green (5G 8/2). The entire core consists of muddy, sheared, layered, and moderately convoluted bedded serpentinite with local vertical and subhorizontal anastomosing microphacoidal foliation. Section 2 contains veins of chrysotile in the matrix. Clasts are predominantly serpentinite. SMEAR SLIDE SUMMARY (%): <table border="1"> <tr> <td></td> <td>1, 58</td> <td>1, 58</td> <td>2, 49</td> <td>3, 3</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> </tr> </table> TEXTURE: <table border="1"> <tr> <td>Sand</td> <td>—</td> <td>—</td> <td>5</td> <td>10</td> </tr> <tr> <td>Silt</td> <td>90</td> <td>90</td> <td>90</td> <td>85</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>10</td> <td>5</td> <td>5</td> </tr> </table> COMPOSITION: <table border="1"> <tr> <td>Amphibole</td> <td>3</td> <td>3</td> <td>3</td> <td>—</td> </tr> <tr> <td>Opales</td> <td>5</td> <td>5</td> <td>5</td> <td>—</td> </tr> <tr> <td>Serpentine</td> <td>90</td> <td>87</td> <td>90</td> <td>98</td> </tr> <tr> <td>Thulite</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> </tr> <tr> <td>Zoisite</td> <td>2</td> <td>5</td> <td>2</td> <td>2</td> </tr> </table>		1, 58	1, 58	2, 49	3, 3	D	D	D	D	D	Sand	—	—	5	10	Silt	90	90	90	85	Clay	10	10	5	5	Amphibole	3	3	3	—	Opales	5	5	5	—	Serpentine	90	87	90	98	Thulite	—	Tr	—	—	Zoisite	2	5	2	2
	1, 58	1, 58	2, 49	3, 3																																																						
D	D	D	D	D																																																						
Sand	—	—	5	10																																																						
Silt	90	90	90	85																																																						
Clay	10	10	5	5																																																						
Amphibole	3	3	3	—																																																						
Opales	5	5	5	—																																																						
Serpentine	90	87	90	98																																																						
Thulite	—	Tr	—	—																																																						
Zoisite	2	5	2	2																																																						

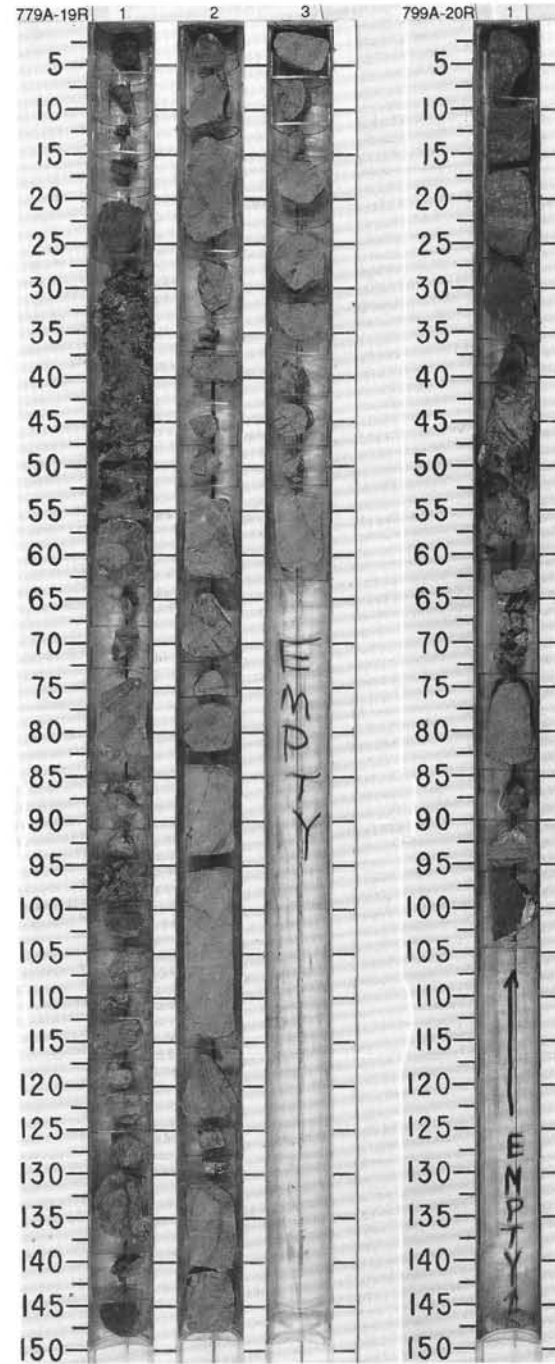


SITE 779 HOLE A CORE 19R CORED INTERVAL 4106.3-4116.3 mbsl; 159.1-169.1 mbsf

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	IM	WVW		*		<p>PHACOIDAL SHEARED SERPENTINE</p> <p>Major lithology: PHACOIDAL SHEARED SERPENTINE, dark green (5G 3/2) with white (7.5YR 8/0) zone at the top and small light green (5G 8/2) grains scattered throughout. Upper zone is either late-stage serpentine or carbonate. Small grains are serpentine.</p> <p>* SMEAR SLIDE SUMMARY (%):</p> <table border="0"> <tr> <td></td> <td>1.38</td> <td>1.97</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>5</td> <td>20</td> </tr> <tr> <td>Silt</td> <td>85</td> <td>50</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>20</td> </tr> </table> <p>COMPOSITION:</p> <table border="0"> <tr> <td>Amphibole</td> <td>Tr</td> <td>—</td> </tr> <tr> <td>Opales</td> <td>5</td> <td>5</td> </tr> <tr> <td>Serpentine</td> <td>90</td> <td>90</td> </tr> <tr> <td>Talc</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Thulite</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Zoisite</td> <td>5</td> <td>5</td> </tr> </table>		1.38	1.97	D	D	D	Sand	5	20	Silt	85	50	Clay	10	20	Amphibole	Tr	—	Opales	5	5	Serpentine	90	90	Talc	—	Tr	Thulite	—	Tr	Zoisite	5	5
	1.38	1.97																																													
D	D	D																																													
Sand	5	20																																													
Silt	85	50																																													
Clay	10	20																																													
Amphibole	Tr	—																																													
Opales	5	5																																													
Serpentine	90	90																																													
Talc	—	Tr																																													
Thulite	—	Tr																																													
Zoisite	5	5																																													
							1.0																																								
							2		IM																																						
							3																																								

SITE 779 HOLE A CORE 20R CORED INTERVAL 4116.3-4117.3 mbsl; 169.1-170.1 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	IM			*		<p>PHACOIDAL SHEARED SERPENTINE</p> <p>Major lithology: PHACOIDAL SHEARED SERPENTINE, light greenish gray (10Y 7/2). Pebbles of serpentinized ultramafic rock in sand-sized, zoisite and thulite-bearing matrix material. Core exhibits a sheared, phacoidal texture with veins and foliation anastomosing around dark green (5G 3/2) pebbles. Some flattening and brittle pinch and swell (normal faulting) is present.</p> <p>* SMEAR SLIDE SUMMARY (%):</p> <table border="0"> <tr> <td></td> <td>1.69</td> <td>1.72</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>70</td> </tr> <tr> <td>Silt</td> <td>30</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>Opales</td> <td>10</td> <td>10</td> </tr> <tr> <td>Serpentine</td> <td>55</td> <td>90</td> </tr> <tr> <td>Thulite</td> <td>25</td> <td>—</td> </tr> <tr> <td>Zoisite</td> <td>10</td> <td>—</td> </tr> </table>		1.69	1.72	D	D	D	Sand	60	70	Silt	30	20	Clay	10	10	Opales	10	10	Serpentine	55	90	Thulite	25	—	Zoisite	10	—
	1.69	1.72																																							
D	D	D																																							
Sand	60	70																																							
Silt	30	20																																							
Clay	10	10																																							
Opales	10	10																																							
Serpentine	55	90																																							
Thulite	25	—																																							
Zoisite	10	—																																							
							1.0	IM																																	

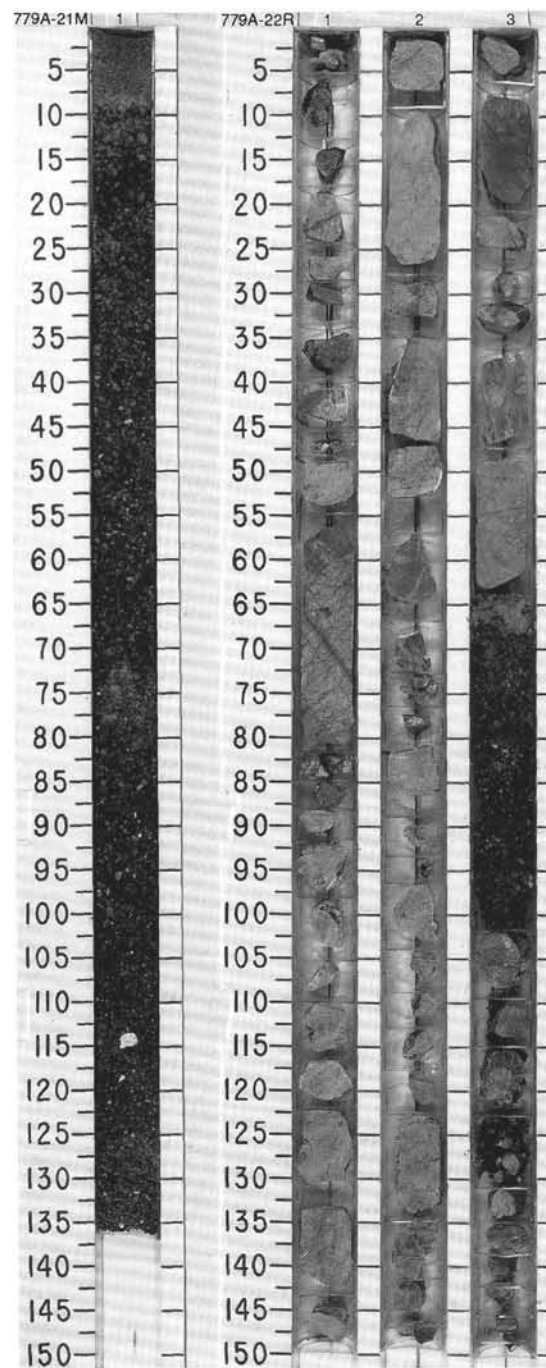


SITE 779 HOLE A CORE 21M CORED INTERVAL 4115.3-4117.3 mbsl; 168.1-170.1 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER			PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSELS	RADIOLARIANS									
							1	0.5 1.0	CUTTINGS			This core consisted entirely of drill cuttings.

SITE 779 HOLE A CORE 22R CORED INTERVAL 4117.3-4124.8 mbsl; 170.1-177.6 mbsf

TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER			PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB. SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSELS	RADIOLARIANS									
							1	0.5 1.0	IM			This core contained no sedimentary material. Drill cuttings occur in Section 3 from 65 to 103 cm.
							2					
							3		CUTTINGS			



SITE 779 HOLE A CORE 23R CORED INTERVAL 4124.8-4134.4 mbsl; 177.6-187.2 mbsf

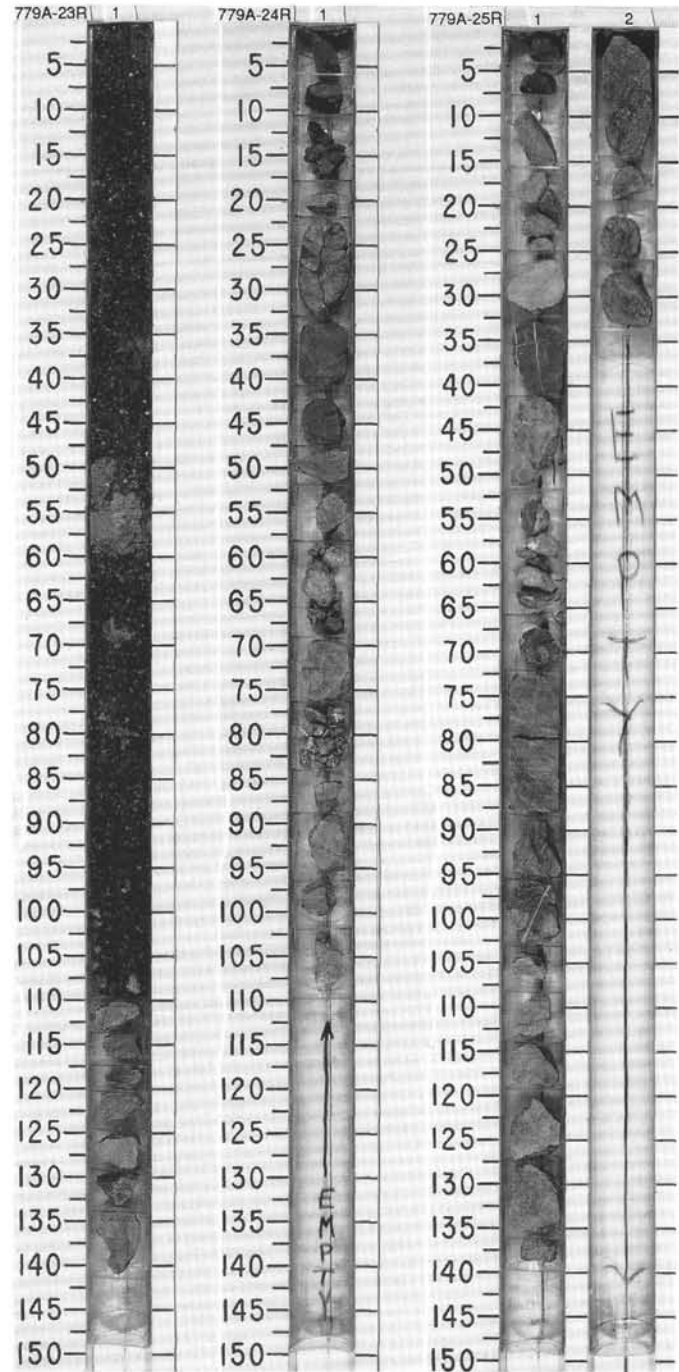
TIME-ROCK UNIT	BIOSTRAT. ZONE/ FOSSIL CHARACTER				PALEOMAGNETICS	PHYS. PROPERTIES	CHEMISTRY	SECTION	METERS	GRAPHIC LITHOLOGY	DRILLING DISTURB.	SED. STRUCTURES	SAMPLES	LITHOLOGIC DESCRIPTION
	FORAMINIFERS	NANNOFOSSILS	RADIOLARIANS	DIATOMS										
					?			1	0.5 1.0	CUTTINGS IM				This core consisted of 110 cm of drill cuttings and 30 cm of igneous- metamorphic rock; it contained no sedimentary material.

SITE 779 HOLE A CORE 24R CORED INTERVAL 4134.4-4144.0 mbsl; 187.2-196.8 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										
					?	0-0.0 P-2.86	V-4.21	1	0.5 1.0	IM				This core contained no sedimentary material.

SITE 779 HOLE A CORE 25R CORED INTERVAL 4144.0-4153.7 mbsl; 196.8-206.5 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										
					?	0-0.0 P-2.65	V-5.3	1	0.5 1.0	IM				This core contained no sedimentary material.
								2		IM				

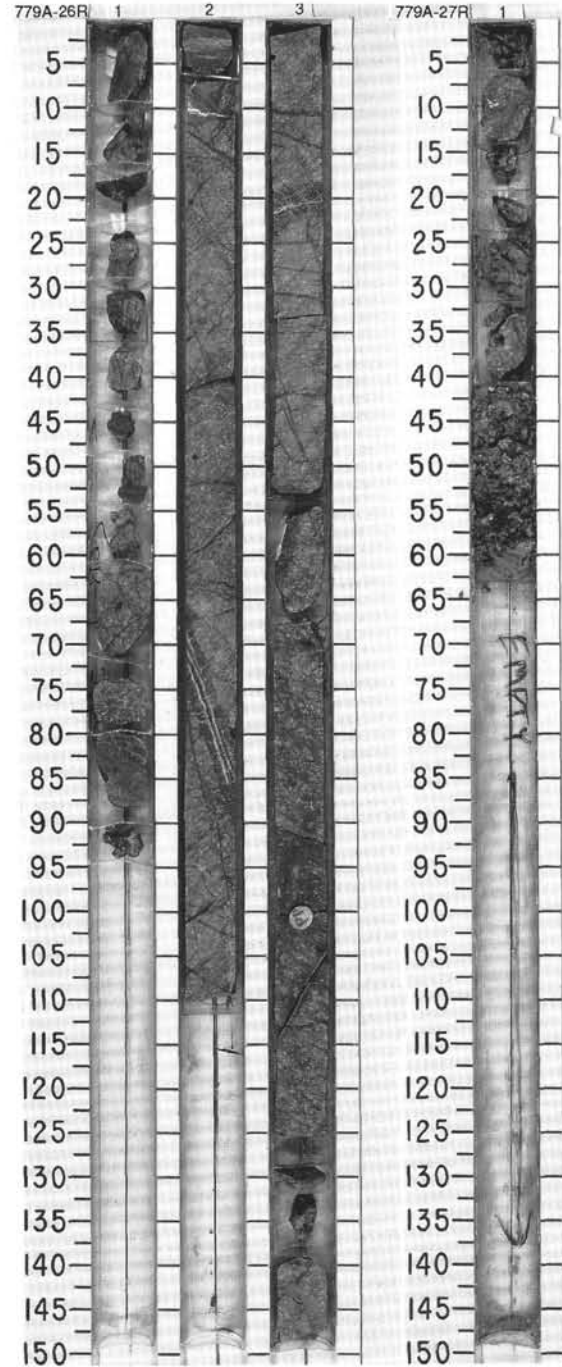


SITE 779 HOLE A CORE 26R CORED INTERVAL 4153.7-4163.4 mbsl; 206.5-216.2 mbsf

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									
												This core contained no sedimentary material.
					$\delta = 0.0$ V=5.0 $\beta = 2.71$			0.5 1 1.0	IM			
					$\delta = 1.2$ V=5.0 $\beta = 2.57$			2	IM			
					$\delta = 1.2$ V=5.0 $\beta = 2.57$			3	IM			

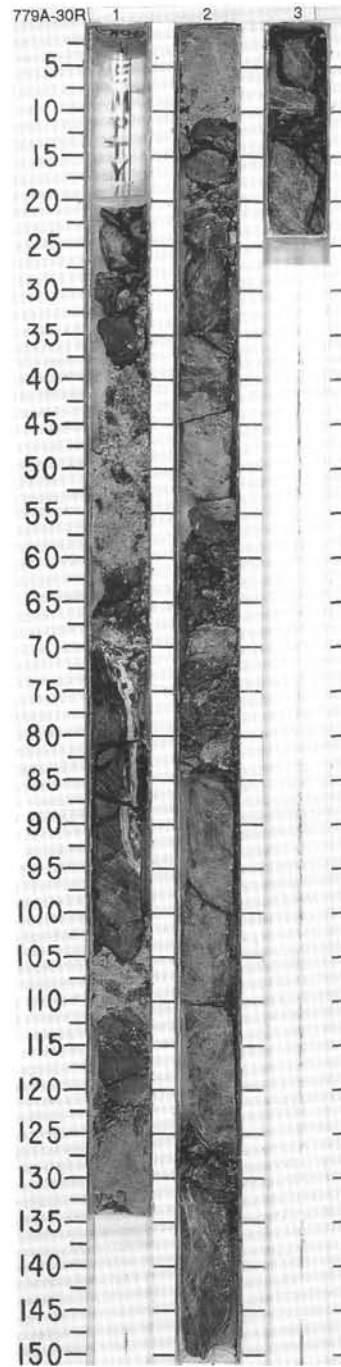
SITE 779 HOLE A CORE 27R CORED INTERVAL 4163.4-4173.0 mbsl; 216.2-225.8 mbsf

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									
UPPER MIOCENE or LOWER PLIOCENE		R/M						0.5	IM			CLAYEY SILT-SIZED SERPENTINE
	CN8/CN11				$\delta = 4.3$ $\beta = 1.90$	WT. %CaCO ₃ WT. %TiO ₂						Major lithology: CLAYEY SILT-SIZED SERPENTINE, dark bluish gray (5B 4/1) with inter-spersed coarse sand-to cobble-sized fragments of olive (5Y 4/4) ultramafic rocks.
					$\delta = 0.2$							SMEAR SLIDE SUMMARY (%):
												D 1,3 D 1,44 D 1,45 D 1,54 D 1,60 D 1,61
												TEXTURE:
												Sand 15 25 15 75 10 —
												Silt 50 40 65 20 50 70
												Clay 35 35 20 5 40 30
												COMPOSITION:
												Amphibole — — Tr Tr 5 Tr
												Barite — — — Tr — —
												Chert — — Tr — Tr —
												Chlorite — — Tr Tr — —
												Clay — — 5 5 15 —
												Micrite — — Tr Tr Tr —
												Nannofossils — — Tr Tr Tr —
												Opauques 5 10 10 5 5 —
												Serpentine 95 90 80 75 75 90
												Thulite — — — Tr 5 —
												Zoisite — — 5 15 — 5



SITE 779 HOLE A CORE 30R CORED INTERVAL 4192.2-4201.9 mbsl; 245.0-254.7 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										DIAZONES																																																																																																																																																																											
					0.47, 0.2 P-1.0, 0.4 0.19		1	0.5	IM			<p>PHACOIDAL SHEARED SERPENTINE</p> <p>Major lithology: PHACOIDAL SHEARED SERPENTINE, dark gray (N3) to light bluish gray (5B 7/1) with angular clasts (locally tabular) clasts up to 3 mm in diameter. Moderately well developed foliation and shear texture throughout. At 50 to 56 cm a well lithified serpentine melange zone is present. The zone contains rhomboidal, phacoidal, and irregular elongate clasts extending along the foliation planes. Tails of clasts extend out into the matrix (by shear). Intense cataclasis fabrics are exhibited locally. Many shear bands dip 60 degrees to vertical.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="1"> <tr> <td></td> <td>1, 52</td> <td>1, 55</td> <td>1, 105</td> <td>1, 109</td> <td>1, 127</td> <td>1, 128</td> <td>1, 128</td> </tr> <tr> <td></td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>M</td> </tr> </table> <p>TEXTURE:</p> <table border="1"> <tr> <td>Sand</td> <td>10</td> <td>10</td> <td>10</td> <td>40</td> <td>5</td> <td>10</td> <td>10</td> </tr> <tr> <td>Silt</td> <td>50</td> <td>50</td> <td>40</td> <td>50</td> <td>55</td> <td>70</td> <td>70</td> </tr> <tr> <td>Clay</td> <td>40</td> <td>40</td> <td>50</td> <td>10</td> <td>40</td> <td>20</td> <td>20</td> </tr> </table> <p>COMPOSITION:</p> <table border="1"> <tr> <td>Amphibole</td> <td>—</td> <td>—</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Chlorite</td> <td>—</td> <td>Tr</td> <td>—</td> <td>20</td> <td>—</td> <td>Tr</td> <td>—</td> </tr> <tr> <td>Clay</td> <td>—</td> <td>—</td> <td>60</td> <td>—</td> <td>—</td> <td>—</td> <td>10</td> </tr> <tr> <td>Dolomite</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> <td>Tr</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Epidote</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>3</td> <td>—</td> </tr> <tr> <td>Micrite</td> <td>—</td> <td>5</td> <td>5</td> <td>5</td> <td>Tr</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Nannofossils</td> <td>3</td> <td>Tr</td> <td>Tr</td> <td>—</td> <td>—</td> <td>5</td> <td>5</td> </tr> <tr> <td>Olivine</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> </tr> <tr> <td>Opacues</td> <td>2</td> <td>5</td> <td>5</td> <td>5</td> <td>10</td> <td>5</td> <td>10</td> </tr> <tr> <td>Organic matter</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>Serpentine</td> <td>95</td> <td>90</td> <td>30</td> <td>70</td> <td>90</td> <td>87</td> <td>75</td> </tr> <tr> <td>Thulite</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> <td>—</td> <td>Tr</td> <td>—</td> </tr> </table> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="1"> <tr> <td></td> <td>2, 2</td> <td>2, 6</td> </tr> <tr> <td></td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="1"> <tr> <td>Sand</td> <td>10</td> <td>10</td> </tr> <tr> <td>Silt</td> <td>60</td> <td>50</td> </tr> <tr> <td>Clay</td> <td>30</td> <td>40</td> </tr> </table> <p>COMPOSITION:</p> <table border="1"> <tr> <td>Amphibole</td> <td>—</td> <td>Tr</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>10</td> </tr> <tr> <td>Dolomite</td> <td>Tr</td> <td>—</td> </tr> <tr> <td>Micrite</td> <td>Tr</td> <td>5</td> </tr> <tr> <td>Nannofossils</td> <td>Tr</td> <td>Tr</td> </tr> <tr> <td>Opacues</td> <td>10</td> <td>10</td> </tr> <tr> <td>Serpentine</td> <td>80</td> <td>75</td> </tr> </table>		1, 52	1, 55	1, 105	1, 109	1, 127	1, 128	1, 128		D	D	D	D	D	D	M	Sand	10	10	10	40	5	10	10	Silt	50	50	40	50	55	70	70	Clay	40	40	50	10	40	20	20	Amphibole	—	—	—	Tr	—	—	Tr	Chlorite	—	Tr	—	20	—	Tr	—	Clay	—	—	60	—	—	—	10	Dolomite	—	Tr	—	—	Tr	—	Tr	Epidote	—	—	—	—	—	3	—	Micrite	—	5	5	5	Tr	—	Tr	Nannofossils	3	Tr	Tr	—	—	5	5	Olivine	—	—	—	—	Tr	—	—	Opacues	2	5	5	5	10	5	10	Organic matter	—	Tr	—	—	—	—	—	Serpentine	95	90	30	70	90	87	75	Thulite	—	Tr	—	—	—	Tr	—		2, 2	2, 6		D	D	Sand	10	10	Silt	60	50	Clay	30	40	Amphibole	—	Tr	Clay	10	10	Dolomite	Tr	—	Micrite	Tr	5	Nannofossils	Tr	Tr	Opacues	10	10	Serpentine	80	75
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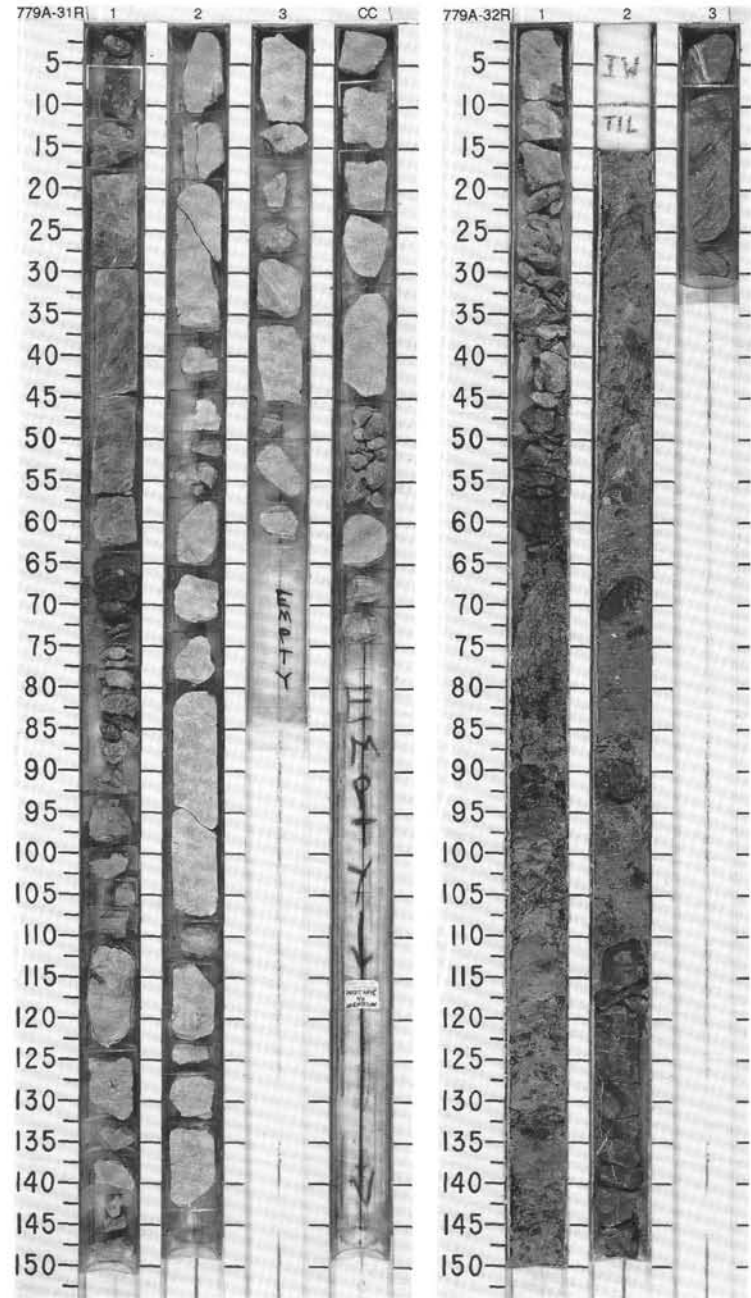


SITE 779 HOLE A CORE 31R CORED INTERVAL 4201.9-4211.6 mbsl; 254.7-264.4 mbsf

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										
					● 0.0 ● 2.3, 2	● 1.0, 7 ● 2.4, 7			0.5 1 1.0	IM				This core contained no sedimentary material.
					● V=3.6			1						
					● V=5.3			2						
					● V=4.8			3		IM				
								CC		IM				

SITE 779 HOLE A CORE 32R CORED INTERVAL 4211.6-4221.2 mbsl; 264.4-274.0 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																																																																						
					?	● 2.3, 4 ● 3.01 ● 3.22			0.5 1.0	IM				<p>PHACOIDAL SHEARED SERPENTINE</p> <p>Major lithology: PHACOIDAL SHEARED SERPENTINE, light green (%G 8/2), bluish gray (5B6/1), and shades of gray-blue and blue-gray more intense than those represented on the Munsell charts. Foliation in upper 75 cm and in the interval from 58 to 67 cm Section 1 is predominantly subhorizontal. Sand-sized clasts up to 3 cm in diameter occur in the central portion of Section 2. Clasts are probably serpentine. The bottom 10 cm of the core is a zone of chaotic foliation.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="1"> <tr> <td></td> <td>1, 70</td> <td>1, 137</td> <td>2, 33</td> <td>2, 81</td> </tr> <tr> <td></td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="1"> <tr> <td>Sand</td> <td>7</td> <td>50</td> <td>30</td> <td>40</td> </tr> <tr> <td>Silt</td> <td>83</td> <td>50</td> <td>50</td> <td>60</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>—</td> <td>20</td> <td>—</td> </tr> </table> <p>COMPOSITION:</p> <table border="1"> <tr> <td>Chlorite</td> <td>20</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>Micrite</td> <td>5</td> <td>5</td> <td>—</td> <td>—</td> </tr> <tr> <td>Nannofossils</td> <td>—</td> <td>—</td> <td>3</td> <td>—</td> </tr> <tr> <td>Opales</td> <td>10</td> <td>5</td> <td>10</td> <td>5</td> </tr> <tr> <td>Serpentine</td> <td>65</td> <td>75</td> <td>82</td> <td>80</td> </tr> <tr> <td>Thulite</td> <td>—</td> <td>10</td> <td>5</td> <td>5</td> </tr> <tr> <td>Zoisite</td> <td>5</td> <td>5</td> <td>—</td> <td>10</td> </tr> </table>		1, 70	1, 137	2, 33	2, 81		D	D	D	D	Sand	7	50	30	40	Silt	83	50	50	60	Clay	10	—	20	—	Chlorite	20	—	—	—	Micrite	5	5	—	—	Nannofossils	—	—	3	—	Opales	10	5	10	5	Serpentine	65	75	82	80	Thulite	—	10	5	5	Zoisite	5	5	—	10
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Zoisite	5	5	—	10																																																																						
					● 3.1, 1 ● 2	● 0.3 ● 0.22		1																																																																		
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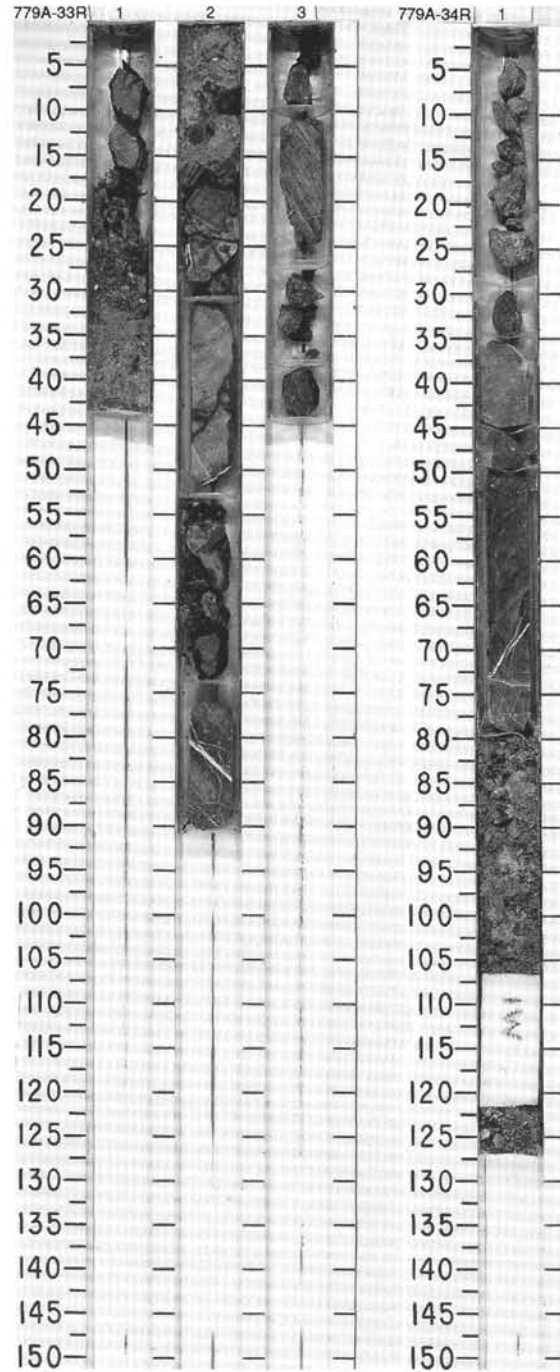


SITE 779 HOLE A CORE 33R CORED INTERVAL 4221.2-4230.9 mbsl; 274.0-283.7 mbsf

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																																																				
					?	0-0.1 2.32 V-4.6		1	IM	W	*	SILT-SIZED SERPENTINE Major lithology: SILT-SIZED SERPENTINE, bluish gray (SB 5/1) to greenish gray (5BG 5/1) matrix with angular clasts 1 to 2 mm in diameter of serpentinized harzburgite(?) and smaller, more prevalent, clasts of serpentine(?) and fragments of light green (5G B/2) serpentine veins. Very poorly sorted and, locally, phacoidal and foliated (especially at top and bottom of sections). Zoisite and chlorite are locally abundant.																																												
							2	IM	W	*		SMEAR SLIDE SUMMARY (%): <table border="1"> <tr> <td></td> <td>1, 34</td> <td>2, 5</td> <td>2, 68</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> <td>D</td> </tr> </table> TEXTURE: <table border="1"> <tr> <td>Sand</td> <td>5</td> <td>60</td> <td>20</td> </tr> <tr> <td>Silt</td> <td>85</td> <td>30</td> <td>75</td> </tr> <tr> <td>Clay</td> <td>10</td> <td>10</td> <td>5</td> </tr> </table> COMPOSITION: <table border="1"> <tr> <td>Chlorite</td> <td>10</td> <td>10</td> <td>10</td> </tr> <tr> <td>Micrite</td> <td>10</td> <td>5</td> <td>5</td> </tr> <tr> <td>Opagues</td> <td>10</td> <td>20</td> <td>10</td> </tr> <tr> <td>Organic debris</td> <td>—</td> <td>—</td> <td>5</td> </tr> <tr> <td>Serpentine</td> <td>70</td> <td>55</td> <td>65</td> </tr> <tr> <td>Zoisite</td> <td>—</td> <td>10</td> <td>5</td> </tr> </table>		1, 34	2, 5	2, 68	D	D	D	D	Sand	5	60	20	Silt	85	30	75	Clay	10	10	5	Chlorite	10	10	10	Micrite	10	5	5	Opagues	10	20	10	Organic debris	—	—	5	Serpentine	70	55	65	Zoisite	—	10	5
	1, 34	2, 5	2, 68																																																					
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Serpentine	70	55	65																																																					
Zoisite	—	10	5																																																					
							3	IM																																																

SITE 779 HOLE A CORE 34R CORED INTERVAL 4230.9-4240.5 mbsl; 283.7-293.3 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								
					?	0-0.0 2.39 5-5.1	WT. % CaCO ₃ 0.4 WT. % SiO ₂	1	IM	W	1W	SERPENTINE BRECCIA Major lithology: SERPENTINE BRECCIA, greenish gray (5GY 5/1) to light greenish gray (5GY 7/1), highly foliated (drilling disturbance?) with mm- to cm-sized clasts of serpentinized ultramafic rocks.

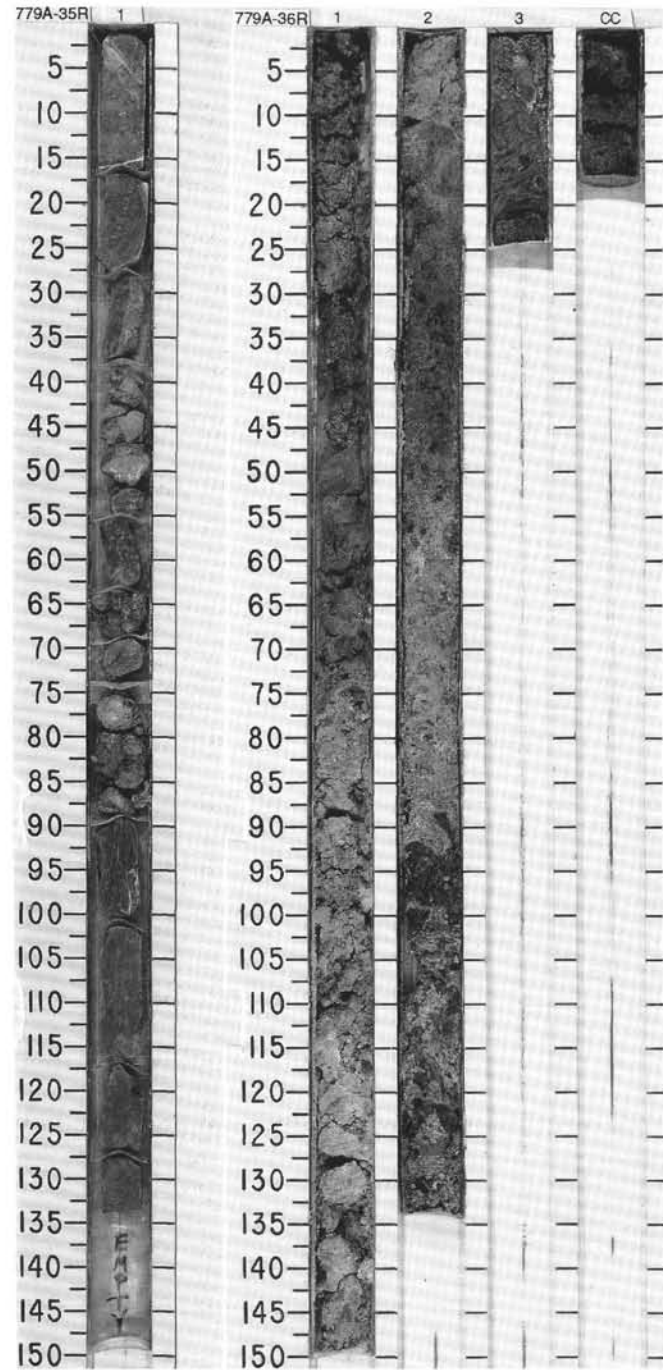


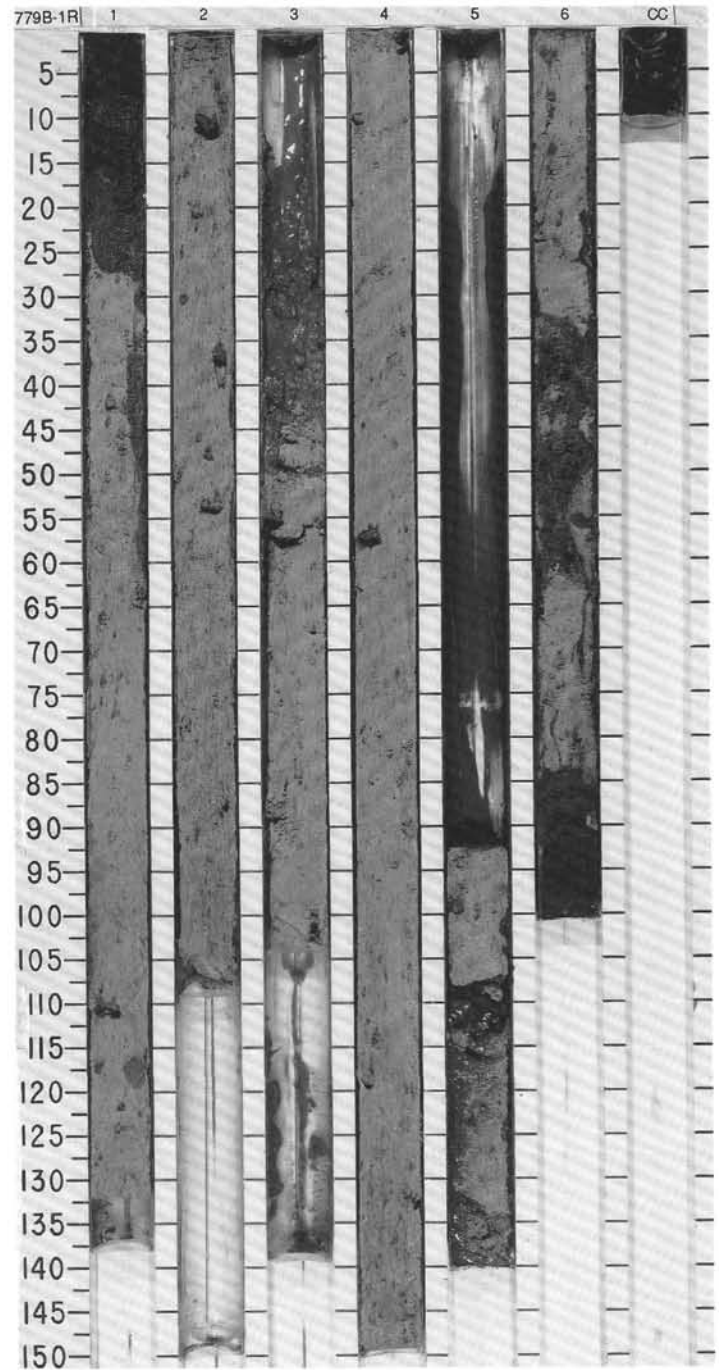
SITE 779 HOLE A CORE 35R CORED INTERVAL 4240.5-4250.2 mbsl; 293.3-303.0 mbsf

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																							
					V=5.5 P=2.99		1	0.5 1.0	IM IM IM				<p>ZOISITE-RICH SILT-SIZED SERPENTINE</p> <p>Major lithology: ZOISITE-RICH SILT-SIZED SERPENTINE. dark greenish gray (10Y 5/2) to light greenish gray (10Y 6/2) with coarse sand- and pebble-sized clasts of serpentinized ultramafics. Clasts in the interval 40 to 57 cm have a thin coating of powdery serpentine dust and matrix material from 65 to 70 cm exhibits a phacoidal texture.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="1"> <tr> <td></td> <td>1.67</td> <td>1.82</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> </tr> </table> <p>TEXTURE:</p> <table border="1"> <tr> <td>Sand</td> <td>5</td> <td>5</td> </tr> <tr> <td>Silt</td> <td>65</td> <td>70</td> </tr> <tr> <td>Clay</td> <td>30</td> <td>25</td> </tr> </table> <p>COMPOSITION:</p> <table border="1"> <tr> <td>Opauques</td> <td>2</td> <td>2</td> </tr> <tr> <td>Serpentine</td> <td>85</td> <td>85</td> </tr> <tr> <td>Zoisite</td> <td>13</td> <td>13</td> </tr> </table>		1.67	1.82	D	D	D	Sand	5	5	Silt	65	70	Clay	30	25	Opauques	2	2	Serpentine	85	85	Zoisite	13	13
	1.67	1.82																																			
D	D	D																																			
Sand	5	5																																			
Silt	65	70																																			
Clay	30	25																																			
Opauques	2	2																																			
Serpentine	85	85																																			
Zoisite	13	13																																			

SITE 779 HOLE A CORE 36R CORED INTERVAL 4250.2-4259.9 mbsl; 303.0-312.7 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																																																																																																																							
					V=4.4 P=2.02		1	0.5 1.0					<p>SILT-SIZED SERPENTINE</p> <p>Major lithology: Dark greenish gray (5G 4/1) to light greenish gray (5G 7/1). Upper 25 cm contains many phacoids and angular, coarse-sand sized dusky red grains (5R 3/4 to 5R 2.5/2). The rest of the core contains intervals of local, primary, subhorizontal laminations interbedded with moderately phacoidal sheared textures. The matrix contains interspersed sand- to pebble-sized clasts, primarily serpentine.</p> <p>SMEAR SLIDE SUMMARY (%):</p> <table border="1"> <tr> <td></td> <td>1.11</td> <td>1.50</td> <td>1.54</td> <td>1.117</td> <td>2.35</td> <td>2.70</td> <td>2.126</td> </tr> <tr> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>D</td> <td>M</td> </tr> </table> <p>TEXTURE:</p> <table border="1"> <tr> <td>Sand</td> <td>2</td> <td>10</td> <td>10</td> <td>15</td> <td>2</td> <td>30</td> <td>10</td> </tr> <tr> <td>Silt</td> <td>78</td> <td>50</td> <td>80</td> <td>60</td> <td>78</td> <td>60</td> <td>60</td> </tr> <tr> <td>Clay</td> <td>20</td> <td>40</td> <td>10</td> <td>25</td> <td>20</td> <td>10</td> <td>30</td> </tr> </table> <p>COMPOSITION:</p> <table border="1"> <tr> <td>Amphibole</td> <td>—</td> <td>Tr</td> <td>Tr</td> <td>—</td> <td>—</td> <td>5</td> <td>—</td> </tr> <tr> <td>Barite</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>20</td> </tr> <tr> <td>Chlorite</td> <td>—</td> <td>20</td> <td>Tr</td> <td>10</td> <td>1</td> <td>3</td> <td>10</td> </tr> <tr> <td>Dolomite</td> <td>—</td> <td>Tr</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>Garnet</td> <td>—</td> <td>—</td> <td>Tr</td> <td>5</td> <td>—</td> <td>—</td> <td>—</td> </tr> <tr> <td>Micrite</td> <td>2</td> <td>Tr</td> <td>2</td> <td>—</td> <td>5</td> <td>2</td> <td>—</td> </tr> <tr> <td>Opauques</td> <td>10</td> <td>10</td> <td>4</td> <td>30</td> <td>7</td> <td>5</td> <td>10</td> </tr> <tr> <td>Organic debris</td> <td>—</td> <td>—</td> <td>—</td> <td>—</td> <td>1</td> <td>—</td> <td>—</td> </tr> <tr> <td>Serpentine</td> <td>74</td> <td>70</td> <td>90</td> <td>55</td> <td>84</td> <td>80</td> <td>60</td> </tr> <tr> <td>Zoisite</td> <td>14</td> <td>—</td> <td>4</td> <td>—</td> <td>2</td> <td>5</td> <td>—</td> </tr> </table>		1.11	1.50	1.54	1.117	2.35	2.70	2.126	D	D	D	D	D	D	D	M	Sand	2	10	10	15	2	30	10	Silt	78	50	80	60	78	60	60	Clay	20	40	10	25	20	10	30	Amphibole	—	Tr	Tr	—	—	5	—	Barite	—	—	—	—	—	—	20	Chlorite	—	20	Tr	10	1	3	10	Dolomite	—	Tr	—	—	—	—	—	Garnet	—	—	Tr	5	—	—	—	Micrite	2	Tr	2	—	5	2	—	Opauques	10	10	4	30	7	5	10	Organic debris	—	—	—	—	1	—	—	Serpentine	74	70	90	55	84	80	60	Zoisite	14	—	4	—	2	5	—
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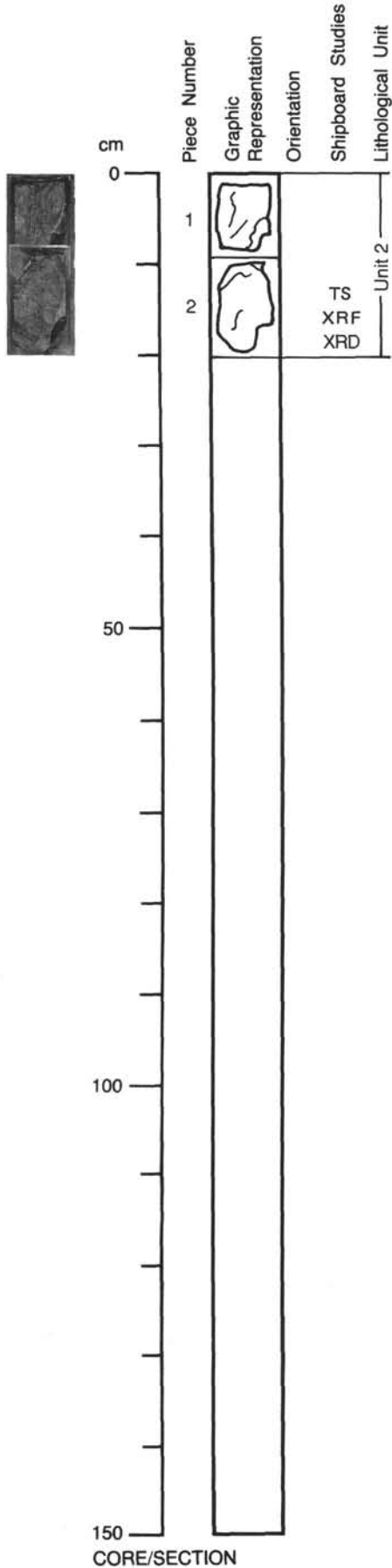




125-779A-3R-CC

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-2



COLOR: Gray-black (5B 4/1).
LAYERING: None.
DEFORMATION: None.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 0-5%.
 Crystal size: 1-2 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Serpentine; magnetite (dusty grains).
 Total percent: 85% ?
 Texture: Mesh texture with some bastitic texture.
 Vein material: Light green (serpentine?) and white (carbonate?) veins (1-3 mm wide) throughout pieces; vein of light serpentine rimmed by darker serpentine and whiter (?) mineral.

125-779A-4R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1 and 5

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: None.
DEFORMATION: Abundant fracturing and veining.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-85%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 80-100.

 Orthopyroxene - Mode: 15-30%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 80-100.

 Spinel - Mode: Trace.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 90-99%.
 Texture: N/A.
 Vein material: Oldest: Light greenish gray 5GY7/1 veins (<1 mm wide) crosscut by bluish gray 5B5/1 veins (<2 mm wide); sometimes rimmed by chrysotile fibers perpendicular to vein wall in thick veins (8 mm wide).

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 2-4

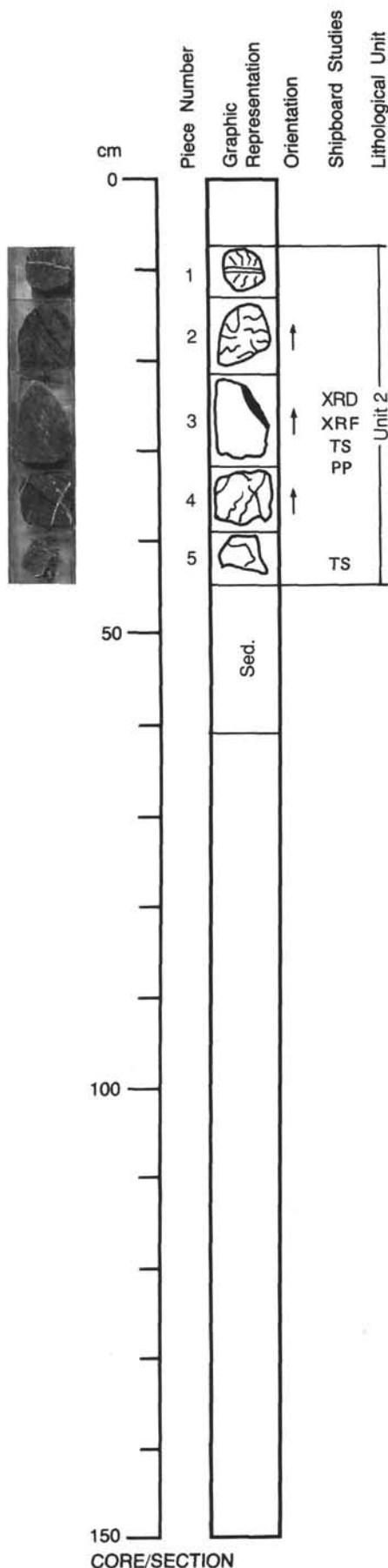
COLOR: Dark greenish gray (5BG4/1).
LAYERING: None.
DEFORMATION: Sub-parallel veins and cracks (minor).
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 80-90.

 Orthopyroxene - Mode: 10-20%.
 Crystal size: 2-4 mm.
 Crystal shape: Euhedral-anhedral.
 Crystal orientation: Not visible.
 Percent replacement: 90.

 Spinel - Mode: <2%.
 Crystal size: <2 mm.
 Crystal shape: Elongate -ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 90-99%.
 Texture: Mesh (?) and bastite.
 Vein material: Few very thin white veins (<0.1 mm wide); occasionally thicker veins (5 mm wide) of light green serpentine (chrysotile?); veins show no specific orientation.



CORE/SECTION

125-779A-5R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-11

COLOR: Dark greenish gray to dark blue gray (5BG 4/1-5B 4/1).
LAYERING: None visible.
DEFORMATION: Minor brecciation in Pieces 1 and 2; abundant small fractures (<0.1 mm wide) in Pieces 3-4.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-85%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 90-100.

 Orthopyroxene - Mode: 10-30%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 90-100.

 Spinel? - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine; dusty black magnetite?
 Total percent: 90-99%.
 Texture: Bastitic in areas?
 Vein material: Serpentine (chrysotile?) veins (1-2 mm wide); minor white (carbonate?) veins (0.1-1 mm wide).
ADDITIONAL COMMENTS: Pieces 3-4 have exterior shear rounding; Piece 7 is rimmed by 7-mm-thick chrysotile vein. Veins show no specific orientation.

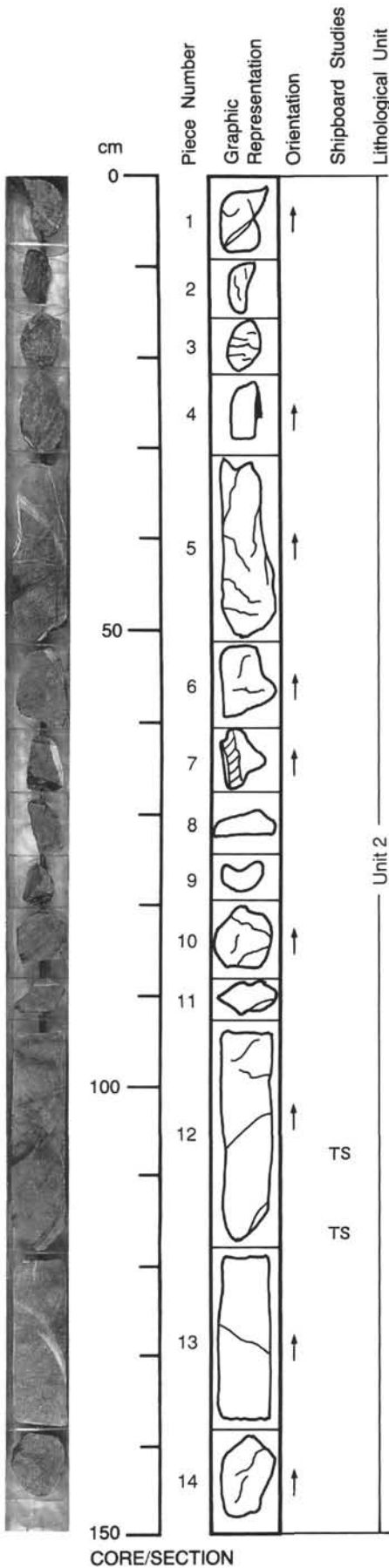
UNIT 2: SERPENTINIZED HARZBURGITE OR DUNITE (?)

Pieces 12-14

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: Some pyroxene-rich layers (5 cm wide).
DEFORMATION: None.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 90-95.

 Orthopyroxene - Mode: 5-20?
 Crystal size: 1-2 mm.
 Crystal shape: Euhedral?
 Crystal orientation: Not visible.
 Percent replacement: 50-90.

 Spinel - Mode: <1%.
 Crystal size: <1 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine, dusty black magnetite?
 Total percent: 90-99%.
 Texture: Bastitic after pyroxenes.
 Vein material: A few dark green serpentine (0.1-1 mm wide) veins; minor white veins (<0.1 mm wide).

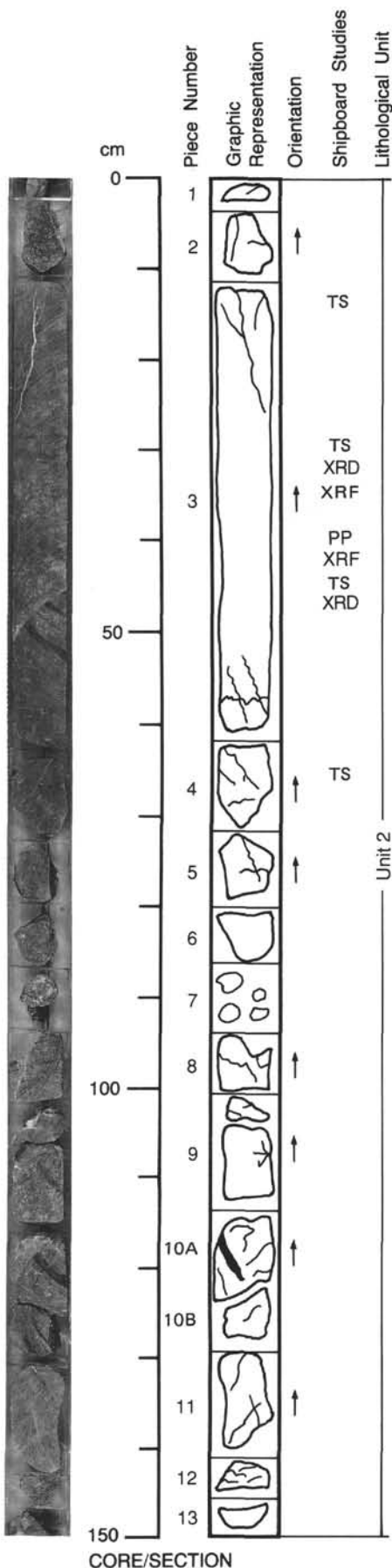


CORE/SECTION

125-779A-5R-2

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-3; 5-13



COLOR: Dark greenish gray (5BG 4/1).
LAYERING: Crude layering defined by pyroxene-rich intervals (4-5 cm wide); 6 layers in 1.5 m.
DEFORMATION: minor brecciation in Pieces 1-2, 10-11.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 80-95.
 Orthopyroxene - Mode: 10-15%.
 Crystal size: 1-3 mm.
 Crystal shape: Subhedral.
 Crystal orientation: None visible.
 Percent replacement: 50-90.
 Spinel - Mode: <5%.
 Crystal size: <2 mm.
 Crystal shape: Subhedral-euhedral.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine, dusty black magnetite?
 Total percent: 95-99%.
 Texture: Bastitic after pyroxenes and in layers.
 Vein material: Locally white veins (<1 mm wide) and light green veins (<1 mm wide) at no specific orientation.

UNIT 2: SERPENTINIZED DUNITE (?)

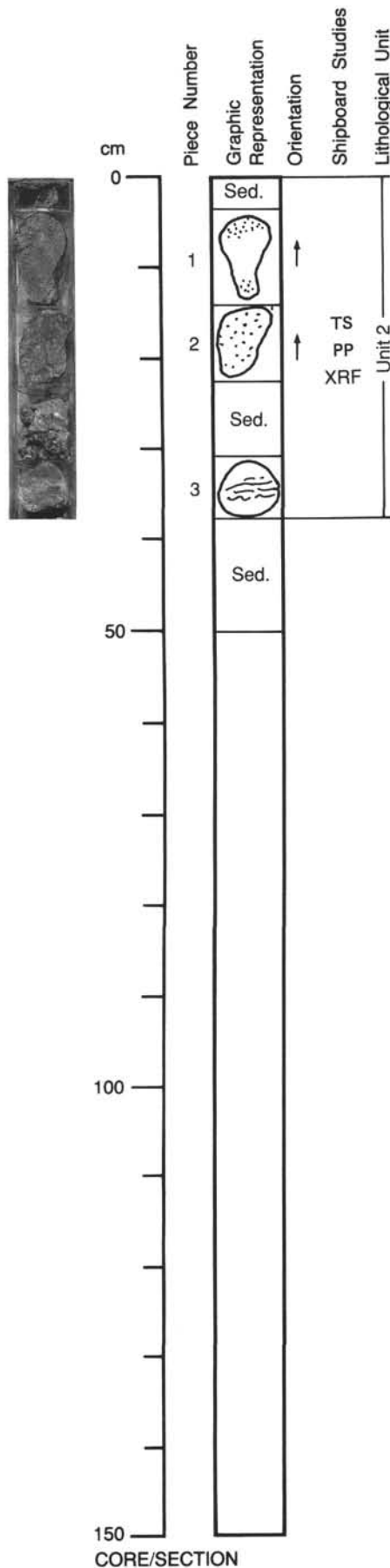
Piece 4

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: None.
DEFORMATION: None visible.
PRIMARY MINERALOGY:
 Olivine - Mode: 95-99%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 95-99.
 Orthopyroxene - Mode: <5%.
 Crystal size: <1 mm.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 95-99.
 Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Anhedral-subhedral.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine; dusty magnetite?
 Total percent: 95-99%.
 Texture: Mesh (?) texture in areas.
 Vein material: Many small serpentine veins (<1 mm wide) at no specific orientation.

125-779A-6R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-2



COLOR: Dark greenish gray (5BG4/1).
LAYERING: Crude pyroxene layers (5 cm wide); Two layers within 20 cm.
DEFORMATION: None.

PRIMARY MINERALOGY:
 Severely altered, relict orthopyroxene, Cr-spinel.
 Olivine - Mode: 80-85%.
 Crystal size: 3-4 mm.
 Crystal shape: Anhedral.
 Crystal orientation: None.
 Percent replacement: 70-80.

Orthopyroxene - Mode: 15-20%.
 Crystal size: 3-4 mm.
 Crystal shape: Euhedral.
 Crystal orientation: None.
 Percent replacement: 50.

Clinopyroxene - Mode: <1%.
 Crystal size: <2 mm.
 Crystal shape: Euhedral.
 Crystal orientation: None.
 Percent replacement: 30-40.

Spinel - Mode: <2%.
 Crystal size: <2 mm.
 Crystal shape: Euhedral-subhedral.
 Crystal orientation: None.
 Percent replacement: 20-30.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70-90%.
 Texture: Bastite after pyroxene (3 mm).
 Vein material: minor white veins (<1 mm wide) at no specific orientation.

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 3

COLOR: Dark greenish gray (5GB 4/1).
LAYERING: None.
DEFORMATION: Severely brecciated.
PRIMARY MINERALOGY:
 Completely altered, Cr-spinel shows diamond shape.
 Olivine - Mode: 80-85%.
 Crystal size: 3-4 mm.
 Crystal shape: Euhedral.
 Crystal orientation: None.
 Percent replacement: 100.

Orthopyroxene - Mode: 15-20%.
 Crystal size: 3-4 mm.
 Crystal shape: Euhedral.
 Crystal orientation: None.
 Percent replacement: 100.

Spinel - Mode: <2%.
 Crystal size: <2 mm.
 Crystal shape: Euhedral-subhedral.
 Crystal orientation: None.
 Percent replacement: 50.
 Comments: Cr-spinel.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: N/A.
 Vein material: White veins (1 mm wide), partly greenish.

125-779A-7R-1

UNIT 2: SERPENTINIZED DUNITE (?)

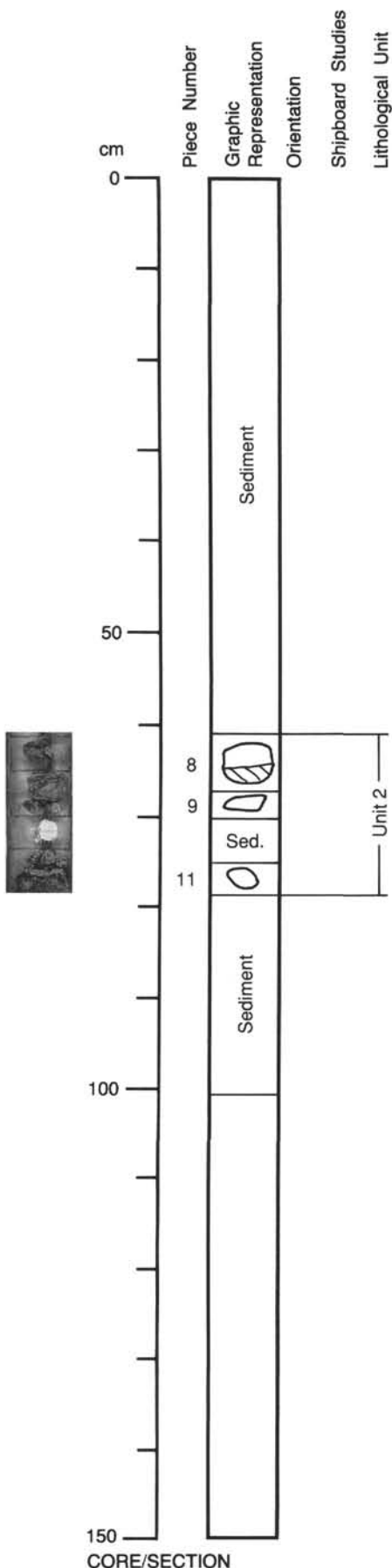
Pieces 8, 9

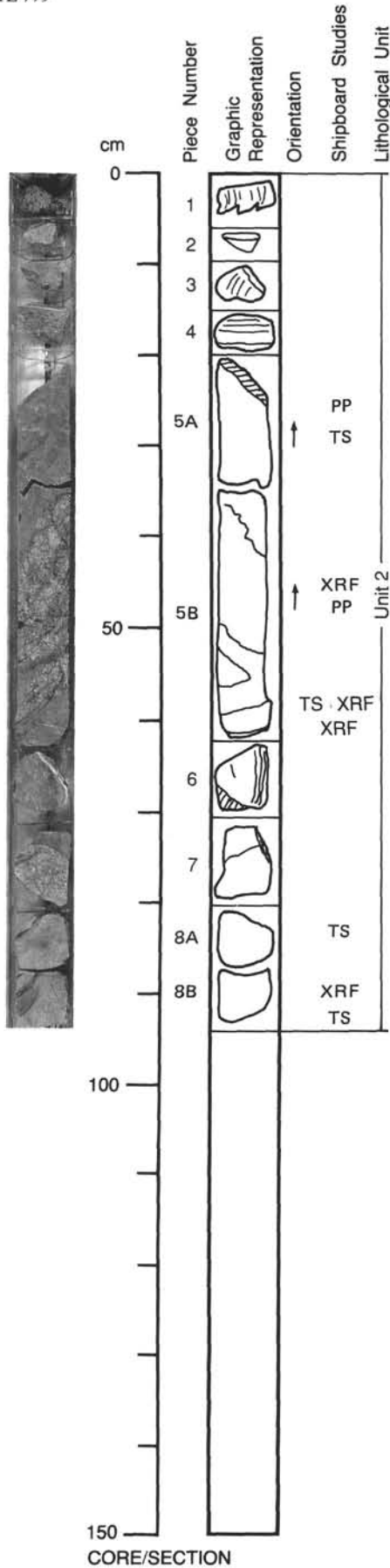
COLOR: Light gray-green with a hint of gray (5G 5/1).
LAYERING: None.
DEFORMATION: Preferred orientation of Cr-spinel grains.
PRIMARY MINERALOGY:
 Olivine - Mode: 99%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100% replaced by serpentine.
 Cr-spinel - Mode: <1%.
 Crystal size: 0.5-1 mm.
 Crystal shape: Elongated parallel preferred orientation.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Total percent: >99%.
 Texture: Micro-mesh texture.
 Vein material: Dark serpentine less than 1 mm wide.
ADDITIONAL COMMENTS: No orthopyroxene discernible in this small piece.

UNIT 2: MAGNESITE

Piece 11

COLOR: White (5YR 8/1).
LAYERING: None.
DEFORMATION: None.
PRIMARY MINERALOGY:
 This is not an igneous rock sensu stricto rather it is a surface product of serpentinization.
 Magnesite - Mode: 100%.
 Crystal size: Polycrystalline.
 Crystal shape: Amorphous.
 Crystal orientation: None.
 Percent replacement: None.
 Comments: Mg-carbonate forming a nodule with characteristic colliform surface texture.
SECONDARY MINERALOGY: None.
 Total percent: 0%.
 Texture: None.
 Vein material: None.





UNIT 2: SERPENTINIZED HARZBURGITE

Piece 1 Zoisite-rich silt-sized serpentine
(See Sedimentary Barrel Sheets)

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 2, 3

COLOR: Pale blue-gray (5B 6/1).
LAYERING: Massive.
DEFORMATION: Random cracks.
PRIMARY MINERALOGY:
 Apparently cumulate texture.
 Orthopyroxene - Mode: 20%.
 Crystal size: 5 mm.
 Crystal shape: Equant.
 Crystal orientation: Random.
 Percent replacement: Variable.

Olivine - Mode: 80%.
 Crystal size: 8-10 mm.
 Crystal shape: Corroded.
 Crystal orientation: Random.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: 0.2-0.5 mm.
 Crystal shape: Euhedral.
 Crystal orientation: Disseminated.
 Percent replacement: 10-20.

SECONDARY MINERALOGY: Serpentine replacing olivine, chlorite (?) also present.
 Total percent: 10-70%.
 Texture: N/A.
 Vein material: None.

ADDITIONAL COMMENTS:
 The cumulate texture of this rock distinguishes it from the ultramafic rocks above and below it.

UNIT 2: SHEARED SERPENTINIZED HARZBURGITE

Piece 4

COLOR: Dark greenish gray (54Y 4/1).
LAYERING: None.
DEFORMATION: Top is sheared normal to core axis, top 5 mm microlaminated pale blue serpentine (chrysotile ?), next 1.5 cm consists of sheared serpentine and sheared/nonsheared crosscutting chrysotile veins. Both lamination and shearing normal to core axis, except for one riedel shear.

PRIMARY MINERALOGY:
 Seem to be fully replaced by serpentine.
 Olivine - Mode: 95%.
 Crystal size: 5-10 mm.
 Crystal shape: None visible.
 Crystal orientation: None.
 Percent replacement: 100.

Orthopyroxene - Mode: 0-5%.
 Crystal size: 5-10 mm.
 Crystal shape: Equant.
 Crystal orientation: None.
 Percent replacement: 100.

Spinel - Mode: Trace.
 Crystal size: 2 mm.
 Crystal shape: Elongate.
 Crystal orientation: None.
 Percent replacement: 100.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: None visible.
 Vein material: 20%, chrysotile-filled and other serpentine minerals.

ADDITIONAL COMMENTS: This piece is probably the upper sheared contact of underlying Piece 5.

125-779A-8R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 5A, 5B

COLOR: Green blue (5BG 4/2) to pale gray (5B 6/1).

LAYERING: Color layering between massive fine-grained serpentinite with few mineral relics to less serpentinitized rock in which primary mineral textures are preserved.

DEFORMATION: Fracturing, both at high and moderate angle to core axis. Shearing in zones at 30 degrees to core axis.

PRIMARY MINERALOGY:

Olivine - Mode: 95%.

Crystal size: 5-8 mm.

Crystal shape: Rounded.

Crystal orientation: Subparallel to 30 degree shears.

Percent replacement: 90-100.

Orthopyroxene - Mode: 0-5%.

Crystal size: 0.2-0.8 mm.

Crystal shape: Elongate to rounded.

Crystal orientation: Not visible.

Percent replacement: 90-100.

Comments: Kink-banded.

Spinel - Mode: Trace.

Crystal size: 1 mm.

Crystal shape: Ragged-elongate.

Crystal orientation: Not visible.

Percent replacement: 50-60.

Comments: Forms stringers.

SECONDARY MINERALOGY:

100% serpentinitized for Piece A, 90% for Piece B.

Total percent: 90-99%.

Texture: N/A.

Vein material: Chrysotile fills some fractures.

ADDITIONAL COMMENTS: It appears that the degree of serpentinitization is fracture controlled, with a serpentinitization halo proximal to the fracture.

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 6

COLOR: Gray green (5BG 4/1).

LAYERING: Massive.

DEFORMATION: Shearing at 60 degrees to core axis.

PRIMARY MINERALOGY:

Spinel forms stringers at 30 degrees to core axis, other primary minerals are serpentinitized.

Olivine - Mode: 90-95%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: Variable.

Orthopyroxene - Mode: 5-10%.

Crystal size: 0.5-9 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Variable.

Cr-spinel - Mode: <1%.

Crystal size: 0.1-1 mm.

Crystal shape: Equant to ragged elongate.

Crystal orientation: 30 degrees to core axis.

Percent replacement: Variable.

SECONDARY MINERALOGY:

Serpentine replaces the primary minerals.

Total percent: 40-70%.

Texture: N/A.

Vein material: 60 degrees to core axis, up to 8 mm wide, anastomosing, filled with a white translucent mineral.

125-779A-8R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 7

COLOR: Green gray (5G 4/1 to 5B 6/1).

LAYERING: Apparent color-banding at 70 degrees to core axis.

DEFORMATION: Fractures at 60 and 70 degrees, conjugate plus relict olivines appear elongated at 60 degrees to core axis.

PRIMARY MINERALOGY:

Variably serpentinized with some primary olivine textures preserved.

Olivine - Mode: 90-95%.

Crystal size: 5-15 mm.

Crystal shape: Elongate-rounded.

Crystal orientation: Not visible.

Percent replacement: Variable.

Orthopyroxene - Mode: 5-10%.

Crystal size: 5-10 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Variable.

Cr-spinel - Mode: Trace.

Crystal size: 0.2-2 mm.

Crystal shape: Equant to elongate.

Crystal orientation: 60 degrees to core axis.

Percent replacement: Variable.

Comments: Stringers also at 60 degrees to core axis.

SECONDARY MINERALOGY:

Pervasively (80-100%) serpentinized.

Total percent: 40-70%.

Texture: N/A.

Vein material: Black serpentine, oriented at 30-60 degrees to core axis.

ADDITIONAL COMMENTS: 30-degree set cuts the 60-degree vein set.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 8A and B

COLOR: Pale gray green (N 6/).

LAYERING: Color banding apparent, possibly caused by serpentinized olivine layer at top of piece.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

Apparent olivine-rich band with wavy contact with orthopyroxene-rich rock at top of piece.

Olivine - Mode: 90%.

Crystal size: 3-8 mm.

Crystal shape: Granular.

Crystal orientation: Not visible.

Percent replacement: 40-50.

Orthopyroxene - Mode: <10%.

Crystal size: 3-8 mm.

Crystal shape: Subhedral-anhedral.

Crystal orientation: Not visible.

Percent replacement: 40-50.

Cr-spinel - Mode: Trace.

Crystal size: 0.5-1 mm.

Crystal shape: Ragged, equant to elongate.

Crystal orientation: 30 degrees to core axis.

Percent replacement: 10-20.

SECONDARY MINERALOGY:

Rock is partially serpentinized.

Total percent: 40-50%.

Texture: N/A.

Vein material: Some veining along fractures, possibly serpentine.

ADDITIONAL COMMENTS: Rock appears to be orthopyroxene-rich cumulate, with a different general appearance to the overlying tectonized harzburgites.

125-779A-9R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 1

COLOR: Greenish-gray (5B 5/1).
LAYERING: None.
DEFORMATION: Bent pyroxenes.
PRIMARY MINERALOGY:
 This appears to have a cumulate texture.
 Olivine - Mode: 90-95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Pyroxene - Mode: <10%.
 Crystal size: 5-20 mm.
 Crystal shape: Equant.
 Crystal orientation: Random.
 Percent replacement: None.
 Comments: Coarse granular texture probably orthopyroxene.

Spinel - Mode: <1%.
 Crystal size: 0.5-1 mm.
 Crystal shape: Elongate.
 Crystal orientation: Random.
 Percent replacement: Not visible.
 Comments: Cr-spinel probable.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 10-60%.
 Texture: N/A.
 Vein material: None.

UNIT 2: SERPENTINIZED HARZBURGITE

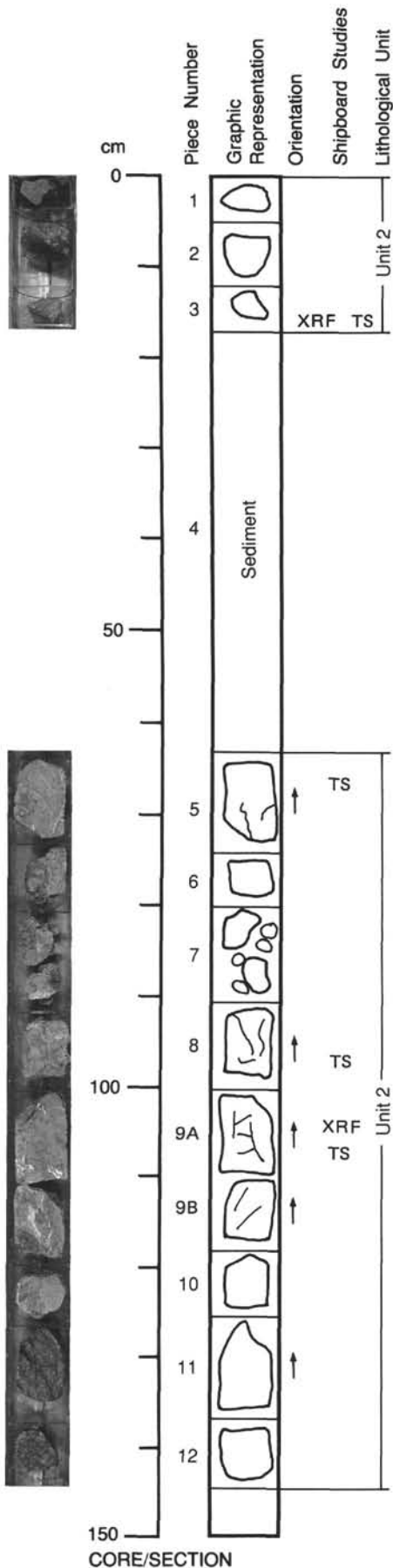
Piece 2

COLOR: Greenish gray (5B 5/1).
LAYERING: None.
DEFORMATION: None.
PRIMARY MINERALOGY:
 Olivine - Mode: 75-85%.
 Crystal size: 2-8 mm.
 Crystal shape: Subhedral-euhedral.
 Crystal orientation: None.
 Percent replacement: 80-90%.
 Comments: Apparently cumulus texture.

Orthopyroxene - Mode: 15-25%.
 Crystal size: 2-8 mm.
 Crystal shape: Equant, subhedral.
 Crystal orientation: Random.
 Percent replacement: 40-70%.
 Comments: Occurs as interstitial grains.

Spinel - Mode: Trace.
 Crystal size: 1 mm.
 Crystal shape: Equant.
 Crystal orientation: Disseminated.
 Percent replacement: 10-20%.
 Comments: Probably Cr-spinel.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 40-70%.
 Texture: N/A.
 Vein material: Irregular, amorphous-looking serpentine-filled veins (not chrysotile), 0.5-1.5 mm width, irregular orientation.



CORE/SECTION

125-779A-9R-1 (continued)

UNIT 2: METASEDIMENT (MAFIC)

Piece 3

COLOR: Light greenish gray (5G 6/1 to 7/1).

LAYERING: Massive.

DEFORMATION: None.

PRIMARY MINERALOGY:

Primary minerals occur as detrital grains.

Clinopyroxene - Mode: 20%.

Crystal size: 1-2 mm.

Crystal shape: Subhedral-anhedral.

Crystal orientation: None.

Percent replacement: 30-40.

Spinel - Mode: Trace.

Crystal size: <1 mm.

Crystal shape: Anhedral.

Crystal orientation: None.

Percent replacement: 80-90.

SECONDARY MINERALOGY:

Pale green hornblende occurs along the rim or cleavage trace of detrital clinopyroxene.

Total percent: 80%.

Texture: Sedimentary textures.

Vein material: None.

ADDITIONAL COMMENTS: Matrix is occupied by dusty brownish clay.

UNIT 2: METABASALT

Pieces 5 to 10

COLOR: Gray (7.5YR 6/0).

LAYERING: None.

DEFORMATION: Brecciated and recemented, individual clasts range from 0.5 to 70 mm in size.

PRIMARY MINERALOGY:

Subophitic, fine-grained.

Plagioclase - Mode: 40-50%.

Crystal size: <0.5 mm.

Crystal shape: Lath.

Crystal orientation: Felted.

Percent replacement: 100.

Clinopyroxene - Mode: 25-30%.

Crystal size: <0.5 mm.

Crystal shape: Granular.

Crystal orientation: None.

Percent replacement: 30.

SECONDARY MINERALOGY:

Chlorite, pumpellyite, prehnite, dusty clay occur as secondary minerals.

Total percent: 70%.

Texture: N/A.

Vein material: 0.5-3 mm wide prehnite-pumpellyite and zeolite veins; thickest oriented subparallel to the core axis.

ADDITIONAL COMMENTS: In-situ brecciation is apparent with dominant fractures oriented at 45 degrees to the core axis.

125-779A-9R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE**Pieces 11, 12**

COLOR: Gray (2.5Y 4/0-6/0).

LAYERING: None.

DEFORMATION: Tectonized.

PRIMARY MINERALOGY:

Olivine - Mode: 85-90%.

Crystal size: 1-8 mm.

Crystal shape: Equant.

Crystal orientation: None.

Percent replacement: 80-90.

Orthopyroxene - Mode: 10-15%.

Crystal size: 3-5 mm.

Crystal shape: Equant.

Crystal orientation: None.

Percent replacement: 80-90.

Comments: Kink-banded; highly deformed.

Spinel - Mode: <1%.

Crystal size: 0.5 mm.

Crystal shape: Euhedral.

Crystal orientation: None.

Percent replacement: 40-50.

SECONDARY MINERALOGY:

Mostly serpentinized.

Total percent: 80-90%.

Texture: N/A.

Vein material: Crosscutting, <0.1 mm, orthogonal sets apparently filled with serpentine.

125-779A-9R-2

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 1

COLOR: Light greenish gray (10Y 5/1).
LAYERING: None.
DEFORMATION: Orthopyroxene shows wavy deformation.

PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: 3-8 mm.
 Crystal shape: Not visible.
 Crystal orientation: None.
 Percent replacement: 80-90.
 Comments: Shows mesh texture.

Orthopyroxene - Mode: 10-20%.
 Crystal size: 3-8 mm.
 Crystal shape: Equant.
 Crystal orientation: None.
 Percent replacement: 80-90.

Spinel - Mode: Trace.
 Crystal size: 2-4 mm.
 Crystal shape: Euhedral to ragged.
 Crystal orientation: None.
 Percent replacement: 30-40.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 80-90%.
 Texture: Mesh texture after olivine.
 Vein material: Veins (0.1 mm wide) filled with serpentine; no preferred orientation.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 2 to 4B

COLOR: Gray (10Y 4/1 to 3/1).
LAYERING: Apparent color change.
DEFORMATION: Orthopyroxene shows minor kink banding.

PRIMARY MINERALOGY:
 Olivine - Mode: 80-95%.
 Crystal size: 1-7 mm.
 Crystal shape: Equant, mesh.
 Crystal orientation: None.
 Percent replacement: Variable.

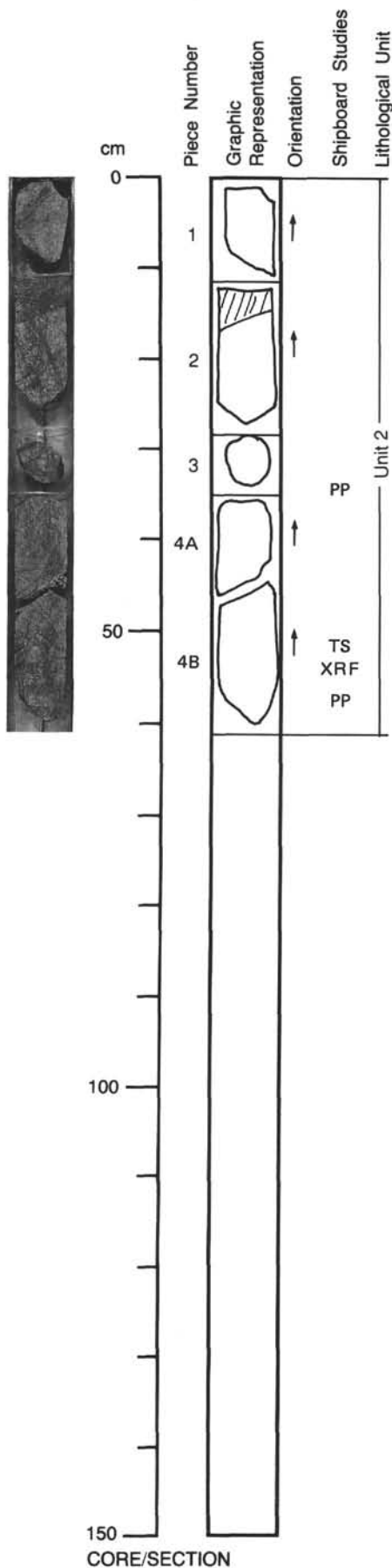
Orthopyroxene - Mode: 5-8%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: None.
 Percent replacement: Variable.

Spinel - Mode: <2-3%.
 Crystal size: <1 mm.
 Crystal shape: Elongate, ragged.
 Crystal orientation: None.
 Percent replacement: Variable.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 60-80%.
 Texture: N/A.
 Vein material: First generation parallel to core axis, 1-2 mm wide, with serpentine fill; 2nd set @ 45 degrees to core axis, same fill and mineralogy; 3rd set @ 75 degrees dip with respect to core axis, 5-10 mm wide with two-stage growth of serpentine; 4th set horizontal, 2-5 mm wide, filled with milky green phase.

ADDITIONAL COMMENTS: Major color change possibly because of 100% serpentinization.



125-779A-10R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1-5

COLOR: Gray blue-green (10Y 5/1 to 4/1).
LAYERING: None.
DEFORMATION: Mylonitization dipping at 70 degrees, elongation of olivine in plane of foliation in a discrete shear zone forming the bottom 8 cm of Piece 5. Other pieces have kink-banded orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 95%.
 Crystal size: Variable <10 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
 Comments: Variable shape of olivine because of deformation.

Orthopyroxene - Mode: <5%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

Spinel - Mode: Trace.
 Crystal size: 0.1-0.5 mm.
 Crystal shape: Ragged-elongate, disseminated.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80-99%.
 Texture: N/A.
 Vein material: 1st set sigmoidal and en echelon showing vertical, dextral shear and filled with milky green serpentine, and 2nd generation chrysotile; 2nd set dip 45 degrees. Sets 1 and 2 are mutually orthogonal. Serpentinization is greatest next to veins.
ADDITIONAL COMMENTS: Macro-shape of pieces because of breakage along serpentine veins.

UNIT 2: SERPENTINIZED DUNITE

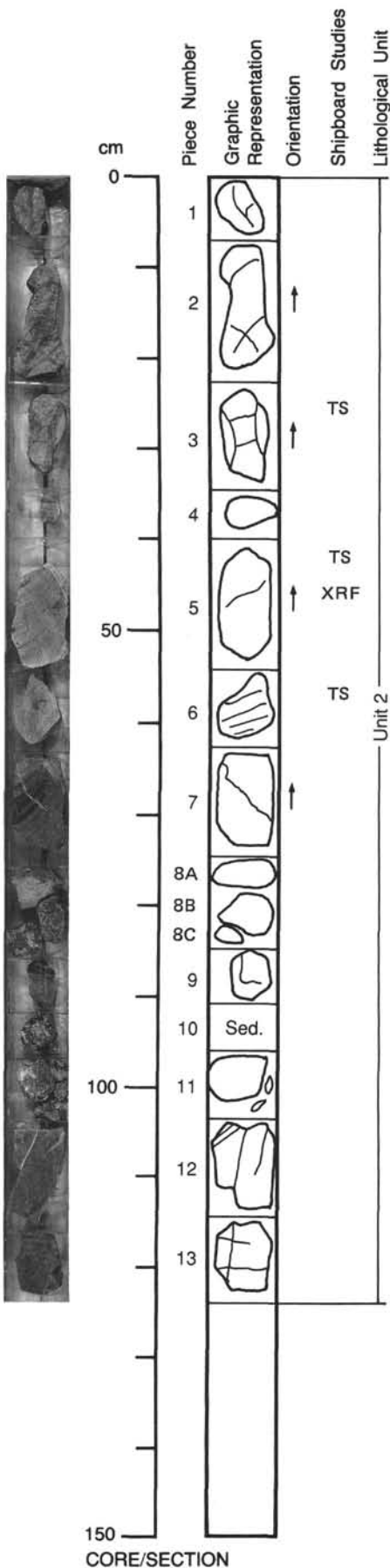
Piece 6

COLOR: Light gray green (5Y 6/1).
LAYERING: Probably primary cumulate layering dipping at 60 degrees, accentuated by parallel tectonic fabric.
DEFORMATION: Shearing indicates dextral vertical shear.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: Variable, tectonized.
 Crystal shape: Ragged.
 Crystal orientation: None visible.
 Percent replacement: 90-99.

Orthopyroxene - Mode: 5-10%.
 Crystal size: 0.5-10 mm.
 Crystal shape: Elongate.
 Crystal orientation: Aligned, dip 60 degrees.
 Percent replacement: 90-99.

Spinel - Mode: Trace.
 Crystal size: 0.1 mm.
 Crystal shape: Elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80-99%.
 Texture: N/A.
 Vein material: En echelon veins 0.1-2 mm wide filled with amorphous dark gray serpentine, oriented vertically.
ADDITIONAL COMMENTS: Cumulate rock with shear overprinting primary layering.



125-779A-10R-1 (continued)

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE**Pieces 7-9****COLOR:** Very dark gray (2.5Y 3/0).**LAYERING:** None.**DEFORMATION:** Kink-banded pyroxene, elongate spinel.**PRIMARY MINERALOGY:**

Olivine - Mode: 95%.
 Crystal size: Variable.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 90-99.

Orthopyroxene - Mode: 5%.
 Crystal size: 5-8 mm.
 Crystal shape: Elongate.
 Crystal orientation: None visible.
 Percent replacement: 90-99.

Spinel - Mode: <1%.
 Crystal size: 0.5-1.5 mm.
 Crystal shape: Ragged.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: Bastitic pseudomorphs after orthopyroxene in areas.
 Vein material: Two sets, first set (2-5 mm wide) filled with milky green amorphous serpentine; 2nd set dipping subvertically filled with chrysotile and other serpentine mineral showing sub-horizontal dextral shear.

UNIT 2: SERPENTINIZED HARZBURGITE/DUNITE CLAST, IN FOLIATED SERPENTINE MATRIX**Piece 11****COLOR:** Dark gray green (2.5Y 3/0 to 4/2).**LAYERING:** None.**DEFORMATION:** Sheared and foliated matrix.**PRIMARY MINERALOGY:**

Heavily serpentinized clast coated with serpentine.
 Spinel - Mode: <2%.
 Crystal size: 2-3 mm.
 Crystal shape: Elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: N/A.
 Vein material: N/A.

125-779A-10R-1 (continued)

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 12-13

COLOR: Dark green gray (10Y 4/1 to 4/2).

LAYERING: None.

DEFORMATION: Elongate spinel.

PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.

Crystal size: Variable 2-10 mm.

Crystal shape: Deformed.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 5-10%.

Crystal size: 2-5 mm.

Crystal shape: Elongate.

Crystal orientation: None visible.

Percent replacement: 80-90.

Spinel - Mode: <1%.

Crystal size: 0.2-0.5 mm.

Crystal shape: Elongate.

Crystal orientation: Along shear planes.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 90-99%.

Texture: N/A.

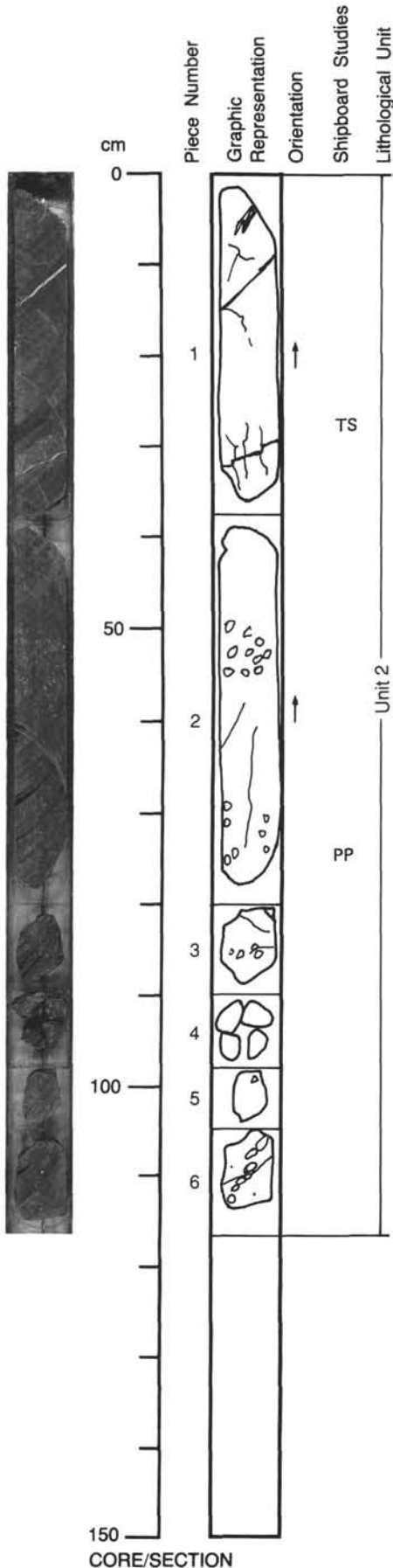
Vein material: 1-3 mm, filled with amorphous serpentine sub- vertical, also 1 mm wide, probably chrysotile at no specific orientation.

ADDITIONAL COMMENTS: Primary mineralogy obscured by heavy serpentinization.

125-779A-10R-2

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Piece 1



COLOR: Dark greenish gray (5BG4/1).
LAYERING: None.
DEFORMATION: Two filled fractures at 30-45 degree dip; offset 0.5 cm, normal fault.
PRIMARY MINERALOGY: Spinel commonly disseminated.
 Olivine - Mode: 90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 95.
 Orthopyroxene - Mode: 9%.
 Crystal size: 1-3 mm.
 Crystal shape: Anhedral.
 Crystal orientation: None visible.
 Percent replacement: 70?
 Spinel - Mode: 1%.
 Crystal size: <1 mm.
 Crystal shape: Subhedral-anhedral.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80-99%.
 Texture: Bastitic after pyroxenes.
 Vein material: Early generation of light greenish serpentine veins (up to 1 cm wide) offset by white and greenish veins along faults; less texture preserved near fault veins.
ADDITIONAL COMMENTS: Orthopyroxene has intercumulus shape.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 2-3

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: None, locally pyroxene-rich zones.
DEFORMATION: Some filled fractures (<0.1 mm wide).
PRIMARY MINERALOGY:
 Olivine - Mode: 80-85%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 80-90.
 Orthopyroxene - Mode: 15-20%.
 Crystal size: 1-3 mm.
 Crystal shape: Subhedral.
 Crystal orientation: None visible.
 Percent replacement: 70-80.
 Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Subhedral.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Severely altered to serpentine.
 Total percent: 80-99%.
 Texture: Bastitic after pyroxenes.
 Vein material: Some greenish white veins (<1 mm), randomly oriented.

125-779A-10R-2 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 4

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: None.

DEFORMATION: None.

PRIMARY MINERALOGY:

Severely altered.

Olivine - Mode: 90-95%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 5-10%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 80-90.

Spinel - Mode: Trace.

Crystal size: Not visible.

Crystal shape: Subhedral-anhedral.

Crystal orientation: In stringers.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 90-99%.

Texture: Bastitic after orthopyroxenes.

Vein material: Few greenish serpentine veins at no specific orientation.

UNIT 2: SERPENTINIZED HARZBURGITE (?)

Piece 5

COLOR: Dark greenish gray (5BG4/1).

LAYERING: None.

DEFORMATION: None.

PRIMARY MINERALOGY:

Severely altered.

Olivine - Mode: 60-80%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 20-40%.

Crystal size: Not visible.

Crystal shape: Anhedral.

Crystal orientation: None visible.

Percent replacement: 80-90.

Spinel - Mode: Trace.

Crystal size: Not visible.

Crystal shape: Subhedral-anhedral.

Crystal orientation: In stringers.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 90-99%.

Texture: Bastitic after orthopyroxene.

Vein material: <1-mm-wide green-white serpentine(?) veins showing no preferred orientation.

ADDITIONAL COMMENTS: Intercumulus pyroxene.

125-779A-10R-2 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 6

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: None, pyroxene-zone at 80 degree dip.

DEFORMATION: Parallel vein-filled cracks at 60 degree dip.

PRIMARY MINERALOGY:

Severely altered; zone of large pyroxene (<2 cm wide) with kink bands?

Olivine - Mode: 90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 10%.

Crystal size: <4 mm.

Crystal shape: Subhedral-anhedral.

Crystal orientation: None visible.

Percent replacement: Variable.

Spinel - Mode: Trace.

Crystal size: Not visible.

Crystal shape: Subhedral-anhedral.

Crystal orientation: In stringers.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 90-99%.

Texture: Bastitic after pyroxenes.

Vein material: Minor bluish green-white serpentine veins (<1 mm wide).

125-779A-11R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 1

COLOR: Dark greenish gray (5BG 4/1) with bluish gray patches.

LAYERING: None.

DEFORMATION: Fractured.

PRIMARY MINERALOGY:

Olivine - Mode: 80-90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 95-99.

Orthopyroxene - Mode: 10-20%.

Crystal size: <3 mm.

Crystal shape: Anhedral.

Crystal orientation: None visible.

Percent replacement: Variable.

Spinel - Mode: Trace.

Crystal size: <1 mm.

Crystal shape: Equant.

Crystal orientation: None visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 100%.

Texture: blue-gray serpentine pseudomorphs after anhedral pyroxenes (<1 cm).

Vein material: Sub-parallel bluish green veins (<2 mm wide).

ADDITIONAL COMMENTS: Intercumulate(?) pyroxene.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 2-4

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: None.

DEFORMATION: None.

PRIMARY MINERALOGY:

Olivine - Mode: 80-90%.

Crystal size: Not visible.

Crystal shape: Anhedral.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 10-15%.

Crystal size: <2 mm.

Crystal shape: Subhedral.

Crystal orientation: None visible.

Percent replacement: Variable.

Spinel - Mode: Trace.

Crystal size: <2 mm.

Crystal shape: Subhedral-anhedral.

Crystal orientation: Stringers.

Percent replacement: Not visible.

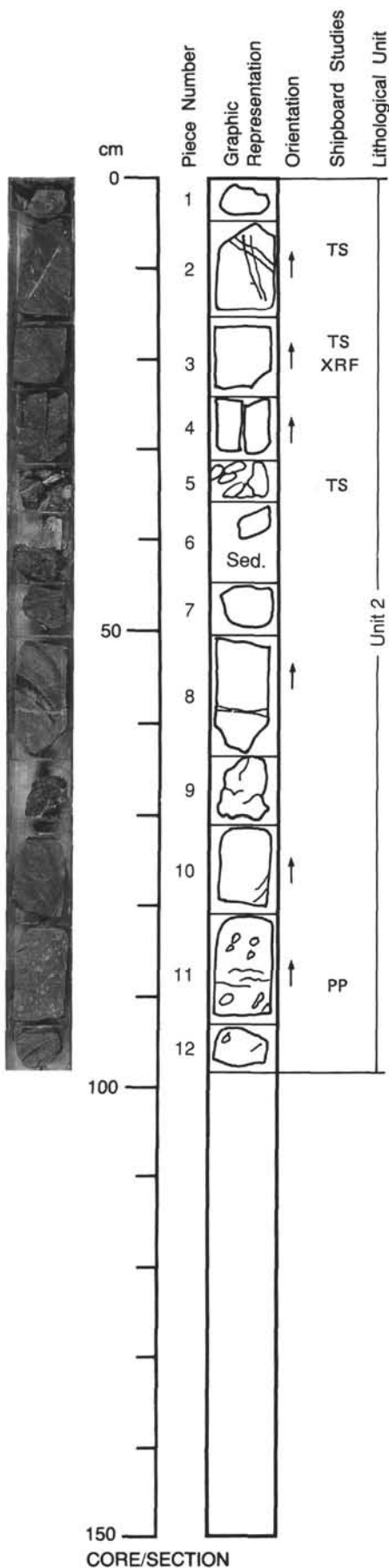
SECONDARY MINERALOGY:

Serpentine.

Total percent: 90-99%.

Texture: Bastitic after pyroxenes in areas.

Vein material: 1 green serpentine vein (4 mm wide) and few white veins (<0.2 mm wide) at no specific orientation.



125-779A-11R-1 (continued)

UNIT 2: SERPENTINIZED DUNITE (?)

Pieces 5-6 (clast)

COLOR: Dark greenish gray (5BG4/1) with bluish white patchy fracture surfaces from vein serpentine.

LAYERING: Sub-parallel veins.

DEFORMATION: Vein-filled fractures.

PRIMARY MINERALOGY:

Olivine - Mode: 90%.
Crystal size: Not visible.
Crystal shape: Not visible.
Crystal orientation: None visible.
Percent replacement: 90-99.

Orthopyroxene - Mode: 10%.
Crystal size: <5 mm.
Crystal shape: Subhedral-anhedral.
Crystal orientation: None visible.
Percent replacement: 90.

Spinel - Mode: Trace.
Crystal size: <1 mm.
Crystal shape: Equant.
Crystal orientation: None visible.
Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 100%.
Texture: Bastitic pseudomorphs after euhedral pyroxenes in areas.
Vein material: abundant greenish white veins (up to 2 cm thick) non-fibrous serpentine (?) at no specific orientation.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 7-10

COLOR: Dark greenish gray (5BG 4/1) with lighter patches.

LAYERING: None.

DEFORMATION: None visible.

PRIMARY MINERALOGY:

Olivine - Mode: 80-90%.
Crystal size: Not visible.
Crystal shape: Not visible.
Crystal orientation: None visible.
Percent replacement: 90-99.

Orthopyroxene - Mode: 10-20%.
Crystal size: <0.5 mm.
Crystal shape: Not visible.
Crystal orientation: None visible.
Percent replacement: 90-99.

Spinel - Mode: Trace.
Crystal size: <1 mm.
Crystal shape: Rounded.
Crystal orientation: Stringers.
Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 100%.
Texture: Mesh-textured.
Vein material: Few light greenish white veins (<1 mm).

125-779A-11R-1 (continued)

UNIT 2: SERPENTINIZED DUNITE (?)

Pieces 11-12

COLOR: Dark greenish gray (5BG 4/1) with lighter patches.

LAYERING: None.

DEFORMATION: None visible.

PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 4-8%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 80-90.

Spinel - Mode: 1-2%.

Crystal size: Not visible.

Crystal shape: Stringers.

Crystal orientation: None visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 99%.

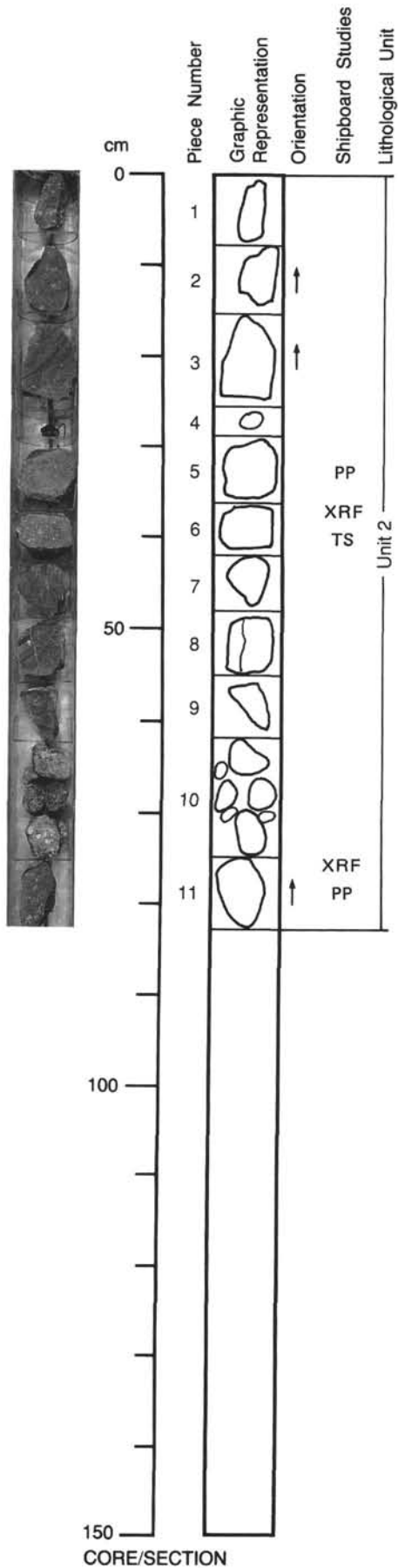
Texture: Bastitic after orthopyroxene in areas and mesh-textured after olivine.

Vein material: Minor serpentine veins present.

125-779A-12R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1-2



COLOR: Dark greenish gray (5BG 4/1) with lighter patches.

LAYERING: None.

DEFORMATION: Deformed serpentized pyroxenes.

PRIMARY MINERALOGY:

Olivine - Mode: 90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 90-99.

Orthopyroxene - Mode: 10%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 90-99.

Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Equant-round.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: Mesh serpentine and bastitic pseudomorphs after pyroxenes.
 Vein material: Few light greenish veins (<0.1 mm).

UNIT 2: SERPENTINIZED DUNITE

Piece 3

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: None.

DEFORMATION: Sub-parallel vein-filled cracks.

PRIMARY MINERALOGY:

Olivine - Mode: >95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 95-99.

Orthopyroxene - Mode: 5%.
 Crystal size: Not visible.
 Crystal shape: Equant-elongate.
 Crystal orientation: None visible.
 Percent replacement: 95-99.
 Comments: Intercurulus ?

Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Round.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: Serpentine mesh-textured after olivine with some bastites after pyroxenes.
 Vein material: Some white subparallel (<0.2 mm) veins; few green veins.

125-779A-12R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 4

COLOR: Greenish black (5Y 2.5/1).

LAYERING: None.

DEFORMATION: None.

PRIMARY MINERALOGY:

Olivine - Mode: 80-90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 10-20%.

Crystal size: <1.5 mm.

Crystal shape: Subhedral-anhedral.

Crystal orientation: None visible.

Percent replacement: 80-90.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 80-90%.

Texture: N/A.

Vein material: N/A.

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 5

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: Locally pyroxene-rich and olivine-rich pockets.

DEFORMATION: None.

PRIMARY MINERALOGY:

Olivine - Mode: 50%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 95-99.

Orthopyroxene - Mode: 50%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90.

Spinel - Mode: Trace.

Crystal size: <1 mm.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 95-99%.

Texture: Slightly developed bastite pseudomorphs after pyroxenes.

Vein material: N/A.

125-779A-12R-1 (continued)

UNIT 2: SERPENTINITE HARZBURGITE

Piece 6

COLOR: Dark greenish gray (5GB 4/1) with lighter patches.

LAYERING: None.

DEFORMATION: None.

PRIMARY MINERALOGY:

Olivine - Mode: 90%.
Crystal size: Not visible.
Crystal shape: Not visible.
Crystal orientation: None visible.
Percent replacement: 90-99.

Orthopyroxene - Mode: 10%.
Crystal size: Not visible.
Crystal shape: Subhedral-anhedral.
Crystal orientation: None visible.
Percent replacement: 90.
Comments: Intercumulus ?

Spinel - Mode: Trace.
Crystal size: <2 mm.
Crystal shape: Subhedral.
Crystal orientation: None visible.
Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 90-99%.
Texture: Bastite pseudomorphs after pyroxenes.
Vein material: N/A.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 7-8

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: None.

DEFORMATION: None.

PRIMARY MINERALOGY:

One equant spinel has a metallic inclusion.
Olivine - Mode: 90%.
Crystal size: Not visible.
Crystal shape: Not visible.
Crystal orientation: None visible.
Percent replacement: 95-99.

Orthopyroxene - Mode: 10%.
Crystal size: 1-2 mm.
Crystal shape: Euhedral-anhedral.
Crystal orientation: None visible.
Percent replacement: 90.

Spinel - Mode: Trace.
Crystal size: <1 mm.
Crystal shape: Equant?
Crystal orientation: None visible.
Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 95-99%.
Texture: Bastite pseudomorphs after pyroxenes.
Vein material: White (<1 mm) and bluish (<1 mm) veins.

125-779A-12R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE**Piece 10 (multiple fragments)****COLOR:** Dark greenish gray (5BG 4/1).**LAYERING:** None.**DEFORMATION:** Brecciated.**PRIMARY MINERALOGY:**

Modal proportions vary in each fragment.

Olivine - Mode: 40-90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 10-60%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90.

Spinel - Mode: Trace.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 99%.

Texture: Bastite pseudomorphs after pyroxenes in areas.

Vein material: Abundant light green veins of serpentine (<1 mm wide).

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE**Piece 11****COLOR:** Dark greenish gray (5BG 4/1) with light patches.**LAYERING:** None.**DEFORMATION:** Deformed pyroxenes.**PRIMARY MINERALOGY:**

Olivine - Mode: 90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 10%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 90.

Spinel - Mode: Trace.

Crystal size: <1 mm.

Crystal shape: Equant.

Crystal orientation: None visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 95-99%.

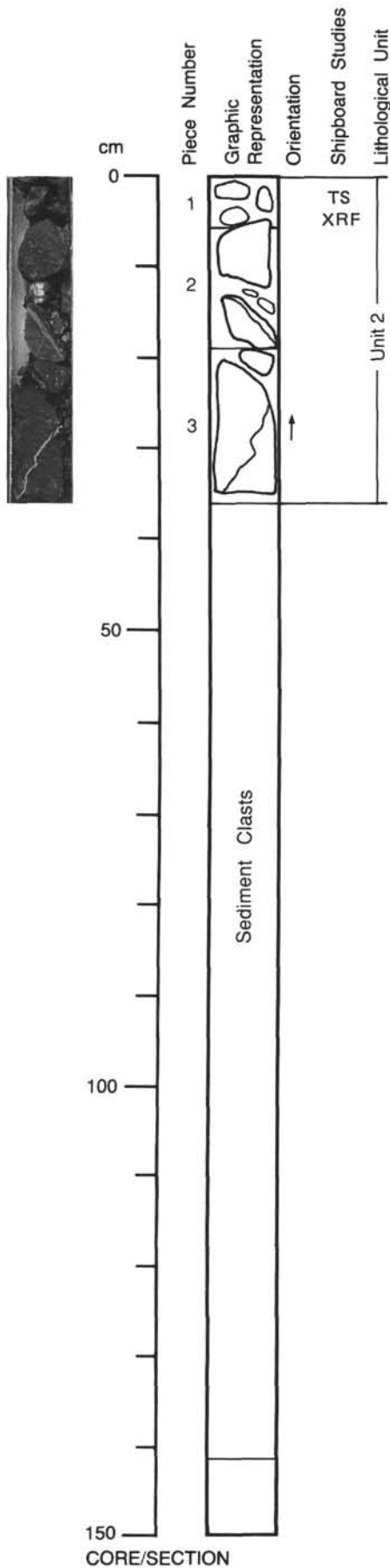
Texture: Bastite pseudomorphs after pyroxenes in areas.

Vein material: Very few light greenish serpentine veins.

125-779A-13R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-3 (multiple fragments)



COLOR: Black (2.5YR 2.5/0).
LAYERING: None.
DEFORMATION: None discernible in hand sample.
PRIMARY MINERALOGY:
 Heavily serpentinized.
 Olivine - Mode: 80-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None.
 Percent replacement: 100.

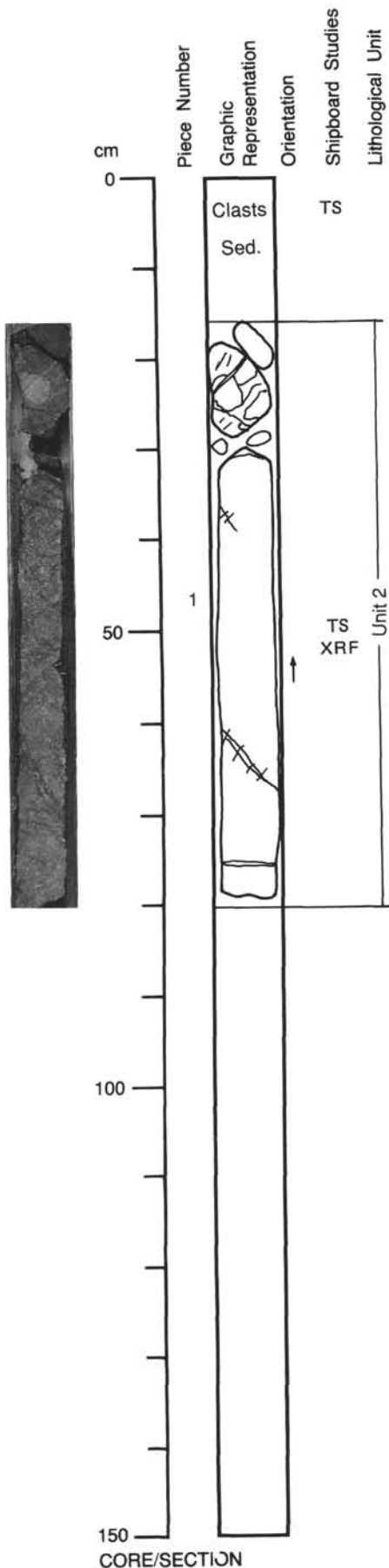
 Orthopyroxene - Mode: >10%.
 Crystal size: 5 mm?
 Crystal shape: Equant.
 Crystal orientation: None.
 Percent replacement: 100.

 Spinel - Mode: 1-2%.
 Crystal size: 0.5-2 mm.
 Crystal shape: Euhedral (equant) to elongate.
 Crystal orientation: None.
 Percent replacement: Variable.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: N/A.
 Vein material: Numerous, up to 5 mm, filled with pale green serpentine, anastomosing.

125-779A-13R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Piece 1



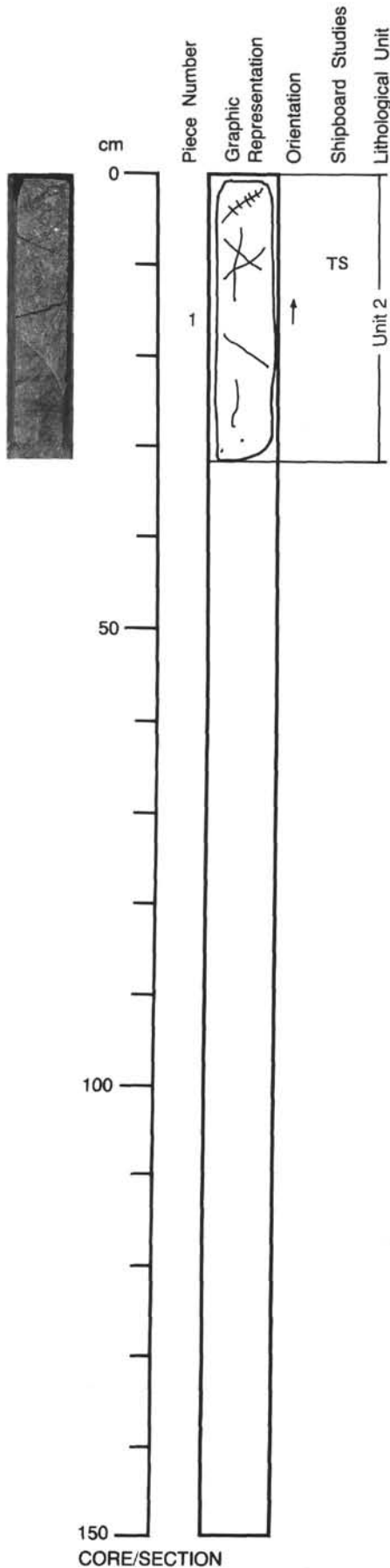
COLOR: Gray (2.5Y 5/0).
LAYERING: None.
DEFORMATION: Orthopyroxenes show wavy cleavage.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-85%.
 Crystal size: 5-10 mm.
 Crystal shape: Equant, ragged.
 Crystal orientation: None.
 Percent replacement: Variable.

 Orthopyroxene - Mode: 10-15%.
 Crystal size: 5-8 mm.
 Crystal shape: Equant.
 Crystal orientation: None.
 Percent replacement: Variable.
 Spinel - Mode: <1%.
 Crystal size: 0.1-3 mm.
 Crystal shape: Elongate, ragged.
 Crystal orientation: None.
 Percent replacement: Variable.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 90-99%.
 Texture: N/A.
 Vein material: 0.5-2 mm wide veins; dipping at 45 degrees, filled with dark serpentine, cross-stitched with second generation of chrysotile ("Frankenstein" texture); second vein set: dipping at 30 degrees, dark serpentine filling.

125-779A-13R-3

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Piece 1



COLOR: Dark gray (2.5YR 4/0).

LAYERING: None.

DEFORMATION: Orthopyroxenes show wavy deformation on exposed cleavage surfaces.

PRIMARY MINERALOGY:

Primary minerals are variably serpentinized.

Orthopyroxene - Mode: 15-20%.

Crystal size: 4-8 mm.

Crystal shape: Equant.

Crystal orientation: None.

Percent replacement: 50-60.

Olivine - Mode: 80-85%.

Crystal size: 5-10 mm.

Crystal shape: Equant to ragged.

Crystal orientation: None.

Percent replacement: 50-60.

Spinel - Mode: >1%.

Crystal size: 0.1-2 mm.

Crystal shape: Ragged to elongate.

Crystal orientation: None.

Percent replacement: 10-20.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 50-60%.

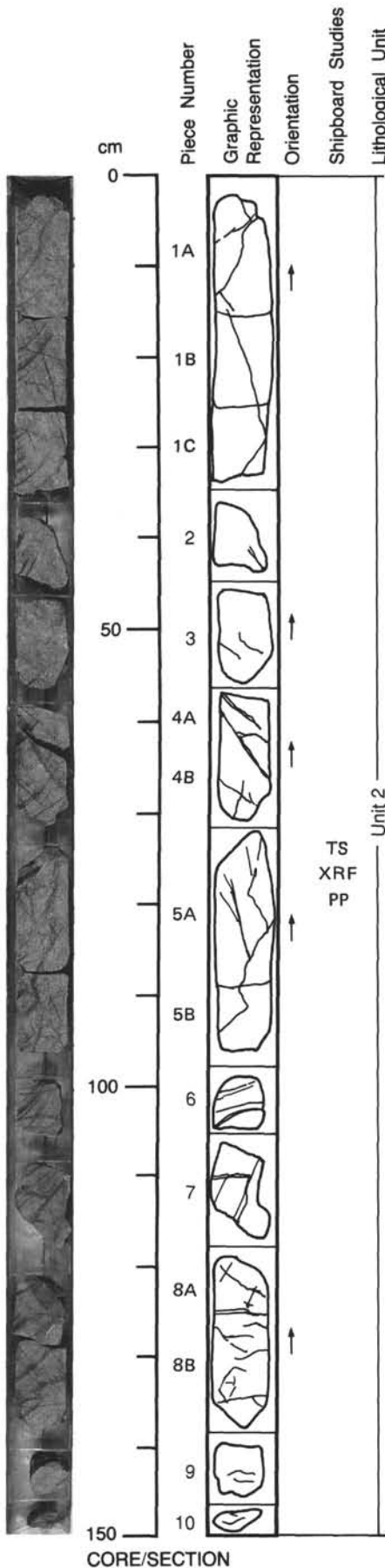
Texture: N/A.

Vein material: Numerous, conjugate sets, 1-2 mm wide, some are filled with black serpentine, some have "Frankenstein texture" with crosscutting light serpentine, sets dip at 45 degrees to core axis, others subparallel to core axis, order of veining indeterminate.

125-779A-14R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 10



COLOR: Gray (N 6).

LAYERING: Massive, with alteration banding caused by variable serpentinization.

DEFORMATION: Orthopyroxene shows wavy cleavage surfaces.

PRIMARY MINERALOGY:

Olivine - Mode: 80-85%.

Crystal size: 1-5 mm.

Crystal shape: Mesh-like.

Crystal orientation: None.

Percent replacement: 80-90.

Orthopyroxene - Mode: 15-20%.

Crystal size: 1-5 mm.

Crystal shape: Equant.

Crystal orientation: None.

Percent replacement: 80-90.

Spinel - Mode: <1%.

Crystal size: 0.5-1 mm.

Crystal shape: Equant to elongate.

Crystal orientation: Elongate parallel to serp.-filled fract.

Percent replacement: 30-40.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 80-90%.

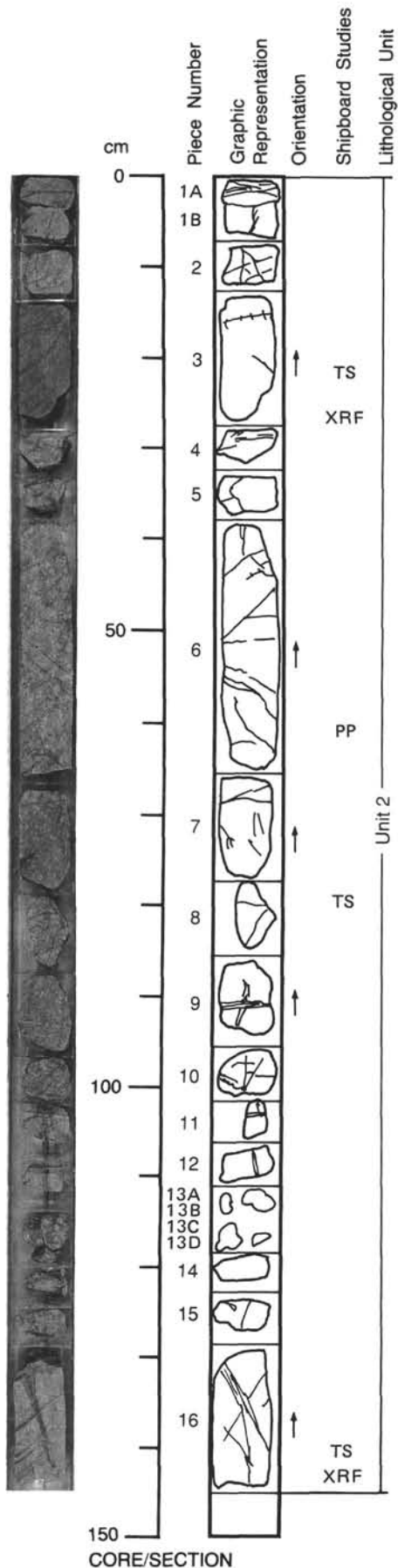
Texture: N/A.

Vein material: Two conjugate sets, oriented at about 45 degrees to core axis; 0.5-2 mm wide, alteration haloes of serpentine extending into the host; most are filled with black serpentine, minority filled with chrysotile.

125-779A-14R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 2, 4 to 16



COLOR: Gray (N 6/).

LAYERING: None, but rock exhibits color banding caused by variable serpentinization.

DEFORMATION: Pyroxene shows wavy cleavage surfaces.

PRIMARY MINERALOGY:

Olivine - Mode: 80-90%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: Variable.

Orthopyroxene - Mode: 10-20%.
 Crystal size: 3-8 mm.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: Variable.

Spinel - Mode: <1%.
 Crystal size: 0.01-2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Parallel to fractures.
 Percent replacement: Variable.

SECONDARY MINERALOGY:

Rock is variably serpentinized, extent more pronounced close to visible fractures.
 Total percent: 50-90%.
 Texture: N/A.
 Vein material: Numerous, crosscutting, about 45 degrees to core axis and some normal to core axis; some are polyphase-filled with dark and light serpentine.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Piece 3

COLOR: Very dark gray (2.5Y 3/0).

LAYERING: None.

DEFORMATION: None visible.

PRIMARY MINERALOGY:

Appears to be less orthopyroxene than overlying and underlying core pieces.
 Olivine - Mode: 80-90%.
 Crystal size: <4 mm.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: 80-90.

Orthopyroxene - Mode: 10-20%.
 Crystal size: 3-7 mm.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: 80-90.

Spinel - Mode: <1%.
 Crystal size: 0.2-1 mm.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: Not visible.

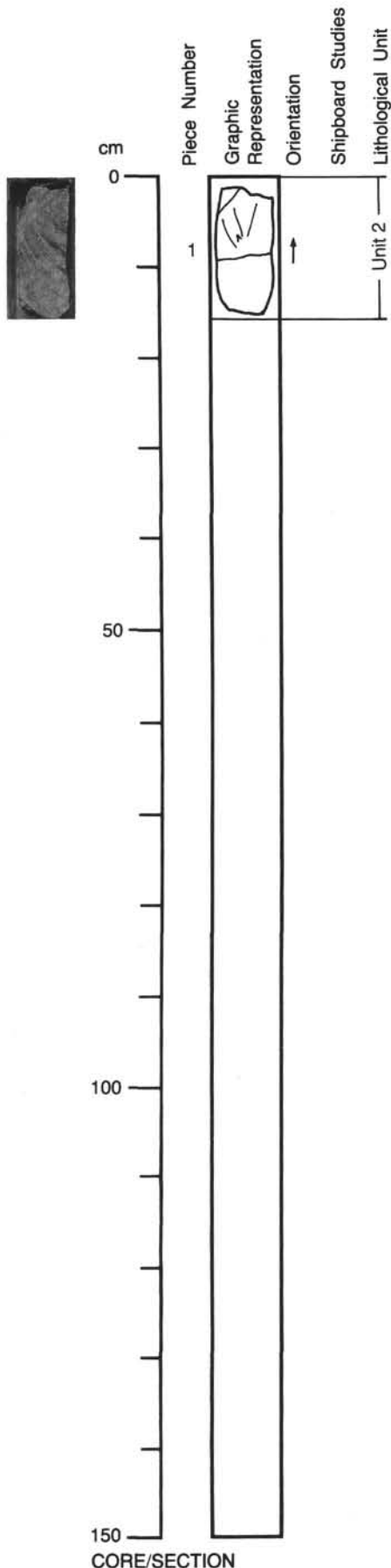
SECONDARY MINERALOGY:

Serpentine.
 Total percent: 80-90%.
 Texture: N/A.
 Vein material: Perpendicular to core axis, dark serpentine in center of vein, chrysotile outer part and at right angles (Frankenstein- texture) to the main (1.5 mm wide) vein. Other chrysotile veins 0.2 mm wide.

125-779A-14R-3

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Piece 1



COLOR: Very dark gray (2.5Y 4/).

LAYERING: None.

DEFORMATION: Wavy cleavage surfaces on the orthopyroxene.

PRIMARY MINERALOGY:

- Olivine - Mode: 65-80%.
- Crystal size: 1-4 mm.
- Crystal shape: Not visible.
- Crystal orientation: None visible.
- Percent replacement: Not visible

- Orthopyroxene - Mode: 20-35%
- Crystal size: 2-5 mm.
- Crystal shape: Not visible.
- Crystal orientation: None visible.
- Percent replacement: Not visible.

- Spinel - Mode: <1%.
- Crystal size: 0.2-3 mm.
- Crystal shape: Equant to elongate.
- Crystal orientation: None visible.
- Percent replacement: Not visible.

SECONDARY MINERALOGY:

- Serpentine.
- Total percent: 50-90%.
- Texture: N/A.
- Vein material: Minor veining, filled with dark serpentine.

125-779A-15R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-9

COLOR: Gray (2.5YR 5/0).
LAYERING: None.
DEFORMATION: None.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-80%.
 Crystal size: 2-5 mm.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: 50.
 Orthopyroxene - Mode: 20-30%.
 Crystal size: 0.5-5 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: None visible.
 Percent replacement: 20-50.
 Spinel - Mode: <1%.
 Crystal size: 0.2-1.
 Crystal shape: Equant.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 50-60%.
 Texture: N/A.
 Vein material: Numerous small (2-mm-wide chrysotile-filled veins).

UNIT 2: SERPENTINIZED HARZBURGITE

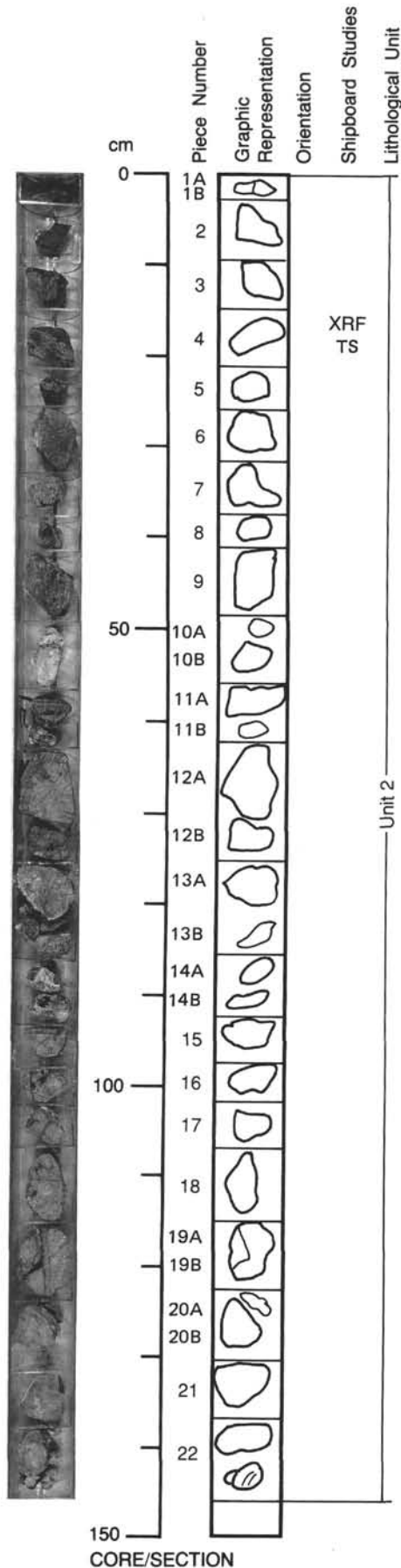
Pieces 10A and B, 14A and B (@85cm)

COLOR: White to light gray (7.5YR 8/0-7/0).
LAYERING: None.
DEFORMATION: None.
PRIMARY MINERALOGY: Pyroxene through a screen of chrysotile coating on clasts.
SECONDARY MINERALOGY: Serpentine.
ADDITIONAL COMMENTS: Primary bulk of sample obscured.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 11-13; 15-22

COLOR: Variable depending on degree of serpentinization; gray (7.5YR 3/0-6/0).
LAYERING: None.
DEFORMATION: Pyroxene shows kink banding and stretching.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-80%.
 Crystal size: 3-10 mm.
 Crystal shape: Equant-ragged.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
 Orthopyroxene - Mode: 20-30%.
 Crystal size: 2-6 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
 Spinel - Mode: <1%.
 Crystal size: 0.1-3 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Some dip at 30 degrees to horizontal.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 50-80%.
 Texture: N/A.
 Vein material: 2 sets; 1st generation 65 degrees, filled with amorphous black serpentine, 1-2 mm wide; 2nd generation: occasionally crosscut 1st set, filled with (1) amorphous black-gray serpentine, (2) laminated/fibrous chrysotile (ranges from 1-15 mm wide). Thickest veins show Frankenstein texture.
ADDITIONAL COMMENTS: Some sediment occurs with Piece 13A, half coating the clast, and underlies 13A. Sediment is sheared serpentine, 3 cm thick.



125-779A-15R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

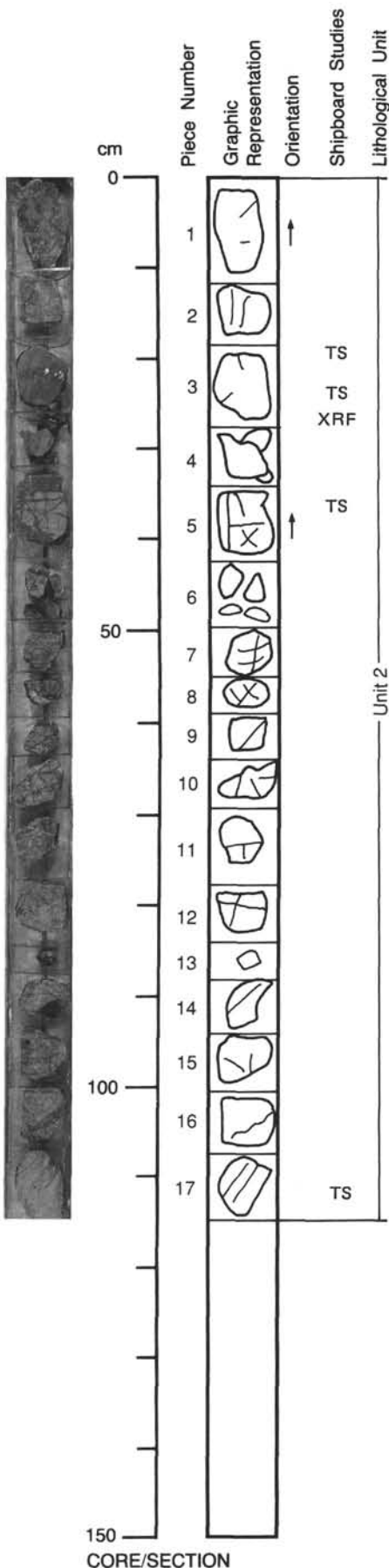
Pieces 1 and 2

COLOR: Dark-gray, blue-gray, mottled (N 6/ to 5B 5/1).
LAYERING: None.
DEFORMATION: Pyroxenes show wavy extinction and minor kink banding; spinel shows dumbbell shape.
PRIMARY MINERALOGY:
 Orthopyroxene - Mode: 10-15%.
 Crystal size: 5-10 mm.
 Crystal shape: Elongate.
 Crystal orientation: None visible.
 Percent replacement: Variable.
 Olivine - Mode: 85-90%.
 Crystal size: 5-15 mm.
 Crystal shape: Ragged.
 Crystal orientation: None visible.
 Percent replacement: Variable.
 Spinel - Mode: Trace.
 Crystal size: 0.1-0.5 mm.
 Crystal shape: Elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
 Comments: Cr-bearing?
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 30-80%.
 Texture: N/A.
 Vein material: En echelon and sigmoidal sets indicating vertical dextral shear, completely filled with amorphous black serpentine.

UNIT 2: SERPENTINIZED DUNITE

Pieces 3, 4A, 4B, 5

COLOR: Dark greenish-gray (5B 4/1).
LAYERING: None.
DEFORMATION: Spinels are sheared, orthopyroxenes show kink-banding and stretching.
PRIMARY MINERALOGY:
 Orthopyroxene - Mode: 0-1%.
 Crystal size: 0.2-1.5 mm.
 Crystal shape: Equant to elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
 Olivine - Mode: 99%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
 Spinel - Mode: <1%.
 Crystal size: 0.2-0.8.
 Crystal shape: Elongate.
 Crystal orientation: None visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 50-80%.
 Texture: N/A.
 Vein material: Two generations, (1) anastomosing, vertical and horizontal, steeply dipping, 1-5 mm wide, two generations of dark amorphous serpentine fill; (2) vertical and horizontal, 0.5-2 mm wide, filled with white and green fibrous chrysotile showing sinistral and vertical shear; veins total up to 2% of rocks.



125-779A-15R-2 (continued)

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 6-17

COLOR: Gray to dark greenish-gray (N 5/ to 5B 4/1).

LAYERING: Disseminated spinel grains, 25 cm thick and forming 1% to 2% modal volume, dipping at 65 degrees (found only in Piece 16).

DEFORMATION: Orthopyroxene shows kink banding and elongation defining a coarse foliation dipping at 50 degrees.

PRIMARY MINERALOGY:

Olivine - Mode: 85-95%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: 80-99.

Orthopyroxene - Mode: 5-15%.

Crystal size: 2-12 mm.

Crystal shape: Equant-elongate.

Crystal orientation: Defines foliation.

Percent replacement: 80-90.

Spinel - Mode: <1%.

Crystal size: 0.2-1 mm.

Crystal shape: Equant-dumbbell.

Crystal orientation: Defines foliation.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 80-99%.

Texture: N/A.

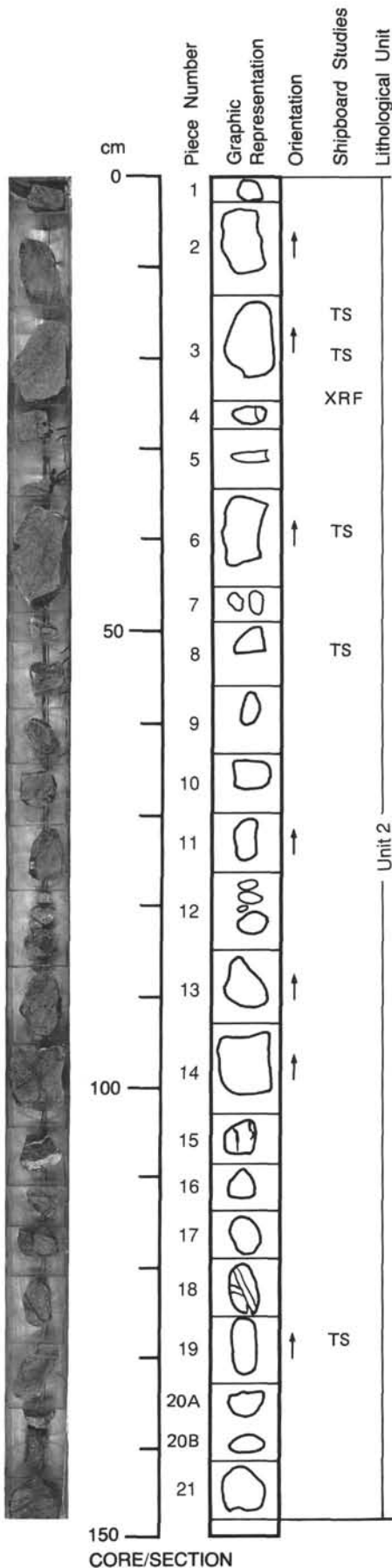
Vein material: Two generations, first: conjugate sets, 0.2-8 mm wide, steeply dipping, filled with amorphous black serpentine, cut by second generation dipping at 15-25 degrees, filled with white chrysotile and carbonate(?) with occasional "Frankenstein veins" of chrysotile perpendicular to strike of veins.

ADDITIONAL COMMENTS: Orthopyroxene and spinel define primary foliation.

125-779A-16R-1

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 1 to 21



COLOR: Bluish gray (5B 5/1) with altered dark greenish gray zones (5BG 4/1).

LAYERING: None.

DEFORMATION: Fractures, locally-low angle, 20-degree normal faulting with a few mm offset in dark veins, kink-banded orthopyroxene. Shearing is caused by brecciation.

PRIMARY MINERALOGY:

Orthopyroxene - Mode: 5-15%.

Crystal size: 2-8 mm.

Crystal shape: Elongate, ragged.

Crystal orientation: None visible.

Percent replacement: Variable.

Olivine - Mode: 85-95%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None visible.

Percent replacement: Variable.

Spinel - Mode: <1%.

Crystal size: 0.1-0.8 mm.

Crystal shape: Flame, ragged.

Crystal orientation: None visible.

Percent replacement: Variable.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 50-70%.

Texture: Strongly deformed serpentine orthopyroxene pseudomorphs set in a matrix of mesh-textured serpentine replacing olivine.

Vein material: Dark greenish gray altered zones usually contain black-green major veins, black-green veins also occur; occasionally greenish white veins of chrysotile (< 5mm).

Pyroxene may control location of fractures and veins.

125-779A-16R-2

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 1-5

COLOR: Bluish gray (5B 5/1) with altered dark greenish gray zones (5BG 4/1).
LAYERING: None.

DEFORMATION: Strongly fractured locally with few mm offset in dark veins.

PRIMARY MINERALOGY:
 Olivine - Mode: 90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None.
 Percent replacement: 95-99.

Orthopyroxene - Mode: 10%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None.
 Percent replacement: 95-99.

SECONDARY MINERALOGY:

Serpentine and magnetite.
 Total percent: 95-99%.
 Texture: Strongly deformed bastite pseudomorphs after orthopyroxene.
 Vein material: Dark greenish gray altered zones usually contain black-green major veins, black-green veins also occur without reaction zone; occasionally greenish white veins (<5 mm). Pyroxenes may control location of fractures and veins.

ADDITIONAL COMMENTS: Low-temperature deformation ??

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 6-12

COLOR: Dark greenish gray (5BG 4/1) with lighter patches.

LAYERING: None.

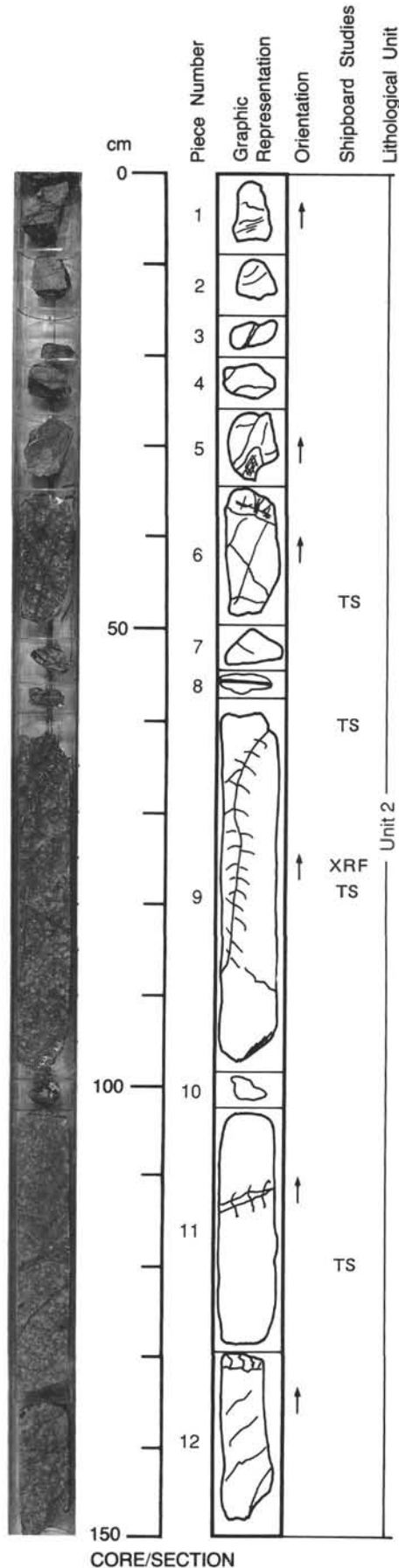
DEFORMATION: Vein-filled fractures with perpendicular chrysotile-filled tension cracks (Frankenstein veins).

PRIMARY MINERALOGY:
 Olivine - Mode: 50%.
 Crystal size: Not visible.
 Crystal shape: Mesh?
 Crystal orientation: None.
 Percent replacement: 95-99.

Orthopyroxene - Mode: 50%.
 Crystal size: <2 cm?
 Crystal shape: Round?
 Crystal orientation: None.
 Percent replacement: 95-99.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 100%.
 Texture: Bastite pseudomorphs after rounded pyroxene.
 Vein material: Early generation of dark veins crosscut by white tension veins.

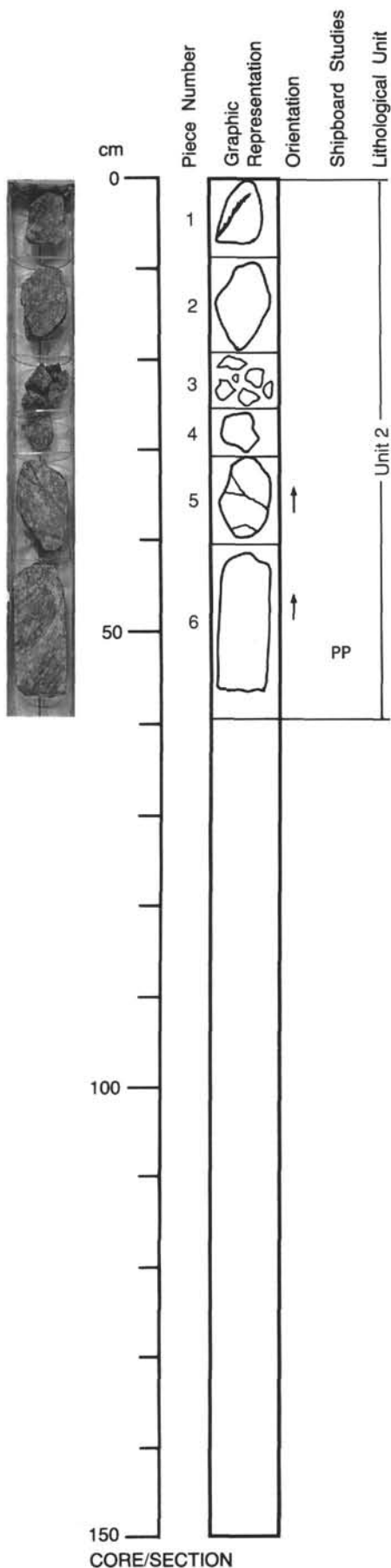


CORE/SECTION

125-779A-16R-3

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1-6



COLOR: Dark greenish gray (5BG 4/1) with lighter patches.

LAYERING: None.

DEFORMATION: Vein-filled fractures with perpendicular chrysotile-filled tension crack (Frankenstein).

PRIMARY MINERALOGY:

Olivine - Mode: 50%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: None.
 Percent replacement: 95-99.

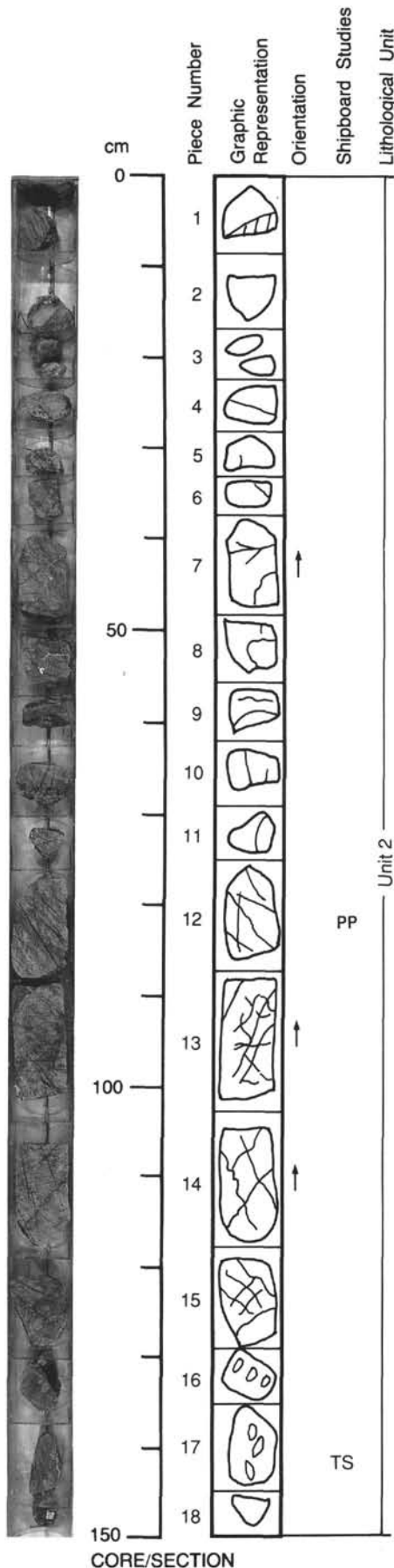
Orthopyroxene - Mode: 50%.
 Crystal size: <2 cm?
 Crystal shape: Round?
 Crystal orientation: None.
 Percent replacement: 95-99.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 100%.
 Texture: Bastite pseudomorphs after rounded deformed orthopyroxene.
 Vein material: Early generation of dark green veins crosscut by white tension veins.

ADDITIONAL COMMENTS: Probably cumulate origin.

125-779A-17R-1



UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 2

COLOR: Bluish gray, variable (5B 5/1) to very dark gray (5Y 3/1).
LAYERING: Not visible.
DEFORMATION: Rare wavy cleavage surface in orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: 5-8 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: 10-20%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: <0.3%.
 Crystal size: 0.1-1 mm.
 Crystal shape: Dumbbell-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70-90%.
 Texture: N/A.
 Vein material: Numerous veins (0.1-0.5 mm wide) filled with dark serpentine; minor (<0.2 mm): filled with white serpentine.

UNIT 2: SERPENTINE-TALC

Pieces 3A and B

COLOR: Mottled gray-green to green gray (4G 4/1 to 5G 7/1).
LAYERING: Not visible.
DEFORMATION: Not visible.
PRIMARY MINERALOGY: Not visible.
SECONDARY MINERALOGY:
 Serpentine and talc forming a phacoidal clast.
 Total percent: 100%.
 Texture: Massive, fine-grained.
 Vein material: Not visible.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 4, 5 and 6

COLOR: Blue gray (5B 5/1).
LAYERING: Not visible.
DEFORMATION: Pyroxene elongate, ragged, with wavy cleavage.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: 10-15 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: 5-10%.
 Crystal size: 5-10 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: Trace.
 Crystal size: <0.1 mm.
 Crystal shape: Dusty.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70-90%.
 Texture: N/A.
 Vein material: 1-2 mm wide, filled with black amorphous serpentine, white chrysotile, and a white laminated amorphous phase.

125-779A-17R-1 (continued)

UNIT 2: SERPENTINIZED DUNITE**Pieces 7 and 8**

COLOR: Mottled pale to dark gray (N 5/ to N 4/).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

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

Cr-spinel - Mode: 1%.
 Crystal size: 0.5-1.5 mm.
 Crystal shape: Equant.
 Crystal orientation: Disseminated.
 Percent replacement: Not visible.
 Comments: Some have a white halo.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 100%.
 Texture: Mesh-textured, massive.
 Vein material: Rock is mottled because of serpentinization halos around veins of several types: Two generations at least of (1) 0.5 to 1.5-mm-wide, amorphous black serpentine sub-vertical, crosscut by (2) conjugate subhorizontal, white amorphous phase.

ADDITIONAL COMMENTS: First dunite sampled downward in the core for a considerable interval.

UNIT 2: SERPENTINIZED DUNITE**Piece 9**

COLOR: Dark gray (N 4/).

LAYERING: Caused by sheared veining of upper 10 mm of surface.

DEFORMATION: Sheared.

PRIMARY MINERALOGY:

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

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

SECONDARY MINERALOGY:

Serpentine replaces all of the primary minerals.
 Total percent: 100%.
 Texture: N/A.
 Vein material: 40% of the rock is made of veins; Two generations: (1) dark blue-green amorphous serpentine in upper 1 cm, apparently subhorizontal; (2) anastomosing chrysotile.

ADDITIONAL COMMENTS: Spinels have white halos (probably of chlorite).

125-779A-17R-1 (continued)

UNIT 2: SERPENTINIZED DUNITE

Piece 10

COLOR: Pale to dark gray (N 5/ to N 4/).

LAYERING: None visible.

DEFORMATION: Elongate spinels.

PRIMARY MINERALOGY:

Olivine - Mode: >99%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: <1%.

Crystal size: 0.5-1 mm.

Crystal shape: Elongate to equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 100%.

Texture: N/A.

Vein material: Predominantly vertical, anastomosing, 0.1-8 mm wide, filled with massive dark green, laminated serpentine phase.

UNIT 2: SERPENTINIZED HARZBURGITIC DUNITE

Pieces 11 to 14

COLOR: Pale gray to dark gray (N 6/ to 5B 4/1).

LAYERING: Olivine layering (in Piece 14).

DEFORMATION: Bent orthopyroxene cleavage.

PRIMARY MINERALOGY:

Olivine - Mode: 95-99%.

Crystal size: 5-15 mm.

Crystal shape: Elongate.

Crystal orientation: Subhorizontal.

Percent replacement: Not visible.

Comments: Oval-shaped and cleaved.

Orthopyroxene - Mode: <5%.

Crystal size: 0.5-0.8 mm.

Crystal shape: Equant-elongate.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Cr-spinel - Mode: <1%.

Crystal size: 0.2-0.5 mm.

Crystal shape: Ovoid.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 85-95%.

Texture: N/A.

Vein material: Primary conjugate set dipping steeply, 0.5-6 mm wide, filled with laminar black amorphous-looking serpentine, making up 5-10% of rock. Crosscut by 45 degree, 0.2-mm-wide amorphous white-filled veins.

125-779A-17R-1 (continued)

UNIT 2: SERPENTINIZED MYLONITIZED DUNITE

Pieces 16 to 18

COLOR: Dark blue gray (5B 4/1).

LAYERING: Not visible.

DEFORMATION: Mylonitized, serpentized olivine has pervasive sheared fabric.

PRIMARY MINERALOGY:

Olivine - Mode: 99%.

Crystal size: Not visible.

Crystal shape: Ovoid-stretched.

Crystal orientation: Long axes steeply dipping.

Percent replacement: Not visible.

Cr-spinel - Mode: <1%.

Crystal size: <0.1 mm.

Crystal shape: Ellipsoidal.

Crystal orientation: Length parallel to schistosity.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

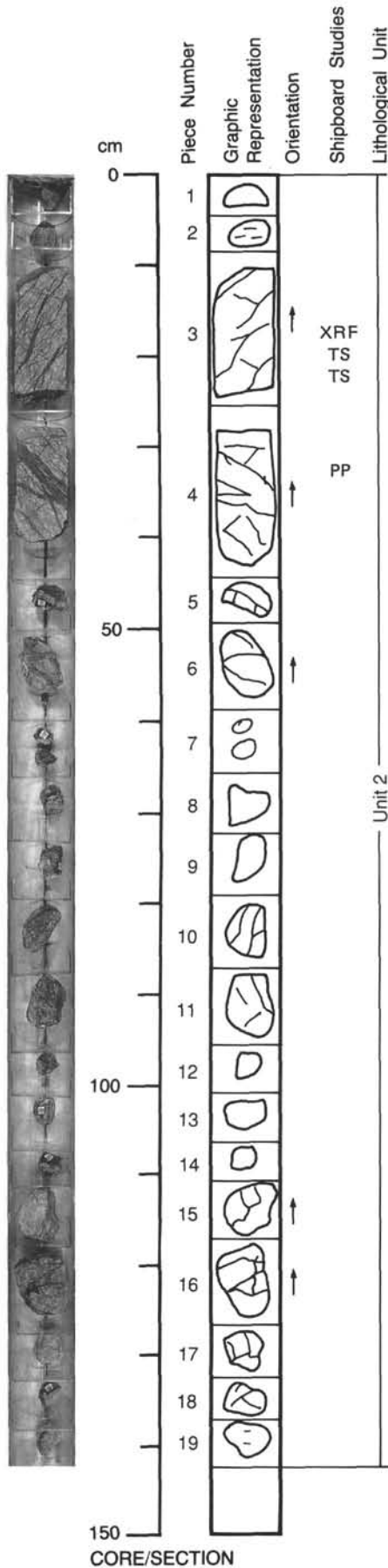
Olivine appears to have completely recrystallized to produce mylonitic fabric.

Total percent: 30-50%.

Texture: N/A.

Vein material: White chrysotile veins subparallel to fabric, 0.5 mm wide.

ADDITIONAL COMMENTS: First mylonitized rock observed downhole.



UNIT 2: SERPENTINIZED DUNITE

Piece 1

COLOR: Dark gray (N 4/).

LAYERING: Not visible.

DEFORMATION: Not visible.

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

Spinel - Mode: 1%.
 Crystal size: 0.1-0.2 mm.
 Crystal shape: Elongate-dumbbell.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Extensively serpentinized.
 Total percent: 70-90%.
 Texture: N/A.
 Vein material: Two generations: (1) dark gray-green serpentine, 1-2 mm wide, cut by (2) chrysotile-filled veins.

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 2

COLOR: Blue gray (5B 5/1).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:
 Olivine - Mode: 70%.
 Crystal size: 5-9 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Orthopyroxene - Mode: 25-30%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: 1.5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Variable serpentinization.
 Total percent: 25-75%.
 Texture: N/A.
 Vein material: Chrysotile veins, 0.3 mm wide.

125-779A-17R-2 (continued)

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE**Pieces 3 to 5**

COLOR: Bluish gray (5B 5/1) to dark gray (N 4/).

LAYERING: Not visible.

DEFORMATION: Orthopyroxene shows wavy cleavage.

PRIMARY MINERALOGY:

Olivine - Mode: 60-80%.
 Crystal size: 5-10 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Orthopyroxene - Mode: 20-40%.
 Crystal size: 1-3 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: 0.2-1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 20-35%.
 Texture: N/A.
 Vein material: Multiple and numerous: (1) amorphous black serpentinite, 2 conjugate sets @ 45 degrees, 1-12 mm wide; (2) chrysotile parallel and normal to dark veins, 1 mm wide.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE**Pieces 6 and 7**

COLOR: Bluish gray (5B 5/1).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.
 Crystal size: 5-10 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Orthopyroxene - Mode: 5-10%.
 Crystal size: 2-6 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: <1%.
 Crystal size: 0.3-1 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Variable serpentinization.
 Total percent: 35-65%.
 Texture: N/A.
 Vein material: Two generations: (1) dark amorphous serpentinite 0.5-2 mm wide; (2) chrysotile following original vein paths; two veins also appear to be superimposed forming a sheared pale-green vein.

125-779A-17R-2 (continued)

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 8-19

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: Not visible.

DEFORMATION: Pyroxenes are kinked and folded, elongated spinels.

PRIMARY MINERALOGY:

Orthopyroxene - Mode: 10-20%.

Crystal size: 5-7 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Olivine - Mode: 80-90%.

Crystal size: 5-10 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: <1%.

Crystal size: 0.1-2 mm.

Crystal shape: Elongate.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Variably serpentinized with respect to major veins.

Total percent: 25-50%.

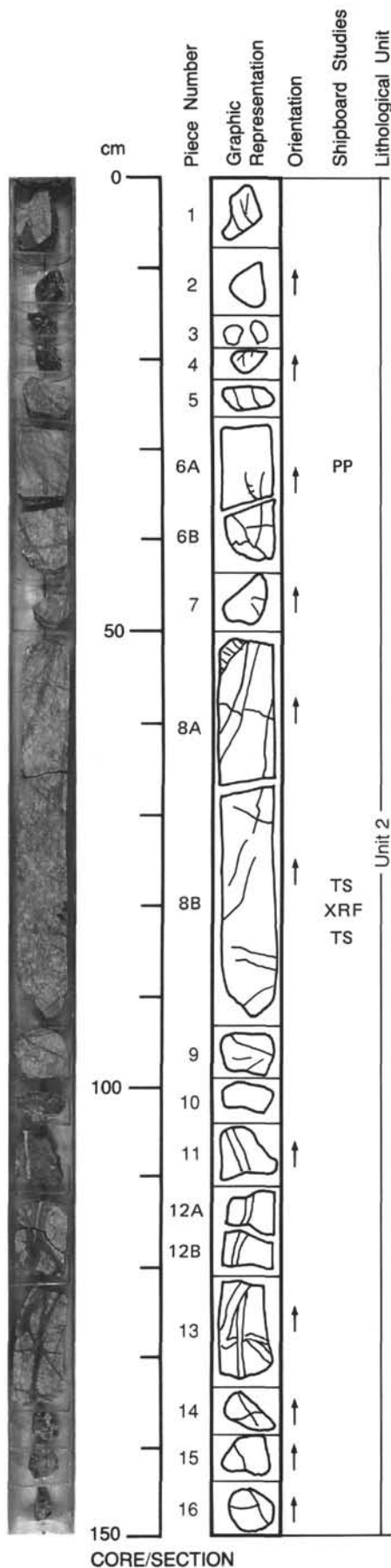
Texture: N/A.

Vein material: Numerous, two generations (at least), primary dark green-black amorphous serpentine, up to 8 mm wide, cut by second generation: chrysotile, 0.2 mm wide.

125-779A-17R-3

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE WITH DUNITE LAYER

Pieces 1 to 16



COLOR: Variable from blue-gray to green-gray (5B 4/1 to N 5) with subordinate (5BG 4/1).

LAYERING: 6-cm-thick massive dunite band, rich in disseminated Cr-spinel (<1%), transitional into harzburgite over 2 cm; layering dips at 65-70 degrees parallel to dumbbell spinel.

DEFORMATION: Wavy cleavage on orthopyroxene; stretched spinel.

PRIMARY MINERALOGY:

Olivine - Mode: 99-80%.
 Crystal size: 5-8 mm.
 Crystal shape: Equant-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible

Orthopyroxene - Mode: 0-20%.
 Crystal size: 2-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Cr-spinel - Mode: Trace.
 Crystal size: <3 mm.
 Crystal shape: Dumbbell.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

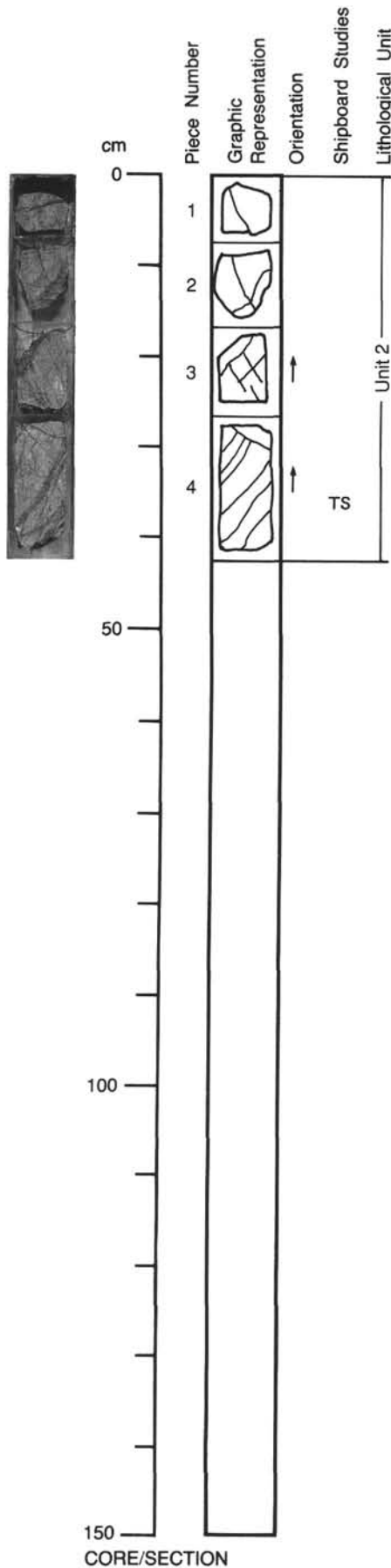
Serpentine.
 Total percent: 25-60%.
 Texture: N/A.
 Vein material: Multiple: (1) anastomosing set, thickest of which are vertical; (2) subordinate conjugate set, steeply dipping; both filled with amorphous black serpentine; (3) vertical, laminar filled with milky-green amorphous serpentine (2-8 mm wide); (3) 0.5 mm subhorizontal chrysotile.

ADDITIONAL COMMENTS: Dunite layer has a primary contact with the harzburgite.

125-779A-17R-4

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 4



COLOR: Gray to dark gray (N 5/ to N 4/).

LAYERING: Not visible.

DEFORMATION: Wavy cleavage on orthopyroxene; elongated, dumbbell-shaped spinel.

PRIMARY MINERALOGY:

Olivine - Mode: 75-95%.
 Crystal size: 5-12 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 25-30%.
 Crystal size: 3-7 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel - Mode: <2%.
 Crystal size: <3 mm.
 Crystal shape: Elongate-dumbbell.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

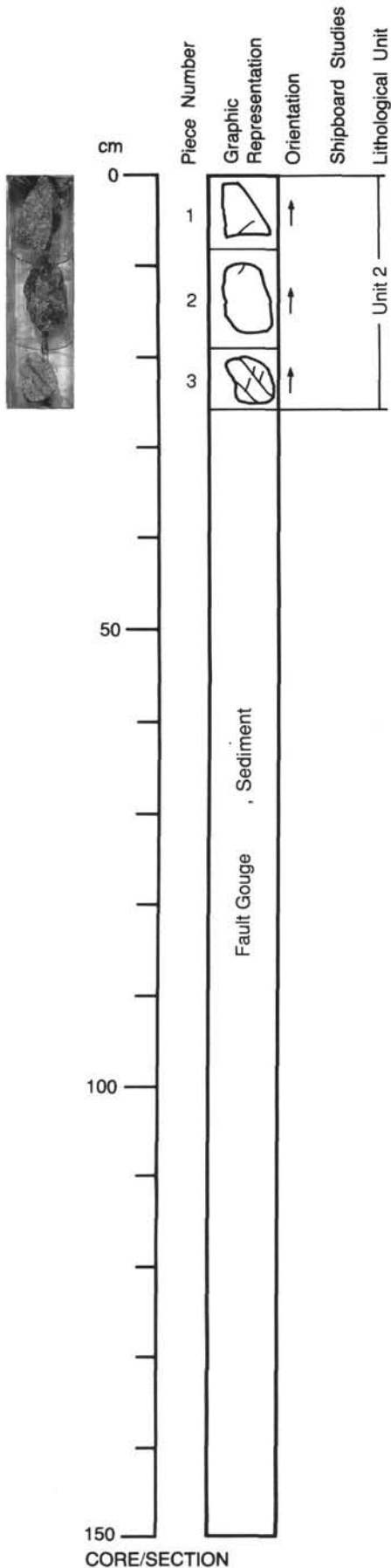
SECONDARY MINERALOGY:

Serpentine.
 Total percent: 70-80%.
 Texture: Mess texture.
 Vein material: (1) Conjugate set dipping at 45 degrees, <10 mm wide, filled with amorphous dark-green serpentine; (2) thin (<0.2 mm) variable orientation, filled with chrysotile.

125-779A-18R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 3



COLOR: Greenish gray, mottled to pale greenish gray (5B 5/1).

LAYERING: Not visible.

DEFORMATION: Wavy orthopyroxene cleavage.

PRIMARY MINERALOGY:

Olivine - Mode: 70-80%.
 Crystal size: 8-12 mm.
 Crystal shape: Rounded.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 20-30%.
 Crystal size: 5-15 mm.
 Crystal shape: Elongated.
 Crystal orientation: Generally subvertical.
 Percent replacement: Not visible.

Cr-spinel - Mode: Trace.
 Crystal size: 0-2 mm.
 Crystal shape: Equant to elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 35-75%.
 Texture: N/A.
 Vein material: <3-mm-wide veins, anastomosing, subvertical, filled with amorphous dark serpentine.

125-779A-18R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITIC DUNITE

Piece 2

COLOR: Dark gray (N 4/).

LAYERING: Not visible.

DEFORMATION: Orthopyroxene shows wavy cleavage, possibly aligned parallel to 70 degrees, dipping contact with overlying fault gouge.

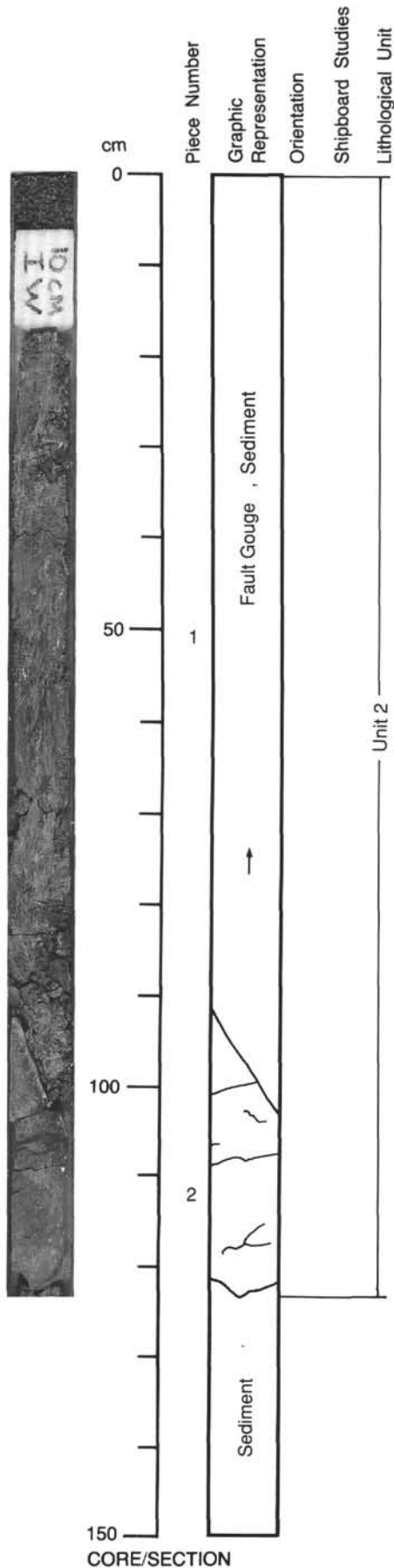
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 5-10%.
 Crystal size: 3-10 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel - Mode: Trace.
 Crystal size: 0.2-2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 35-75%.
 Texture: N/A.
 Vein material: <0.1 mm, dark green serpentine-filled, and white serpentine-filled, but relatively minor compared with many other blocks higher in the hole.

ADDITIONAL COMMENTS: Contact between clast and overlying softer serpentinous material dips at 70 degrees.



125-779A-19R-1

UNIT 2: SERPENTINIZED DUNITE

Pieces 1, 3-5, and 11

COLOR: Dark green-gray to dark black-gray (5 BG 4/1 to 5B 4/1).

LAYERING: Not visible.

DEFORMATION: Appears slightly sheared.

PRIMARY MINERALOGY:

Olivine - Mode: 95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 5%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel? - Mode: Trace.
 Crystal size: Not visible (<1 mm?).
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 90-99%.
 Texture: N/A.
 Vein material: Small 0.2-mm serpentine (chrysotile?) veins; small (0.2-mm) white-green veins appear in some samples.

ADDITIONAL COMMENTS: Piece 5 appears slightly tectonized.

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 2

COLOR: Green-gray to black-gray (5BG 4/1 to 5B 4/1).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

Olivine - Mode: 75-85%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 15-25%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: Bastitic in some areas.
 Vein material: Small, 0.1-mm-wide, pale-green serpentine(?) veins.

UNIT 2: SERPENTINIZED DUNITE

Pieces 13 and 22

COLOR: Dark greenish gray (5BG 4/1).

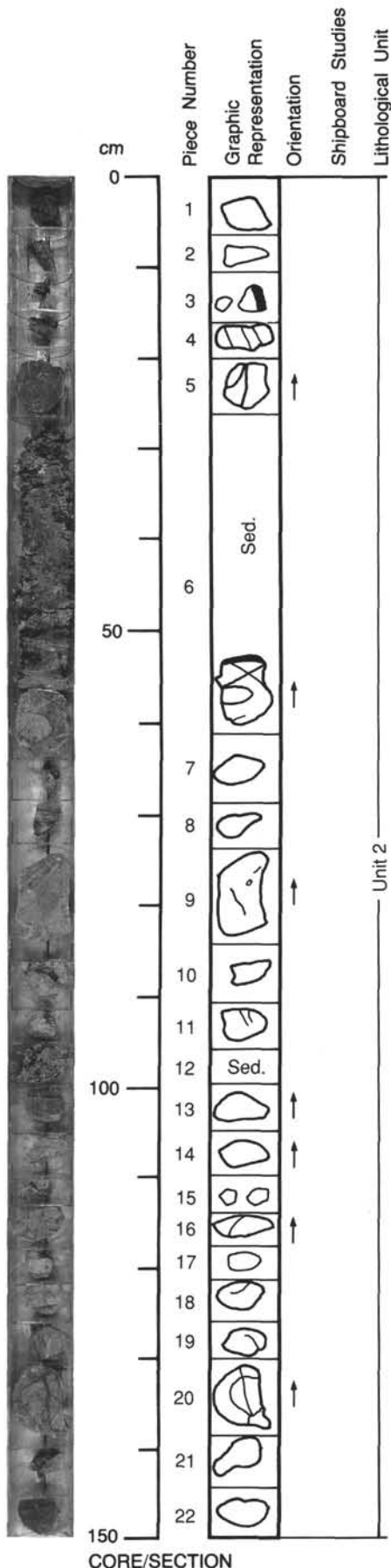
LAYERING: Not visible.

DEFORMATION: Not visible.

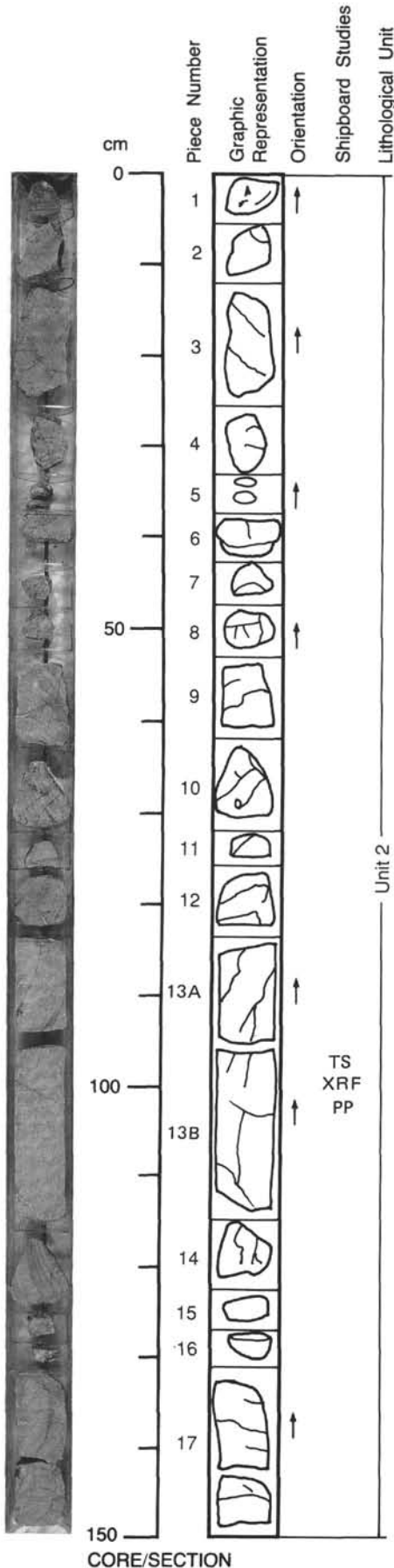
PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 5-10%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.



CORE/SECTION



125-779A-19R-1 (continued)

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: N/A.
 Vein material: Dark black, 0.1-mm-wide, serpentine(?) veining.

ADDITIONAL COMMENTS: Small, 1-cm patches of light mineral within pieces.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 6-10 and 14-21

COLOR: Dark greenish gray to dark gray (5BG 4/1 to N).

LAYERING: Not visible.

DEFORMATION: Appears slightly sheared; fractures and veining are abundant.

PRIMARY MINERALOGY:

Olivine - Mode: 75-80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 20-25%.
 Crystal size: 1-2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel? - Mode: Trace.
 Crystal size: <1 mm?
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine; Piece 9 has a rind (1-2 cm) of dark green mineral (composition?) on edge of sample.
 Total percent: 90-99%.
 Texture: Bastitic texture in some samples.
 Vein material: Abundant veins 0.1-0.3 mm wide of dark black serpentine(?); also very few 0.1-0.2 mm wide veins of white-green mineral (chrysotile?).

125-779A-19R-2

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 1

COLOR: Dark green gray (5BG/1).

LAYERING: Not visible.

DEFORMATION: Slightly deformed.

PRIMARY MINERALOGY:

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

Orthopyroxene - Mode: 20%.
 Crystal size: 1-2 mm?
 Crystal shape: Subhedral.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel? - Mode: Trace.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

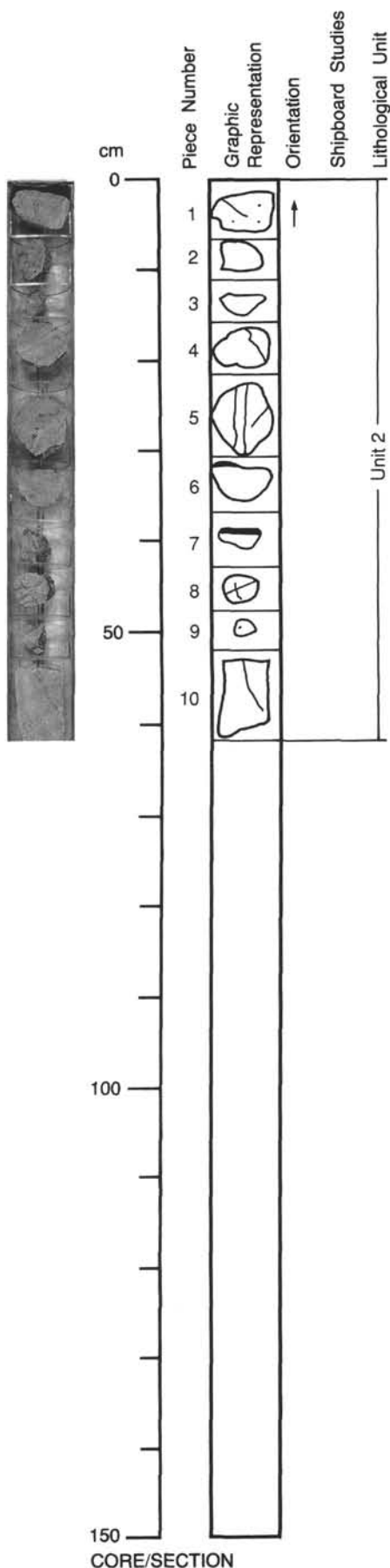
SECONDARY MINERALOGY:

Serpentine.
 Total percent: 95-99%.
 Texture: Serpentine pseudomorphic after olivine; possibly originally cumulate? Vein material: 0.5 mm pale, green-black serpentine vein 2 cm long.

125-779A-19R-3

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1-10



COLOR: Bluish gray (5B 5/1).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

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

Orthopyroxene - Mode: 80%.
 Crystal size: 1-2 mm.
 Crystal shape: Subhedral.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel? - Mode: Trace.
 Crystal size: <1 mm?
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

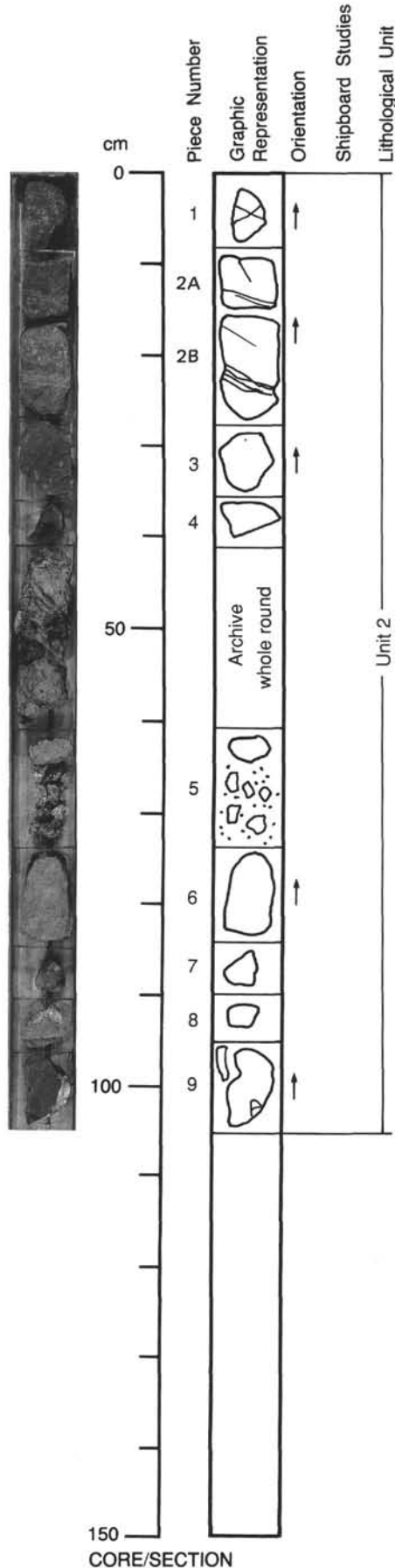
SECONDARY MINERALOGY:

Serpentine pseudomorphs after orthopyroxene and olivine; secondary magnetite(?) is visible in areas.
 Total percent: 95-99%.
 Texture: Bastitic.
 Vein material: Laminar, filled with milky-green amorphous serpentine, 2-4 mm wide.

125-779A-20R-1

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1, 2, 7



COLOR: Dark black gray (5B 4/1).
LAYERING: crude layering defined by pyroxene-rich zone, 8 cm wide, in Piece 2.
DEFORMATION: None visible.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Orthopyroxene - Mode: 20-30%.
 Crystal size: 1-4 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Spinel ? - Mode: Trace.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentinized 90-99%; Piece 2 appears to represent a serpentinization halo.
 Total percent: 90-99%.
 Texture: Bastitic texture in the pyroxene-rich areas and mesh(?) texture in the pyroxene-poor areas.
 Vein material: veins (0.1-0.3 mm) of dark, black vitreous serpentine(?) occur in these pieces. Veins in Piece 1 occur as conjugate sets.

UNIT 2: SERPENTINIZED DUNITE(?)

Pieces 3 and 4

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: None.
DEFORMATION: Appears slightly sheared.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Orthopyroxene - Mode: 5-10%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine and possibly magnetite.
 Total percent: 95-99%.
 Texture: Possible mesh-like texture which appears slightly sheared.
 Vein material: Small 0.1-mm, pale milky-green serpentine(?) veins.

125-779A-20R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 5, 6 and 8

COLOR: Bluish gray (5B 5/1).

LAYERING: None.

DEFORMATION: Piece 5 is sheared and brecciated.

PRIMARY MINERALOGY:

Olivine - Mode: 60-70%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Orthopyroxene - Mode: 30-40%.

Crystal size: 1-2 mm.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 90%.

Texture: Bastitic in areas.

Vein material: Small, 0.1-mm, veins parallel to the long axis of the larger sample.

UNIT 2: SERPENTINIZED DUNITE(?)

Piece 9

COLOR: Dark black gray (5B 4/1).

LAYERING: None.

DEFORMATION: Some areas appear slightly sheared.

PRIMARY MINERALOGY:

Olivine - Mode: 80-85%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Orthopyroxene - Mode: 15-20%.

Crystal size: 1-2 mm?

Crystal shape: Slightly elongated.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

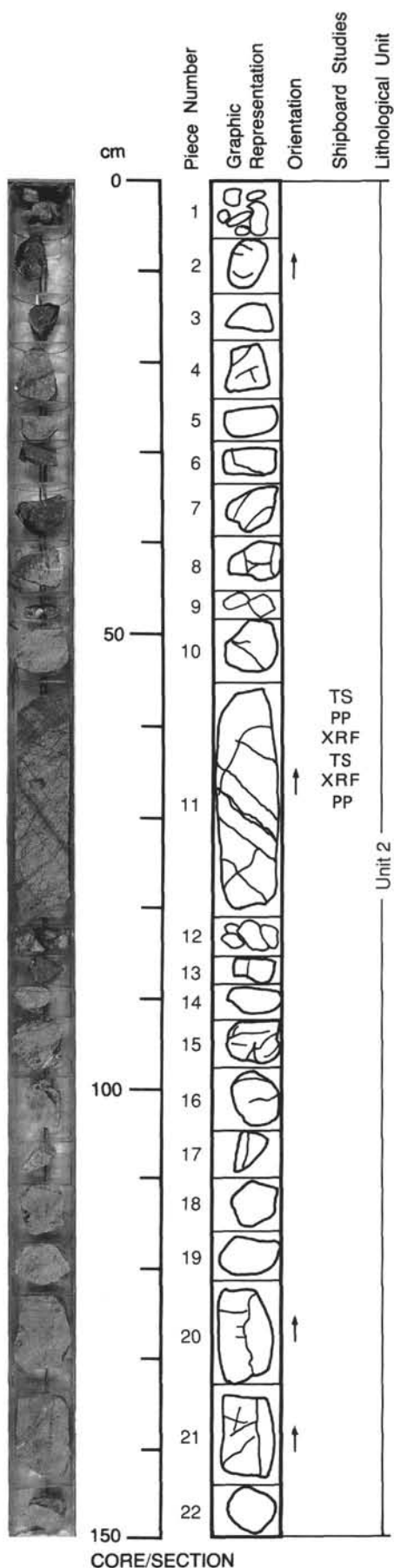
Total percent: 90%.

Texture: Serpentine alteration of olivine.

Vein material: 0.1-mm pale-green serpentine veining; edge and exterior of rock has chrysotile(?) coating, 0.2 mm thick.

125-779A-22R-1

UNIT 2: FRAGMENTS OF SERPENTINIZED HARZBURGITE, OLIVINE PYROXENITE(?)



Piece 1

COLOR: Dark greenish gray (5BG 4/1) to greenish gray (5BG 5/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage of orthopyroxene.
PRIMARY MINERALOGY:
 Fragments show variable degrees of serpentinization.
 Olivine - Mode: 70-95%.
 Crystal size: 3-8 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: 5-30%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: Trace-<2%.
 Crystal size: 0.1-0.3 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 40-80%.
 Texture: N/A.
 Vein material: Veins of greenish-white serpentine, 0.2 mm wide cutting pyroxenite(?).
ADDITIONAL COMMENTS: Piece 1 consists of 6 separate fragments.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 2-4

COLOR: Greenish gray to dark greenish gray (5B 5/1 to 5BG 4/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage on orthopyroxene, elongate spinels in trains.
PRIMARY MINERALOGY:
 Olivine - Mode: 70-95%.
 Crystal size: 5-8 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: 5-30%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: Trace-<2%.
 Crystal size: 0.1-3 mm.
 Crystal shape: Equant to elongate dumbbell.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Variable amounts of serpentine.
 Total percent: 50-80%.
 Texture: N/A.
 Vein material: At least two types: (1) dark amorphous black-green serpentine 1-2 mm in width; (2) linear green-white, 2 mm-wide, chrysotile-filled.

125-779A-22R-1 (continued)

UNIT 2: SERPENTINIZED HARZBURGITE

Piece 5

COLOR: Bluish gray (5B 5/1).
LAYERING: Orthopyroxene appears to form layers, possibly tectonic.
DEFORMATION: Wavy cleavage of orthopyroxene.
PRIMARY MINERALOGY:
 Orthopyroxene - Mode: 70-90%.
 Crystal size: 2-4 mm.
 Crystal shape: Equant-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Olivine - Mode: 10-30%.
 Crystal size: 3-5 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80-95%.
 Texture: N/A.
 Vein material: 1 mm wide, filled with dark serpentine.

UNIT 2: SERPENTINIZED TECTONIZED DUNITE GRADING TO HARZBURGITE

Pieces 6 and 7

COLOR: Black (2.5Y 2/0) to dark bluish gray (5B 4/1).
LAYERING: Not visible.
DEFORMATION: Olivine intensively kink-banded.
PRIMARY MINERALOGY:
 Olivine - Mode: 85-99%.
 Crystal size: 5-10 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: Trace-15%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: <1%.
 Crystal size: <2 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80-95%.
 Texture: N/A.
 Vein material: 0.1-0.3 mm wide, filled with both dark serpentine and white chrysotile.
ADDITIONAL COMMENTS: Serpentinization is extensive.

125-779A-22R-1 (continued)

UNIT 2: SERPENTINIZED TECTONIZED PYROXENITE GRADING TO DUNITE (8 AND ONE FRAGMENT OF PIECE 9)**Pieces 8-10****COLOR:** Bluish gray (5B 5/1) to black (2.5Y 2/0).**LAYERING:** Apparent in gradation from pyroxenite to dunite.**DEFORMATION:** Undulose cleavage on orthopyroxene.**PRIMARY MINERALOGY:**

Orthopyroxene - Mode: 50-5%.

Crystal size: 3-5 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Olivine - Mode: 95-50%.

Crystal size: 8-15 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: Trace-<1%.

Crystal size: <2 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 60-85%.

Texture: N/A.

Vein material: Top of Piece 8 has laminar banded vein sub-horizontal (5-8 mm wide), filled with dark-green and white amorphous serpentine. This vein is cut by a vertical vein wedging downwards from 5-0 mm over 3 cm distance, and filled with same as above.

ADDITIONAL COMMENTS: Note gradation from pyroxenite to dunite in one piece, variable serpentinization.**UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE****Piece 11****COLOR:** Mottled and variable from gray (N 6/) to dark gray (N 4/).**LAYERING:** Not visible.**DEFORMATION:** Strong orthopyroxene foliation parallel to orthopyroxene elongation and dipping at 45 degrees.**PRIMARY MINERALOGY:**

Olivine - Mode: 85-90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Orthopyroxene - Mode: 15-10%.

Crystal size: 8-15 mm.

Crystal shape: Elongate.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: <1%.

Crystal size: 0.5-1 mm.

Crystal shape: Elongate-dumbbell.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 70-80%.

Texture: Variable serpentinization in vicinity of veins.

Vein material: multiple: (1) dip @ 45 degrees, anastomosing, 0.1-10 mm wide, filled with amorphous dark serpentine; (2) conjugate: 1st set, dipping at 45 degrees, generally linear, 0.5-5 mm wide, filled with amorphous black to massive blue-gray material.

ADDITIONAL COMMENTS: Primary vein set dominates serpentinization zones and is parallel to orthopyroxene foliation.

125-779A-22R-1 (continued)

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 12, 14, and 16-22

COLOR: Bluish gray (5B 5/1)

LAYERING: Crude layering apparent, results from orthopyroxene alignment.

DEFORMATION: Orthopyroxene has wavy cleavage surfaces.

PRIMARY MINERALOGY:

Orthopyroxene - Mode: 50-90%.

Crystal size: 3-8 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Olivine - Mode: 50-10%.

Crystal size: 3-5 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: <1%.

Crystal size: <1 mm.

Crystal shape: Equant.

Crystal orientation: Arranged in stringers.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 60-85%.

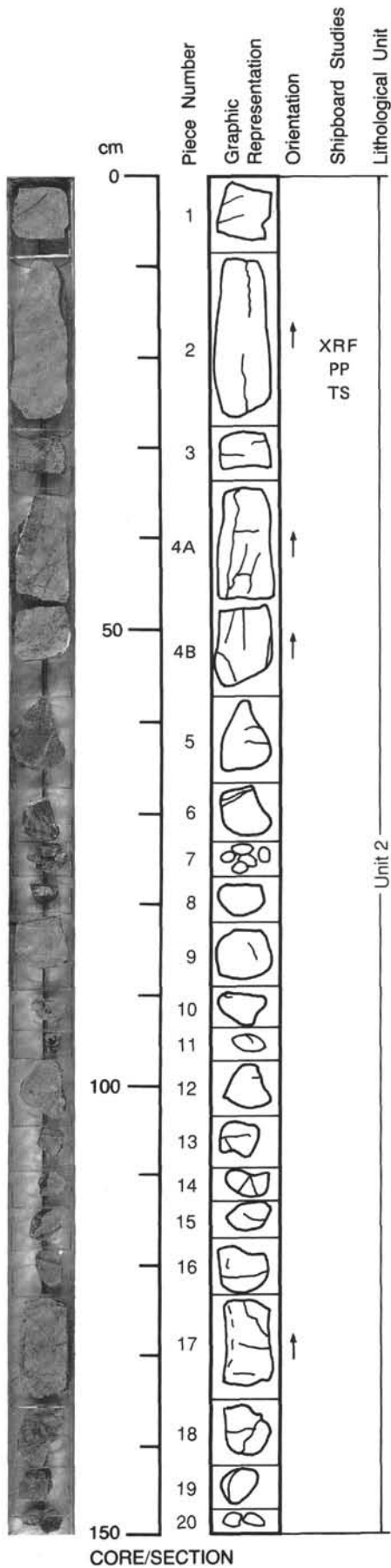
Texture: Variable serpentinization.

Vein material: <2-mm wide veins, some subvertical, others dipping at 45 degrees; filled with dark amorphous and light green-white serpentine.

125-779A-22R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1, 15 and 16



COLOR: Bluish gray (5B 5/1).

LAYERING: Not visible.

DEFORMATION: Wavy cleavage and bent exsolution lamellae in orthopyroxene.

PRIMARY MINERALOGY:

Orthopyroxene - Mode: 50-70%.

Crystal size: 3-8 mm.

Crystal shape: Equant-ragged.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Olivine - Mode: 30-50%.

Crystal size: 3-8 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: <1%.

Crystal size: 0.1-1 mm.

Crystal shape: Euhedral.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 70-80%.

Texture: Variable serpentinization.

Vein material: <1 mm wide, filled with greenish-white serpentine.

125-779A-22R-2 (continued)

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 2-4,9,10,12-14,17,18,20

COLOR: Gray to dark gray (N 6/ to N 5/).

LAYERING: Strong layering defined by olivine and orthopyroxene.

DEFORMATION: Wavy cleavage on orthopyroxene.

PRIMARY MINERALOGY:

Olivine - Mode: 50-80%.
Crystal size: 8-20 mm.
Crystal shape: Elongate-ragged.
Crystal orientation: Not visible.
Percent replacement: Not visible.

Orthopyroxene - Mode: 20-50%.
Crystal size: 5-10 mm.
Crystal shape: Elongate-equant.
Crystal orientation: Not visible.
Percent replacement: Not visible.

Spinel - Mode: Trace.
Crystal size: 0.5-1.5 mm.
Crystal shape: Equant-elongate-dumbbell.
Crystal orientation: Not visible.
Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 70-80%.
Texture: N/A.
Vein material: 2 sets: (1) sub-horizontal and vertical, 0.5-3 mm, amorphous gray-black serpentine fill; (2) horizontal and 65 degrees dip, 1-5 mm, filled with laminar milky green, amorphous serpentine and chrysotile.

ADDITIONAL COMMENTS: Piece 2 has layering of olivine and orthopyroxene. It may be primarily magmatic or tectonic transposition, dips at 45 degrees.

UNIT 2: TECTONIZED SERPENTINIZED DUNITE

Pieces 5-8, 11 and 19

COLOR: Dark bluish gray (5B 4/1).

LAYERING: Olivine appears to be strongly stretched in some pieces defining an apparent layering.

DEFORMATION: Elongated olivines.

PRIMARY MINERALOGY:

Olivine - Mode: 95-99%.
Crystal size: 5-12 mm.
Crystal shape: Elongate-ragged.
Crystal orientation: Not visible.
Percent replacement: Not visible.

Orthopyroxene - Mode: 5-Trace.
Crystal size: 5-8 mm.
Crystal shape: Equant.
Crystal orientation: Not visible.
Percent replacement: Not visible.

Spinel - Mode: <1%.
Crystal size: <2 mm.
Crystal shape: Equant.
Crystal orientation: Not visible.
Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 70-85%.
Texture: Variable serpentinization.
Vein material: <5 mm wide, filled with milky white and pale green serpentine.

125-779A-22R-3

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

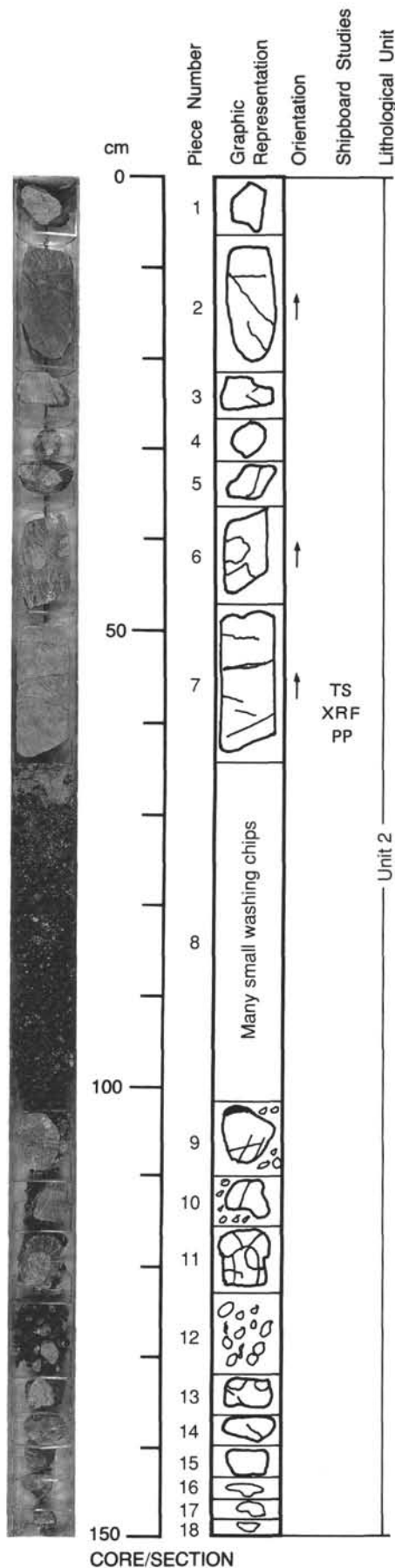
Pieces 1, 3-8, 10, 11, 15, 16-18

COLOR: Bluish gray (5B 5/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: 1-3 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Orthopyroxene - Mode: 10-20%.
 Crystal size: 1-10 mm.
 Crystal shape: Elongate-equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Spinel - Mode: Trace.
 Crystal size: 0.1-2 mm.
 Crystal shape: Equant-elongate-dumbbell.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 65-85%.
 Texture: Variable serpentinization.
 Vein material: <3 mm wide, filled with milky-white, pale green and dark green serpentine.

UNIT 2: TECTONIZED SERPENTINIZED DUNITE

Pieces 2, 9, 12-14

COLOR: Dark blue-gray (5B 4/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage is observed in some orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-98%.
 Crystal size: 1-4 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Orthopyroxene - Mode: 2-10%.
 Crystal size: 1-10 mm.
 Crystal shape: Elongate-equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
 Spinel - Mode: 1-2%.
 Crystal size: 0.1-3 mm.
 Crystal shape: Equant-elongate-dumbbell.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 65-85%.
 Texture: Variable serpentinized.
 Vein material: <2 mm wide, filled with milky white and dark green serpentine.



CORE/SECTION

125-779A-23R-1

UNIT 2: TECTONIZED SERPENTINIZED DUNITE

Pieces 2 and 3

COLOR: Dark blue gray (5BG 5/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage in some pyroxenes.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: 1-3 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: 5-10%.
 Crystal size: 2-7 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel? - Mode: Trace.
 Crystal size: 0.1-0.3 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 90-95%.
 Texture: Not visible.
 Vein material: <2 mm wide filled with milky white and green serpentine.

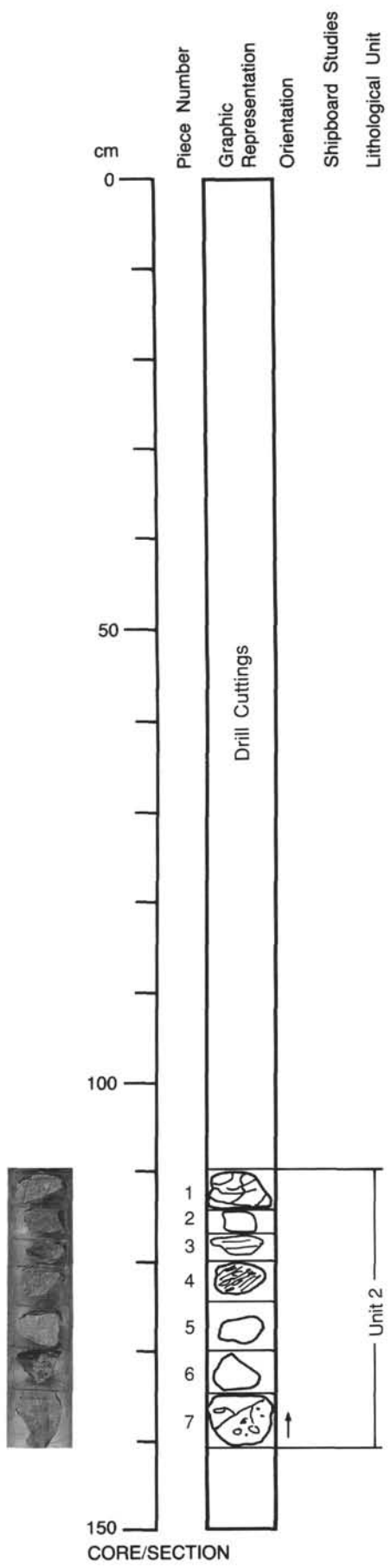
UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1, 4-7

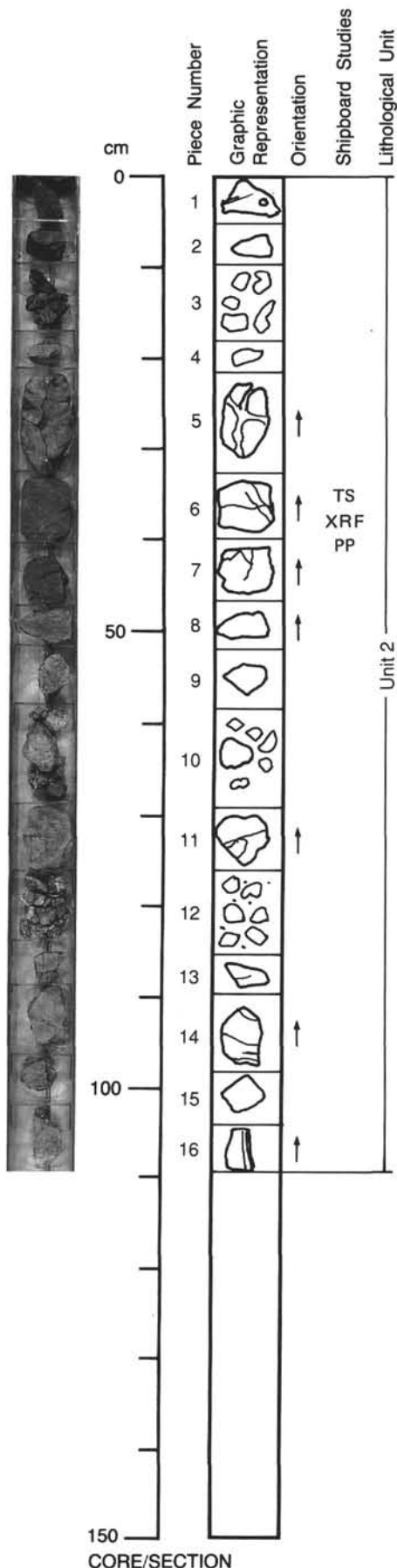
COLOR: Greenish gray (5BG 5/1).
LAYERING: Not visible.
DEFORMATION: Some pyroxenes appear to have wavy cleavages.
PRIMARY MINERALOGY:
 Olivine - Mode: 80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Orthopyroxene - Mode: 20%.
 Crystal size: 1-3 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: Trace.
 Crystal size: <1 mm?
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 90%.
 Texture: N/A.
 Vein material: <2 mm wide, filled with milky white, pale green and dark green serpentine.
ADDITIONAL COMMENTS: Piece 4 shows anastomosing and dark green serpentine veins.



125-779A-24R-1



UNIT 2: SERPENTINIZED DUNITE

Pieces 1, 2, 3, 6, 7

COLOR: Dark bluish gray (5B 4/1).
LAYERING: None.
DEFORMATION: Appears slightly sheared (tectonized?).
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

 Orthopyroxene - Mode: 10-15%.
 Crystal size: 1-3 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

 Spinel? - Mode: Trace.
 Crystal size: 0.5-1.0 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: Serpentinized mesh texture is visible.
 Vein material: <2-mm wide black and pale milky green serpentine veining.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 4, 5, 8, 9, 11, 13-16

COLOR: Bluish gray to dark bluish gray (5B 6/1 to 5B 4/1).
LAYERING: None.
DEFORMATION: Some pyroxenes show wavy extinction.
PRIMARY MINERALOGY:
 Olivine - Mode: 80%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 90%.

 Orthopyroxene - Mode: 15%.
 Crystal size: 1-2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: 50%.

 Spinel? - Mode: Trace-5%.
 Crystal size: <0.5 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: N/A.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Total percent: 70%.
 Texture: Serpentine, bastitic in areas.
 Vein material: Pale green and milky white serpentine veining, <2 mm wide; black serpentine veining <2 mm wide.
ADDITIONAL COMMENTS: Pieces 11 and 13 have serpentinization halos 2-3 cm wide.

125-779A-24R-1(continued)

**UNIT 2: FRAGMENTS OF SERPENTINIZED HARZBURGITES
AND DUNITES****Pieces 10 and 12**

COLOR: Dark bluish gray-dark greenish gray (5B 4/1- 5G 4/1).

LAYERING: None.

DEFORMATION: None visible.

PRIMARY MINERALOGY:

Olivine - Mode: 75-95%.

Crystal size: 2-6 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: 80-90%.

Orthopyroxene - Mode: 5-25%.

Crystal size: 2-5 mm.

Crystal shape: Elongate.

Crystal orientation: Not visible.

Percent replacement: 70-80%.

Spinel - Mode: Trace.

Crystal size: <0.5 mm.

Crystal shape: Ragged.

Crystal orientation: Not visible.

Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 80-90%.

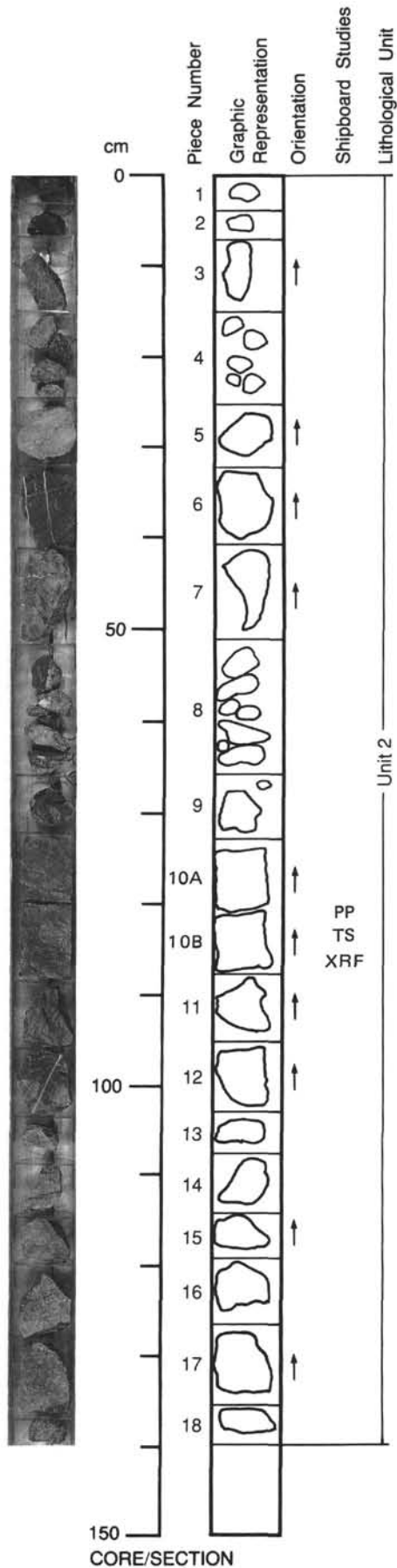
Texture: Mesh and bastite.

Vein material: Two types of veins: 1) black serpentine 2) pale white-green serpentine
<2 mm wide.

125-779A-25R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1-2



COLOR: Dark gray (N4).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

 Orthopyroxene - Mode: 10%.
 Crystal size: 2-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

 Spinel - Mode: <1%.
 Crystal size: 0.1-1 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 99%.
 Texture: Bastite and mesh.
 Vein material: Chrysotile veins (<4 mm) and fine dark serpentine veins.

125-779A-25R-1 (continued)

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 3 and 6

COLOR: Dark greenish gray (5B 4/1).

LAYERING: Not visible.

DEFORMATION: Elongated ragged spinel; distorted orthopyroxene, some elongated.

PRIMARY MINERALOGY:

Olivine - Mode: 90%.
Crystal size: Not visible.
Crystal shape: Not visible.
Crystal orientation: Not visible.
Percent replacement: 90%.

Orthopyroxene - Mode: 10%.
Crystal size: 5-12 mm.
Crystal shape: Equant to elongate.
Crystal orientation: Random.
Percent replacement: 90%.

Cr-spinel - Mode: Trace.
Crystal size: <1 mm.
Crystal shape: Equant to ragged.
Crystal orientation: Random.
Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 90-99%.
Texture: Micro-mesh texture after olivine with bastite after orthopyroxene.
Vein material: One subhorizontal white vein (<0.5 mm) cut by vertical white vein (1 mm thick).

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 4 and 5

COLOR: Bluish gray (5B 5/1).

LAYERING: Not visible.

DEFORMATION: Shear fabric dipping at 60 degrees.

PRIMARY MINERALOGY:

Orthopyroxene - Mode: 50%.
Crystal size: 3-4 mm.
Crystal shape: Elongated.
Crystal orientation: 60-70 degrees.
Percent replacement: 20%.

Olivine - Mode: 5-10%.
Crystal size: 8-10 mm.
Crystal shape: Elongate.
Crystal orientation: Parallel to orthopyroxene.
Percent replacement: 20%.

Cr-spinel - Mode: Trace.
Crystal size: <1 mm.
Crystal shape: Rounded-equant.
Crystal orientation: Random.
Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.
Total percent: 20%.
Texture: Serpentinization along orthopyroxene cleavage planes.
Vein material: None.

ADDITIONAL COMMENTS: Comparatively orthopyroxene-rich pieces; fabric possibly relict cumulate origin now accentuated by deformation.

125-779A-25R-1 (continued)

UNIT 2: SERPENTINIZED TECTONIZED DUNITE**Pieces 7 to 15****COLOR:** Dark gray (N4/).**LAYERING:** Not visible.**DEFORMATION:** Some unfilled fractures.**PRIMARY MINERALOGY:**

Olivine - Mode: >95%.

Crystal size: 8-15 mm.

Crystal shape: Elongated.

Crystal orientation: Not visible.

Percent replacement: 60%.

Orthopyroxene - Mode: 5%.

Crystal size: 3-5 mm.

Crystal shape: Elongated.

Crystal orientation: Not visible.

Percent replacement: 100%.

Spinel - Mode: Trace.

Crystal size: <1 mm.

Crystal shape: Elongated.

Crystal orientation: Not visible.

Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 10-70%.

Texture: Variably deformed mesh texture after olivine.

Vein material: Black veins surrounded by alteration zones (<1 mm wide), crosscut by white laminated veins at 60 degrees dip (2 mm wide).

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE**Pieces 16 to 18****COLOR:** Dark gray (N4/).**LAYERING:** Orthopyroxene-rich layer dipping at 50 degrees.**DEFORMATION:** Wavy cleavage on orthopyroxene.**PRIMARY MINERALOGY:**

Olivine - Mode: 90%.

Crystal size: 8-12 mm.

Crystal shape: Rounded.

Crystal orientation: Not visible.

Percent replacement: 60%.

Orthopyroxene - Mode: 10%.

Crystal size: 5-1.5 mm.

Crystal shape: Rounded.

Crystal orientation: Not visible.

Percent replacement: 30%.

Spinel - Mode: Trace.

Crystal size: <2 mm.

Crystal shape: Equant.

Crystal orientation: Not visible.

Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 30-60%.

Texture: Mesh texture after olivine and bastite after orthopyroxene.

Vein material: Set of black horizontal and vertical veins (<2 mm wide) cut by white veins.

ADDITIONAL COMMENTS: Bulk of pieces broken by orthogonal set of serpentine-filled fractures.

125-779A-25R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Piece 1

COLOR: Dark bluish gray (5B 4/1).
LAYERING: Not visible.
DEFORMATION: Elongated ragged spinel; some elongated and deformed orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 85%.
 Crystal size: <10 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 80%.

 Orthopyroxene - Mode: 15%.
 Crystal size: <10 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: 50%.

 Spinel - Mode: 1%.
 Crystal size: <2 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70%.
 Texture: Mesh and bastite.
 Vein material: Dark green vein (8 mm wide) cuts across the core.

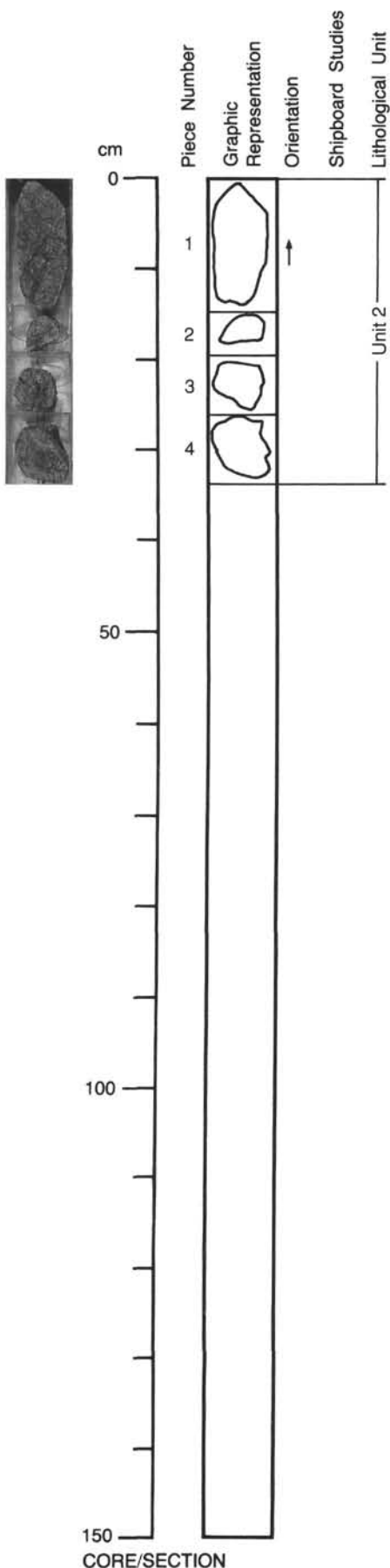
UNIT 2: SERPENTINIZED DUNITE

Pieces 2, 3 and 4

COLOR: Grayish green (5G 4/2).
LAYERING: Not visible.
DEFORMATION: Brittle fracture and elongation of Cr-spinel.
PRIMARY MINERALOGY:
 Olivine - Mode: 95%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

 Orthopyroxene - Mode: <5%.
 Crystal size: <5 mm.
 Crystal shape: Elongated.
 Crystal orientation: Random.
 Percent replacement: Variable.

 Cr-spinel - Mode: <1%.
 Crystal size: <2 mm.
 Crystal shape: Ragged.
 Crystal orientation: Disseminated.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 50-70%.
 Texture: Micro-mesh texture after olivine; bastite after orthopyroxene.
 Vein material: 1st generation of anastomosing veins, 2-15 mm wide, of black serpentine with alteration halos 15 mm wide, dipping at 60-65 degrees.



125-779A-26R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1, 2, 3, 5, 6, 8, 10

COLOR: Bluish gray (5B 5/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage surfaces on orthopyroxene.
PRIMARY MINERALOGY:
 Orthopyroxene - Mode: 5-10%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Olivine - Mode: 90-95%.
 Crystal size: 5-10 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Spinel - Mode: Trace.
 Crystal size: <0.1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 40-50%.
 Texture: Mesh after olivine and bastite after orthopyroxene.
 Vein material: <5 mm wide, anastomosing, filled with dark gray- black amorphous serpentine.

ADDITIONAL COMMENTS: In Piece 1, there appears to be an apparent downhole gradation from harzburgite to dunite.

UNIT 2: SERPENTINIZED TECTONIZED DUNITE

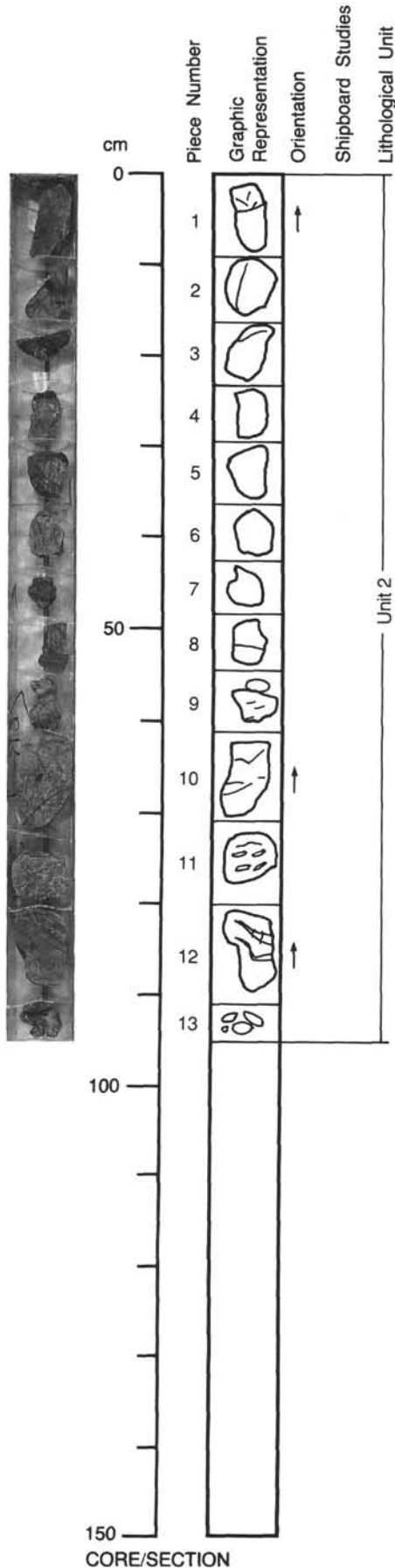
Pieces 4, 7, 9, 11, 12, 13

COLOR: Mottled, variable from dark greenish to bluish gray (5BG 4/1 to 5B 6/1).
LAYERING: Not visible.
DEFORMATION: Apparent cataclastic appearance in some pieces resulting from extensive alteration of olivine; dipping at 30 degrees.
PRIMARY MINERALOGY:
 Olivine - Mode: 95-99%.
 Crystal size: 3-12 mm.
 Crystal shape: Ragged and elongate to equant.
 Crystal orientation: N/A.
 Percent replacement: Variable.

Spinel - Mode: <1%.
 Crystal size: <2 mm.
 Crystal shape: Equant to elongate.
 Crystal orientation: Arranged in ragged trains.
 Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 90%.
 Texture: Mesh after olivine.
 Vein material: Multiple: (1) <5 mm wide, irregular, filled with dark green-black amorphous serpentine; (2) "Frankenstein texture", chrysotile filled (<1 mm wide).

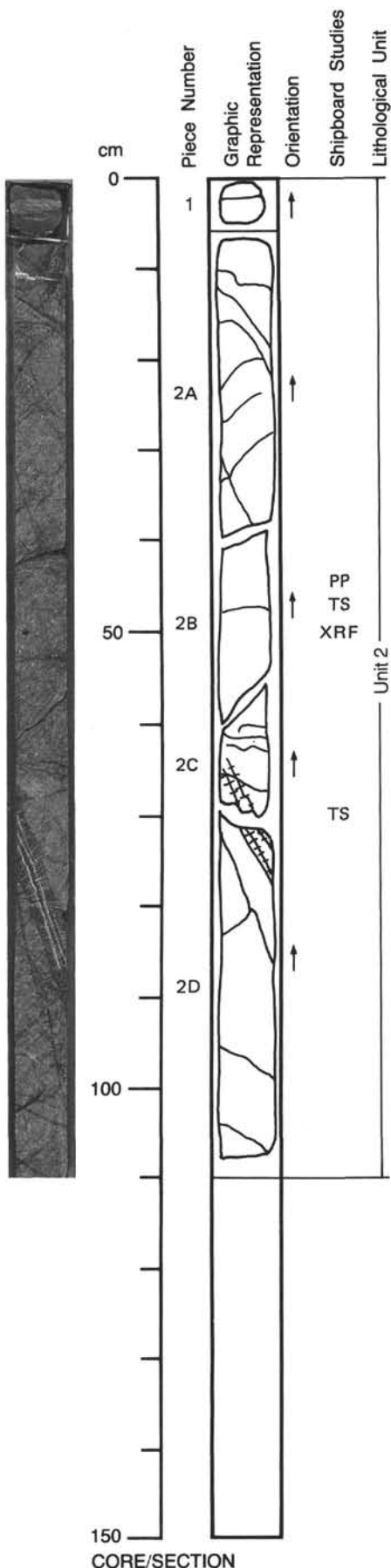


CORE/SECTION

125-779A-26R-2

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 and 2



COLOR: Bluish gray to dark bluish gray (5B 5/1 to 5B 4/1) with grayish green (5G 4/2) veins.

LAYERING: Not visible.

DEFORMATION: Orthopyroxene has wavy cleavage; some cataclasis with sense of horizontal shear in Piece 1.

PRIMARY MINERALOGY:

Olivine - Mode: 80-90%.
 Crystal size: 5-8 mm.
 Crystal shape: Equant-ragged.
 Crystal orientation: Not visible.
 Percent replacement: 25-30%.

Orthopyroxene - Mode: 10-20%.
 Crystal size: 1-5 mm -5mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.

Spinel - Mode: <1.5%.
 Crystal size: <1 mm.
 Crystal shape: Subhedral.
 Crystal orientation: Disseminated.
 Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 30%.
 Texture: Protomesh after olivine and bastite after orthopyroxene.

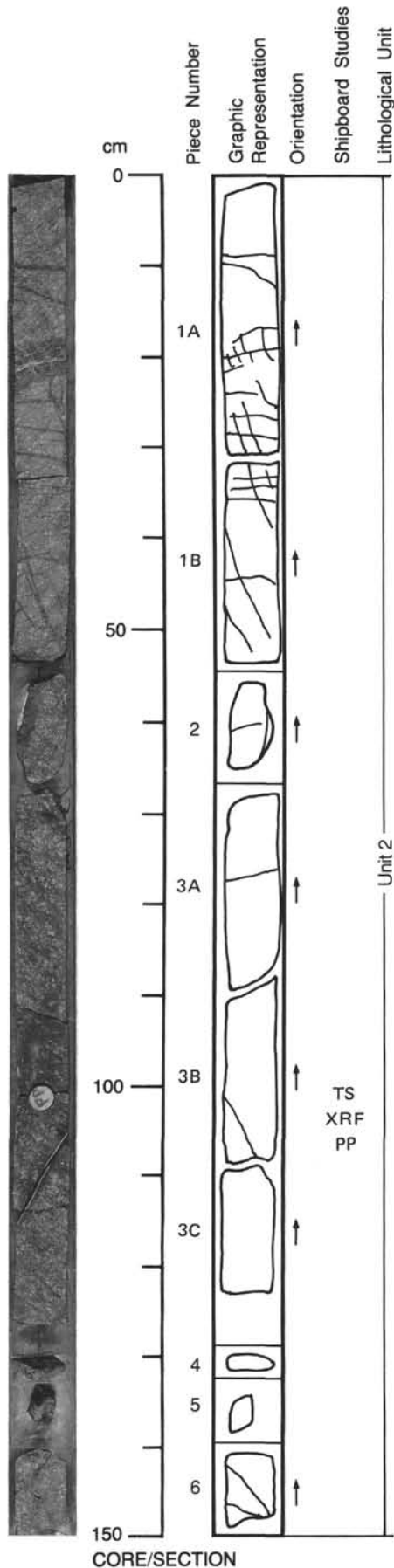
Vein material: Polyphase veins dipping at 75 degrees, filled with several generations of dark green black serpentine, 30 mm wide; later generation of pale green amorphous serpentine 2-3 mm wide, followed by chrysotile veins (<1-2 mm wide); also a conjugate set of dark amorphous serpentine, dipping at 30 degrees.

ADDITIONAL COMMENTS: This is one of the longest complete sections of core so far recovered from 779A; intense serpentinization more pronounced closest to the veins dipping at 70 degrees.

125-779A-26R-3

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 to 6



COLOR: Bluish gray to dark bluish gray (5B 5/1 to 5B 4/1) with dark gray green (5G 4/2) veins.

LAYERING: None.

DEFORMATION: Wavy cleavage on orthopyroxene; spinels show weak alignment in trains.

PRIMARY MINERALOGY:

- Olivine - Mode: 80-90%.
Crystal size: 5-12 mm.
Crystal shape: Equant-ragged.
Crystal orientation: Not visible.
Percent replacement: 20%.
- Orthopyroxene - Mode: 10-20%.
Crystal size: 3-5 mm.
Crystal shape: Equant-elongate.
Crystal orientation: Not visible.
Percent replacement: 10%.
- Spinel - Mode: Trace.
Crystal size: <1 mm.
Crystal shape: Equant-dumbbell.
Crystal orientation: Not visible.
Percent replacement: 0%.

SECONDARY MINERALOGY:

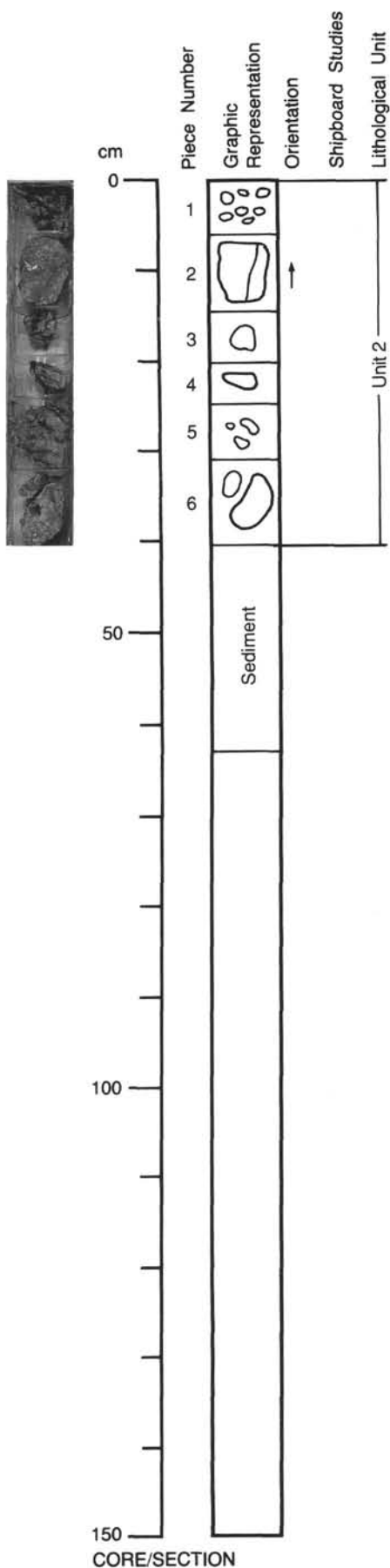
Serpentine.
Total percent: 20%.
Texture: Protomesh after olivine and bastite after orthopyroxene.
Vein material: (1) major set, <4 mm wide, dipping @ 70 degrees, filled with dark green/black serpentine, subsequently same fracture cannibalized by chrysotile veining and cross-stitching; (2) another generation, possibly first in sequence of conjugate, <5 mm wide, filled with amorphous dark serpentine.

ADDITIONAL COMMENTS: Serpentinization most intense around the veins dipping at 70 degrees.

125-779A-27R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 2, 3, 4 and 6



COLOR: Dark bluish gray (5B 4/1).
LAYERING: Not visible.
DEFORMATION: Wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 80-90%.
 Crystal size: 3-8 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

 Orthopyroxene - Mode: 10-20%.
 Crystal size: 4-6 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

 Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70%.
 Texture: Mesh after olivine and bastite after orthopyroxene.
 Vein material: 2 mm wide, dark blue-gray, serpentine-filled.

125-779A-28R-1

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Pieces 1 and 3

COLOR: Bluish gray to dark bluish gray (5B 5/1 TO 5B 4/1).

LAYERING: Not visible.

DEFORMATION: Wavy cleavage on orthopyroxene.

PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.
 Crystal size: 5-8 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: 80%.

Orthopyroxene - Mode: 5-10%.
 Crystal size: 2-4 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 50%.

Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 70%.
 Texture: Mesh after olivine and bastite after orthopyroxene.
 Vein material: N/A.

UNIT 2: SERPENTINIZED TECTONIZED DUNITE

Pieces 5 to 11

COLOR: Black (5Y 2.5/1).

LAYERING: Not visible.

DEFORMATION: Not visible.

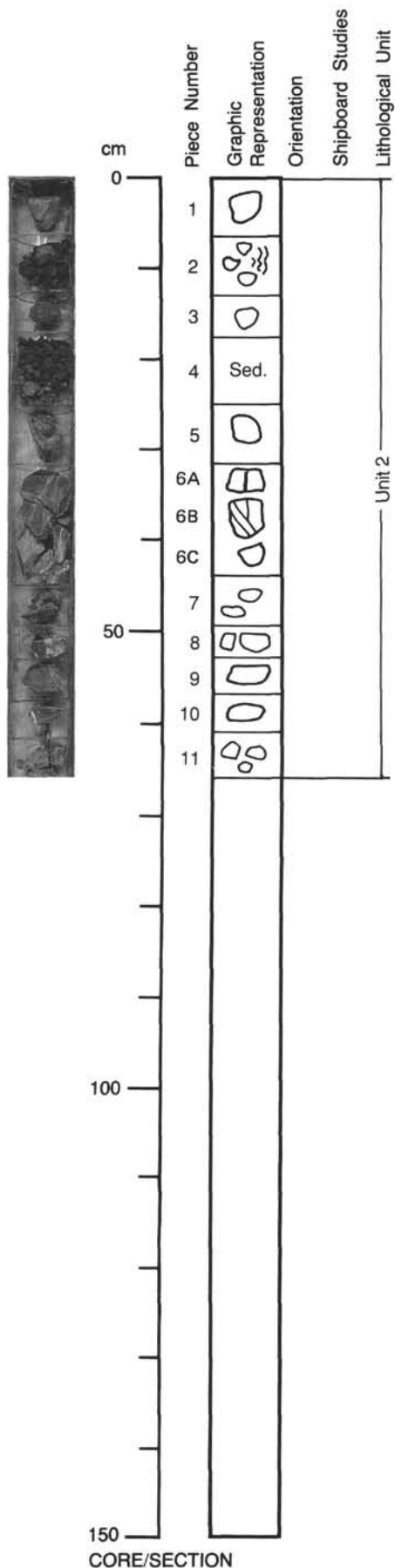
PRIMARY MINERALOGY:

Olivine - Mode: 99%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.

Spinel - Mode: 1%.
 Crystal size: <2 mm.
 Crystal shape: Equant to elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

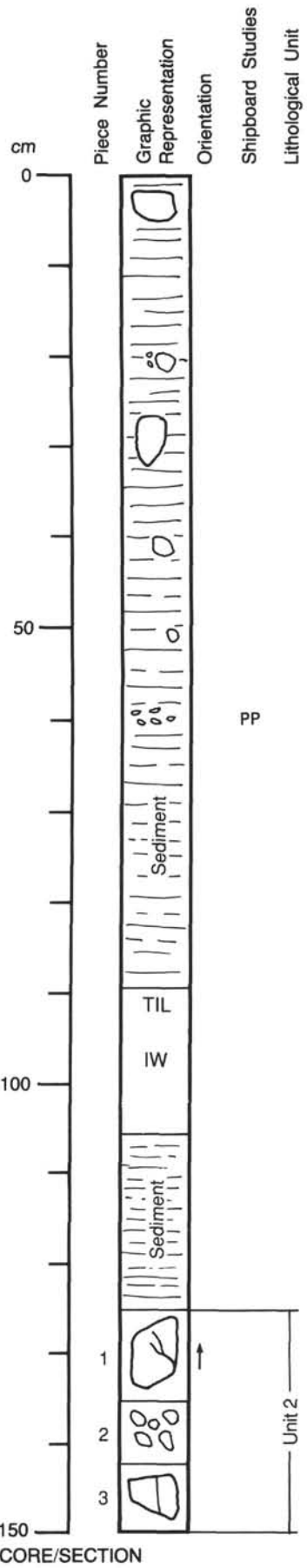
Serpentine.
 Total percent: 99%.
 Texture: Mesh.
 Vein material: <3 mm, overall linear, but irregular on a small scale, with dark green, serpentine-filled (plus some chrysotile) veining and cross stitching.



125-779A-28R-2

UNIT 2: SERPENTINIZED TECTONIZED DUNITE

Pieces 1 to 3



COLOR: Very dark greenish gray (10Y 3/1).

LAYERING: Not visible.

DEFORMATION: Spinel appear to be elongate and arranged in trains.

PRIMARY MINERALOGY:

- Olivine - Mode: 99%.
- Crystal size: Not visible.
- Crystal shape: Not visible.
- Crystal orientation: Not visible.
- Percent replacement: 100%.

Spinel - Mode: 1%.

- Crystal size: <3 mm.
- Crystal shape: Equant to elongate.
- Crystal orientation: Not visible.
- Percent replacement: 0%.

SECONDARY MINERALOGY:

- Serpentine.
- Total percent: 100%.
- Texture: Very fine-grained.
- Vein material: <3-mm wide, green-white, serpentine-filled veins.

125-779A-28R-3

UNIT 2: SERPENTINIZED TECTONIZED DUNITE

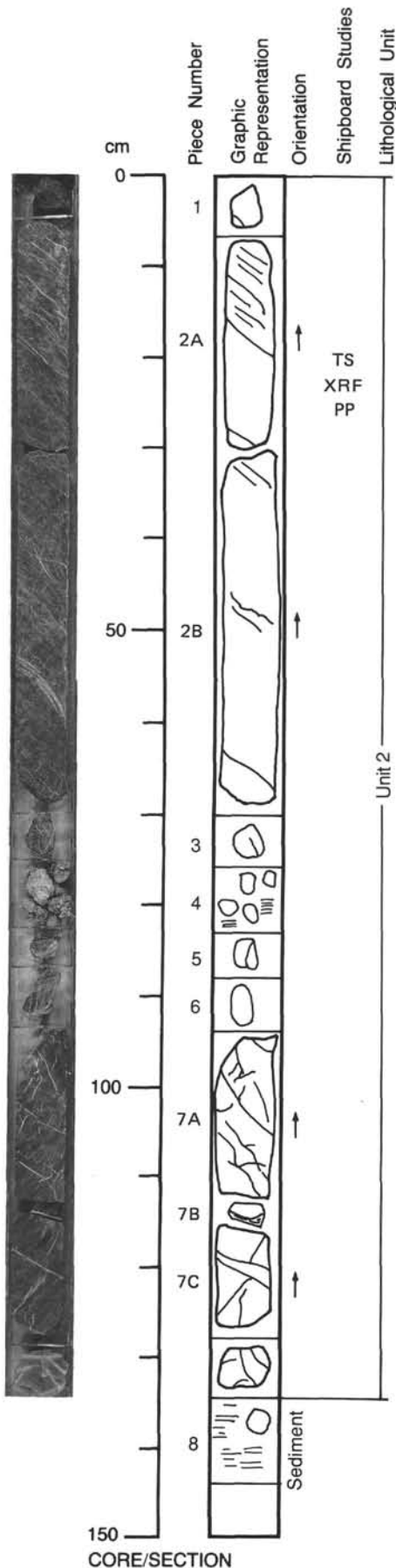
Pieces 1, 3 to 8

COLOR: Very dark greenish gray (10Y 3/1).
LAYERING: Not visible.
DEFORMATION: Possible alignment of elongate spinels.
PRIMARY MINERALOGY:
 Olivine - Mode: 99%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
 Spinel - Mode: 1%.
 Crystal size: <5 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: Mesh after olivine.
 Vein material: numerous <3-mm linear and en echelon milky-green and white serpentine-filled veins; hint of conjugate set dipping at 70 degrees.

UNIT 2: SERPENTINIZED TECTONIZED HARZBURGITE

Piece 2

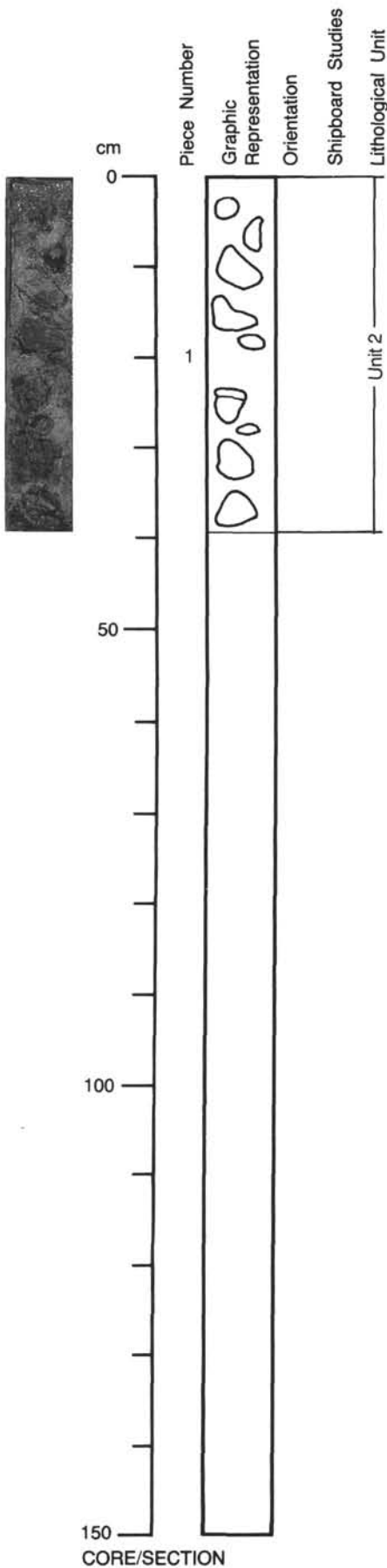
COLOR: Dark gray to dark bluish gray (N 4/ to 5B 4/1).
LAYERING: Apparently elongated olivine dipping at 70 degrees.
DEFORMATION: Wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 90-95%.
 Crystal size: <15 mm.
 Crystal shape: Ragged to elongate.
 Crystal orientation: Not visible.
 Percent replacement: 100%.
 Orthopyroxene - Mode: 5-10%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 10%.
 Spinel - Mode: Trace.
 Crystal size: <5 mm.
 Crystal shape: Elongate-equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80%.
 Texture: Mesh after olivine and bastite after orthopyroxene.
 Vein material: <2 mm wide, dipping @ 70 degrees, filled with white-green amorphous serpentine.



125-779A-29R-1

UNIT 2: TECTONIZED SERPENTINIZED DUNITE CLASTS

Piece 1



COLOR: Greenish black (10GY3/2).

LAYERING: Not visible.

DEFORMATION: Fractured to pulverized.

PRIMARY MINERALOGY:

Olivine - Mode: 95-99%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: None.

Percent replacement: 95-99.

Spinel - Mode: <1%.

Crystal size: <1 mm.

Crystal shape: Not visible.

Crystal orientation: None.

Percent replacement: Variable.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 95-99%.

Texture: Very fine-grained.

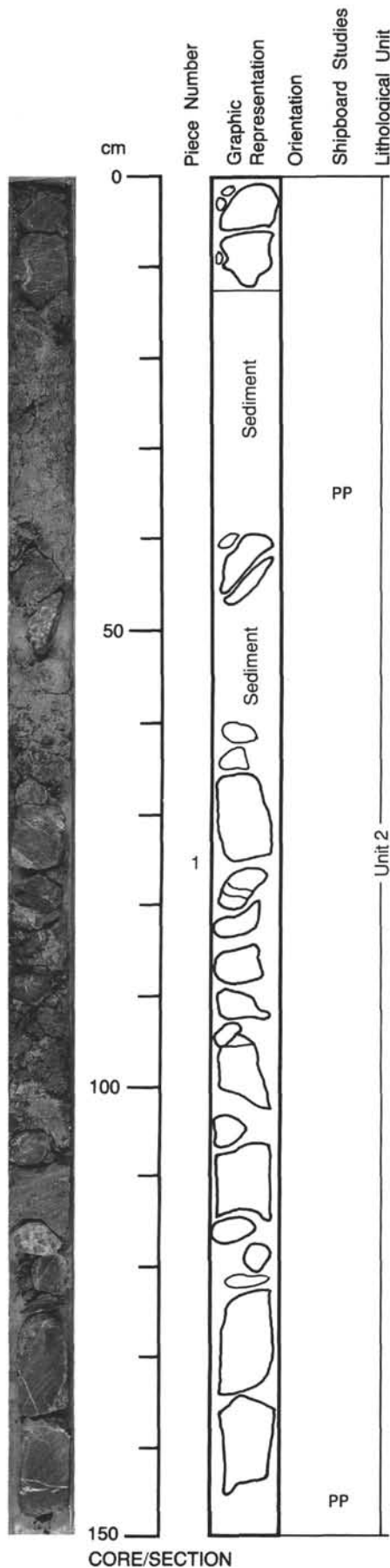
Vein material: White veins (<0.5 mm wide).

ADDITIONAL COMMENTS: Variably fractured clasts in serpentine matrix.

125-779A-29R-2

UNIT 2: SERPENTINIZED DUNITE TO HARZBURGITE

Piece 1 (fragments in serp. matrix)

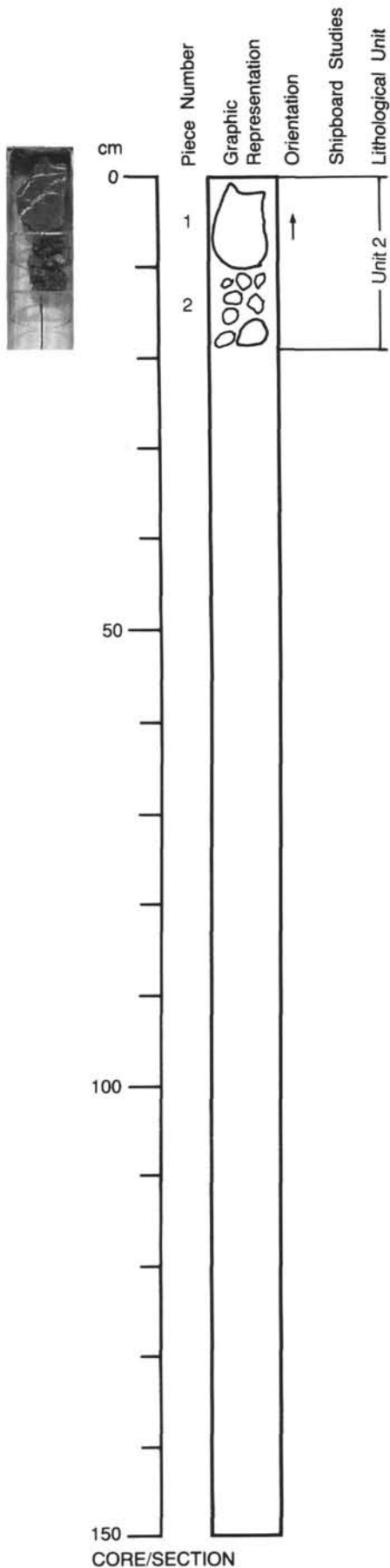


COLOR: Black (10Y3/2).
LAYERING: Not visible.
DEFORMATION: Locally strongly fractured after last vein generation.
PRIMARY MINERALOGY:
 Olivine - Mode: 85-95%.
 Crystal size: 3-5 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: 99%.
 Orthopyroxene - Mode: 5-15%.
 Crystal size: 2-8 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 80%.
 Cr-spinel - Mode: <1%.
 Crystal size: <1 mm.
 Crystal shape: Round to subequant.
 Crystal orientation: Stringers.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80-99%.
 Texture: Mesh serpentine after olivine, some bastite after orthopyroxene.
 Vein material: White chrysotile veins at 45-70 degrees dip; also commonly with vertical orientation (along core length).
ADDITIONAL COMMENTS: Fragments are mainly olivine, but there are locally orthopyroxene-rich patches.

125-779A-29R-3

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 1 and 2



COLOR: Dark greenish gray (5B4/1).
LAYERING: Not visible.
DEFORMATION: Vein-filled fractures.
PRIMARY MINERALOGY:
 Olivine - Mode: 85-90%.
 Crystal size: 2-3 mm.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: 95%.

Orthopyroxene - Mode: 15-10%.
 Crystal size: 5 mm.
 Crystal shape: Anhedral.
 Crystal orientation: Not visible.
 Percent replacement: 80%.

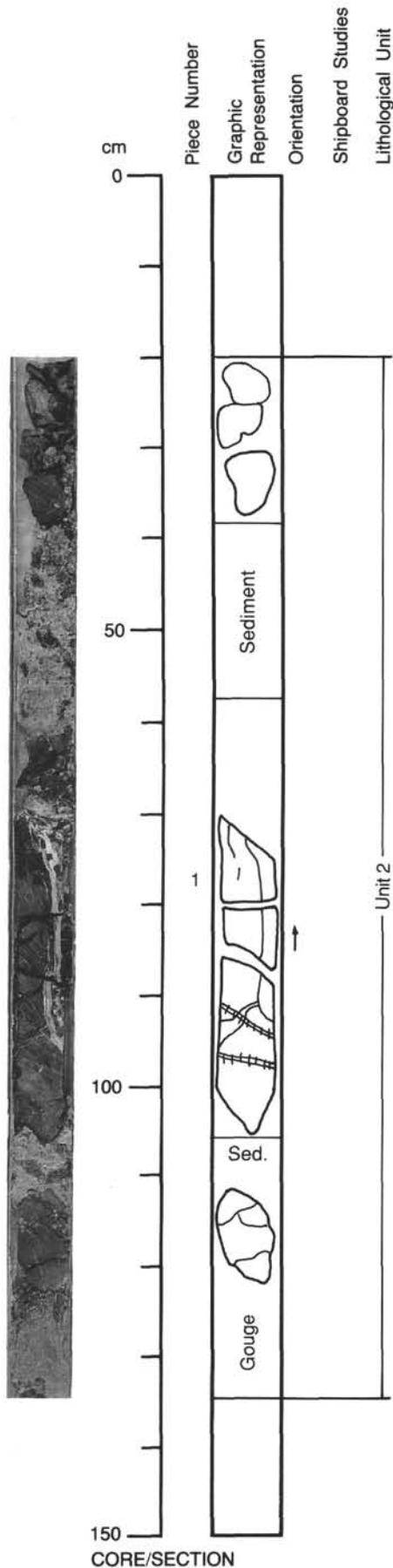
Spinel - Mode: 1%.
 Crystal size: 1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 99%.
 Texture: Mesh after olivine, bastite after orthopyroxene.
 Vein material: Steeply dipping white veins of chrysotile (1-8 mm).

125-779A-30R-1

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE AND DUNITE

Pieces 1 (multiple fragments)

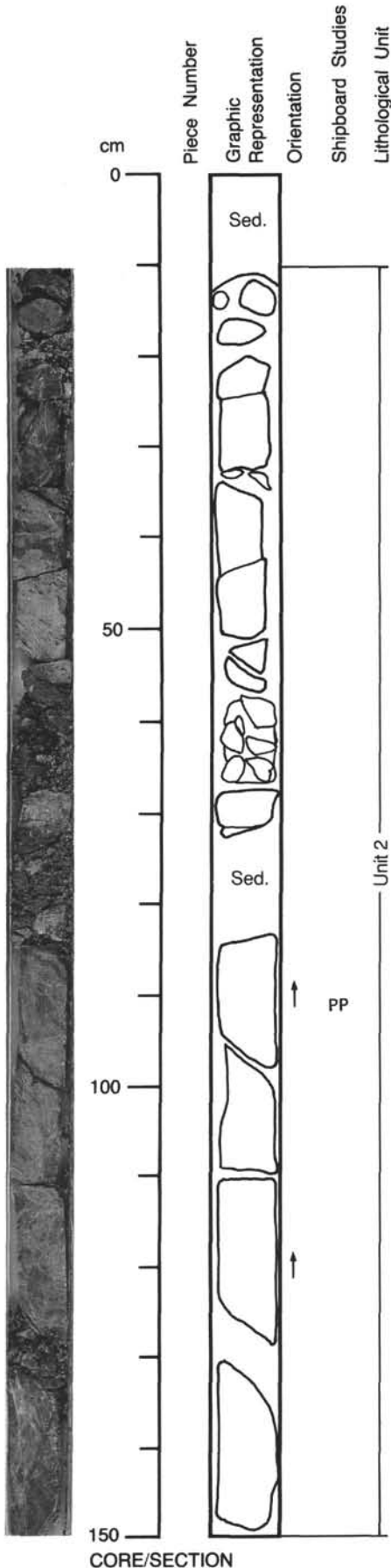


COLOR: Dark greenish gray (5BG 4/1).
LAYERING: Apparent between pyroxene-rich (harzburgitic) and dunitic layers.
DEFORMATION: Wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:
 Olivine - Mode: 85-99%.
 Crystal size: 5-10 mm.
 Crystal shape: Ragged.
 Crystal orientation: Not visible.
 Percent replacement: 60-90%.
 Orthopyroxene - Mode: 1-15%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: 30-50%.
 Spinel - Mode: <1%.
 Crystal size: <2 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: 0%.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 80%.
 Texture: Mesh after olivine, bastite after orthopyroxene.
 Vein material: Prominent subvertical but wavy <10 mm, filled with light-dark green amorphous serpentine, with a fringe (<1 mm) of chrysotile; another set dips at 30 degrees, filled with dark gray-black serpentine, cross-stitched by chrysotile; other <2-mm conjugate veins of chrysotile at 30 degrees dip.
ADDITIONAL COMMENTS: Major serpentine vein in this rock is one of the largest seen in the core.

125-779A-30R-2

UNIT 2: STRONGLY TECTONIZED SERPENTINIZED HARZBURGITE

Pieces multiple clasts in clay



COLOR: Dark green black with light green fractured zones.

LAYERING: Not visible.

DEFORMATION: Strongly fractured.

PRIMARY MINERALOGY:

Olivine - Mode: 90%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: 90-99.

Orthopyroxene - Mode: 10%.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Not visible.

Percent replacement: 90-99.

Spinel - Mode: Trace.

Crystal size: Not visible.

Crystal shape: Not visible.

Crystal orientation: Disseminated.

Percent replacement: None.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 99%.

Texture: Cataclasis.

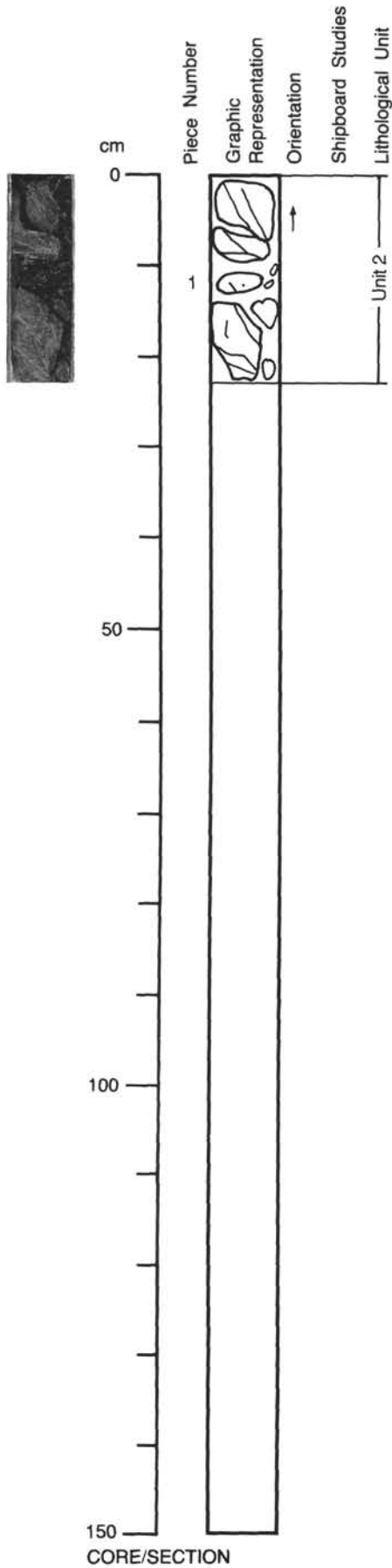
Vein material: White veins; (<0.1-3 mm), in all orientations chrysotile.

ADDITIONAL COMMENTS: Strongly serpentinized.

125-779A-30R-CC

UNIT 2: INTENSIVELY TECTONIZED AND SERPENTINIZED DUNITE

Piece 1



COLOR: Very dark greenish gray (10Y 3/1).
LAYERING: Crudely defined by elongate appearing serpentinized olivine.
DEFORMATION: Intensely deformed olivine.
PRIMARY MINERALOGY:
 Olivine - Mode: 99%.
 Crystal size: <20 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

 Spinel - Mode: Trace.
 Crystal size: <1-2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 90%.
 Texture: N/A.
 Vein material: Numerous, <2 mm wide, filled with pale-dark green amorphous serpentine, dipping at 40 degrees, but many others at irregular dips and orientations.

125-779A-31R-1

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 1 and 2

COLOR: Dark greenish gray to greenish gray (5BG 4/1 to 5GY 5/1).

LAYERING: Not visible.

DEFORMATION: Wavy appearance to orthopyroxene cleavage.

PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.
 Crystal size: 5-12 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Orthopyroxene - Mode: 5-10%.
 Crystal size: 3-5 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 75-95%.
 Texture: Variable serpentinization.
 Vein material: <1-mm wide, conjugate sets, dark serpentine-filled.

UNIT 2: STRONGLY TECTONIZED AND SERPENTINIZED DUNITE

Pieces 3 to 9

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: Not visible.

DEFORMATION: Cataclastic appearance with micro-shears and elongate serpentinized olivine.

PRIMARY MINERALOGY:

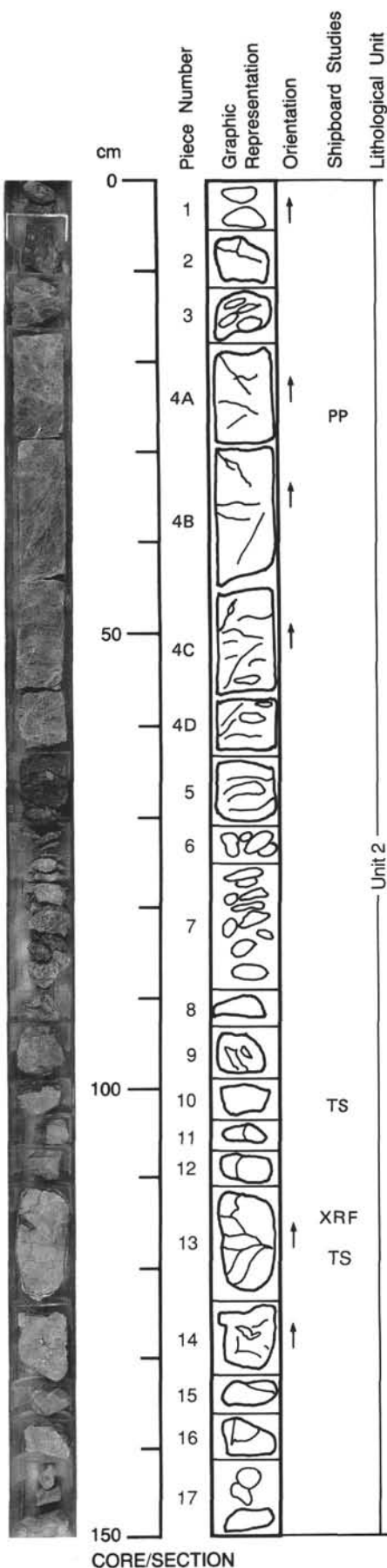
Olivine - Mode: 99%.
 Crystal size: <20 mm.
 Crystal shape: Elongate, ragged.
 Crystal orientation: Along shears.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 90-95%.
 Texture: N/A.
 Vein material: Numerous anastomosing, <2 mm wide, filled with amorphous gray-green cataclastic serpentine.

ADDITIONAL COMMENTS: All pieces are strongly serpentinized and deformed; it is possible that some orthopyroxene may exist, but no cleavage is visible.



CORE/SECTION

125-779A-31R-1 (continued)

UNIT 2: METABASALT

Pieces 10 to 17

COLOR: Bluish gray, (5B 6/1).

LAYERING: Not visible.

DEFORMATION: Brecciated into angular clasts and elongate clasts 10-30 mm in size, indurated.

PRIMARY MINERALOGY:

Aphyric, very fine-grained.

Plagioclase - Mode: 10-20%.

Crystal size: <1 mm?

Crystal shape: Not visible.

Crystal orientation: None.

Percent replacement: 80-90.

Clinopyroxene - Mode: 20-40%.

Crystal size: <1 mm.

Crystal shape: Not visible.

Crystal orientation: None.

Percent replacement: 80-90.

Glass - Mode: 50-60%.

Crystal size: Not visible.

Crystal shape: None.

Crystal orientation: None.

Percent replacement: 80-90.

SECONDARY MINERALOGY:

Clays; chlorite.

Total percent: 90%.

Texture: N/A.

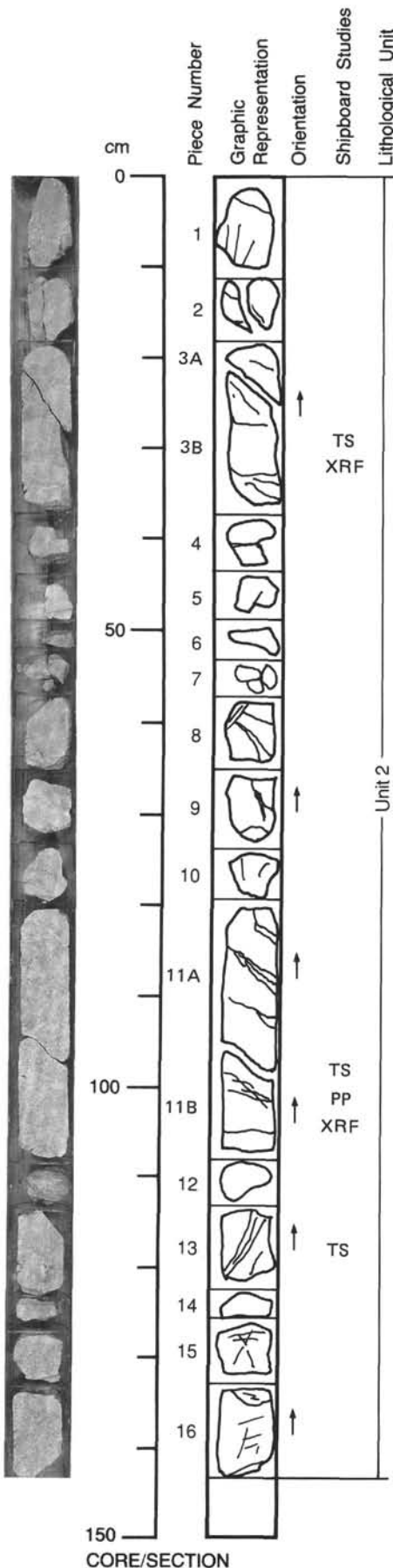
Vein material: White, non-carbonate.

ADDITIONAL COMMENTS: These pieces appear to be the upper chilled margin of a rock unit that becomes coarser-grained downwards in the core, eventually returning to a fine-grained character at the base; whole unit constitutes the majority of Core 31R except for the upper 90 cm.

125-779A-31R-2

UNIT 2: META-MICROGABBRO

Pieces 1 to 16



COLOR: Greenish gray (5G 6/1).
LAYERING: Massive locally.
DEFORMATION: Shear zones sub-horizontal to dipping at 45 degrees, up to 100 mm wide, showing normal faulting.

PRIMARY MINERALOGY:
 Size varies downwards in the section from fine-grained to sizes given below;
 plagioclase extensively replaced by secondary phases.
 Plagioclase - Mode: 30-60%.
 Crystal size: <3 mm.
 Crystal shape: Euhedral.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Clinopyroxene - Mode: 40-60%.
 Crystal size: <6 mm.
 Crystal shape: Ophitic.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

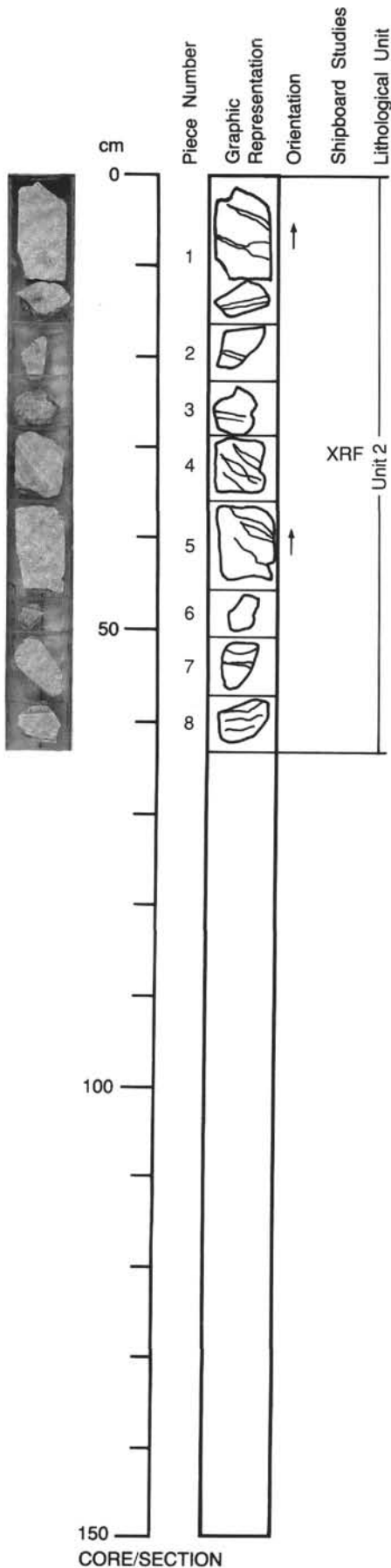
Oxide - Mode: <2%.
 Crystal size: <0.2 mm.
 Crystal shape: Anhedral.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Clays, chlorite and other low-temperature phases.
 Total percent: 30-70%.
 Texture: Massive.
 Vein material: <3 mm wide, sub-horizontal to steeply dipping, filled with pale gray-green material.

125-779A-31R-3

UNIT 2: META-MICROGABBRO

Pieces 1 to 8



COLOR: Greenish gray (5G 6/1).

LAYERING: Not visible.

DEFORMATION: Shear zones dipping at 45 degrees, <30 mm wide.

PRIMARY MINERALOGY:

Plagioclase extensively altered.
 Plagioclase - Mode: 30-60%.
 Crystal size: 1-3 mm.
 Crystal shape: Euhedral.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Clinopyroxene - Mode: 40-50%.
 Crystal size: <5 mm.
 Crystal shape: Ophitic.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Oxide - Mode: Trace.
 Crystal size: <0.1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

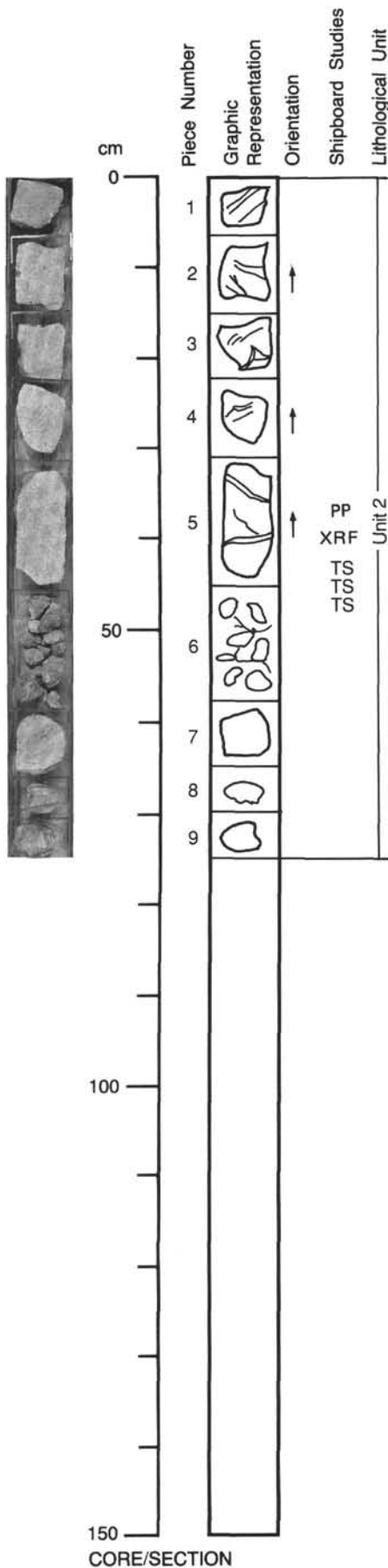
SECONDARY MINERALOGY:

Clays, chlorite.
 Total percent: 30-60%.
 Texture: N/A.
 Vein material: <1 mm wide, following shear zones and anastomosing from these; filled with greenish-white material.

125-779A-31R-CC

UNIT 2: META-MICROGABBRO

Pieces 1-9



COLOR: Greenish gray (5G 6/1).
LAYERING: Not visible.
DEFORMATION: Extensive shearing in zones <5 mm wide, subhorizontal and dipping at 40 degrees.
PRIMARY MINERALOGY:
 Plagioclase - Mode: 40-60%.
 Crystal size: <0.5-4 mm.
 Crystal shape: Euhedral-tabular.
 Crystal orientation: Not visible.
 Percent replacement: Extensive.

 Clinopyroxene - Mode: 40-50%.
 Crystal size: 5-8 mm.
 Crystal shape: Ophitic.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

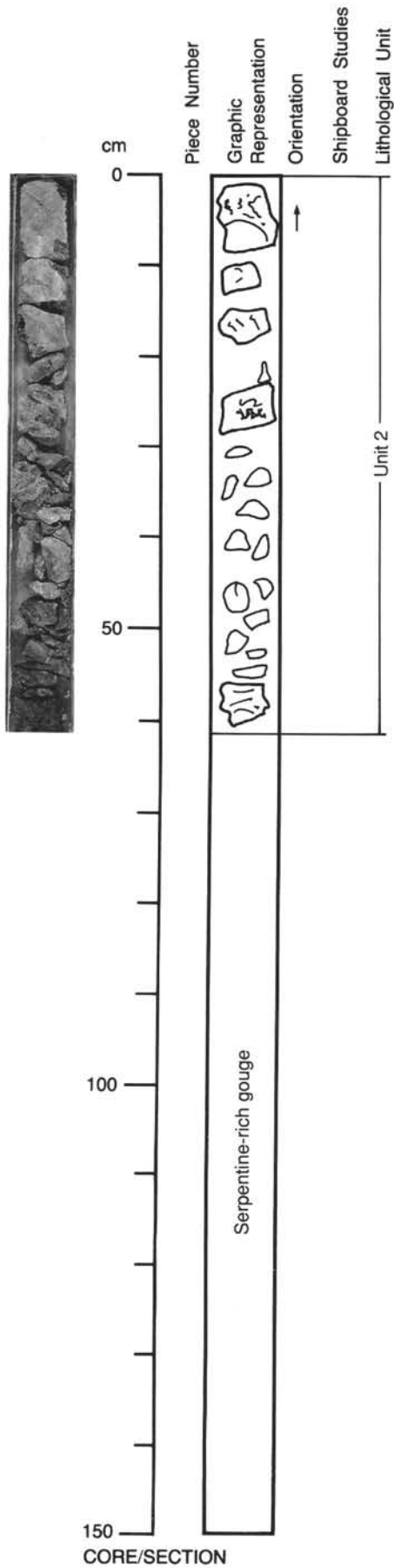
 Oxide - Mode: Trace.
 Crystal size: Equant.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Clays, chlorite, hydrogrossular.
 Total percent: 40-70%.
 Texture: N/A.
 Vein material: Filling shears, light green and black vein-filling materials.

125-779A-32R-1

UNIT 2: TECTONIZED AND BRECCIATED METABASALT AND DUNITE

Pieces multiple pieces

COLOR: Greenish gray (5G 6/1) (brecciated material) to very dark greenish gray (10Y 3/1).
LAYERING: Not visible.
DEFORMATION: Strong brecciation present in uppermost pieces, grades into sheared, deformed serpentinous fragments to tectonized dunite.
PRIMARY MINERALOGY: Ultramafic fragments (olivine-rich) are fine-grained. Fragments are also extensively altered.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 100%.
 Texture: N/A.
 Vein material: Deep green, serpentinous material infilling between angular brecciated fragments.



125-779A-32R-2

UNIT 2: FRAGMENTS OF SERPENTINIZED HARZBURGITE

Pieces multiple fragments

COLOR: Dark greenish gray (5BG 4/1).

LAYERING: Not visible.

DEFORMATION: Not visible.

PRIMARY MINERALOGY:

Olivine - Mode: 85-95%.

Crystal size: Not visible.

Crystal shape: Equant-elongate.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Orthopyroxene - Mode: 5-15%.

Crystal size: 3-4 mm.

Crystal shape: Equant-ragged.

Crystal orientation: Not visible.

Percent replacement: Not visible.

Spinel - Mode: Trace.

Crystal size: <2 mm.

Crystal shape: Elongate-ragged.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

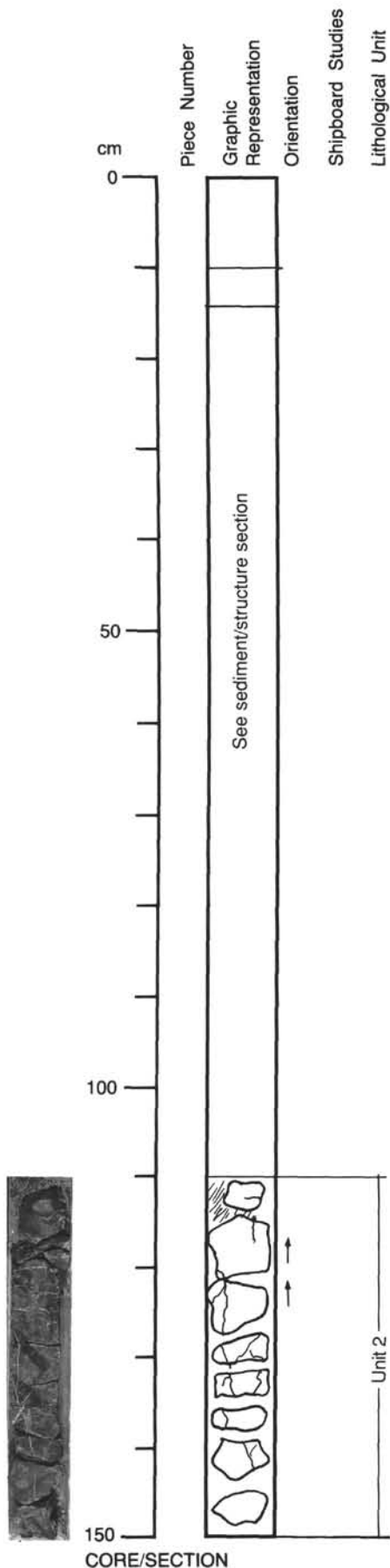
Serpentine.

Total percent: 75-85%.

Texture: N/A.

Vein material: <2 mm, filled with white layered serpentine, paralleling side of core barrel.

Also black and green serpentine veins (<2 mm) dipping at various angles to core barrel.

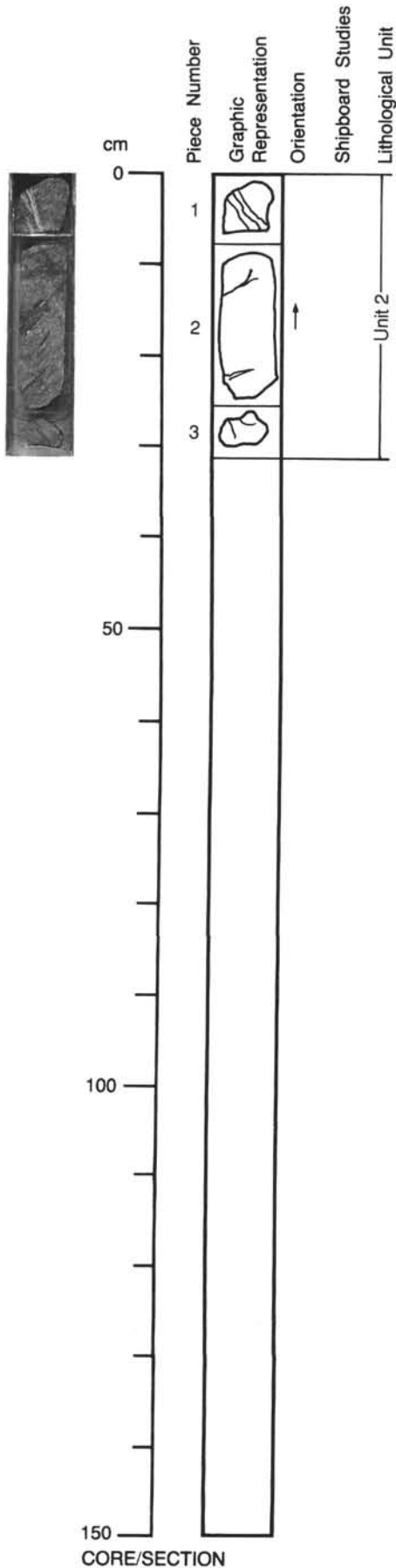


CORE/SECTION

125-779A-32R-3

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 1 to 3



COLOR: Bluish gray to dark bluish gray (5B 5/1 to 5B 4/1).

LAYERING: Not visible.

DEFORMATION: Wavy cleavage on orthopyroxene.

PRIMARY MINERALOGY:

Olivine - Mode: 85-95%.

Crystal size: 5-10 mm.

Crystal shape: Ragged.

Crystal orientation: Not visible.

Percent replacement: Variable.

Orthopyroxene - Mode: 5-15%.

Crystal size: 3-5 mm.

Crystal shape: Elongate-irregular.

Crystal orientation: Not visible.

Percent replacement: Variable.

Spinel - Mode: Trace.

Crystal size: <2 mm.

Crystal shape: Elongate.

Crystal orientation: Not visible.

Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.

Total percent: 50-80%.

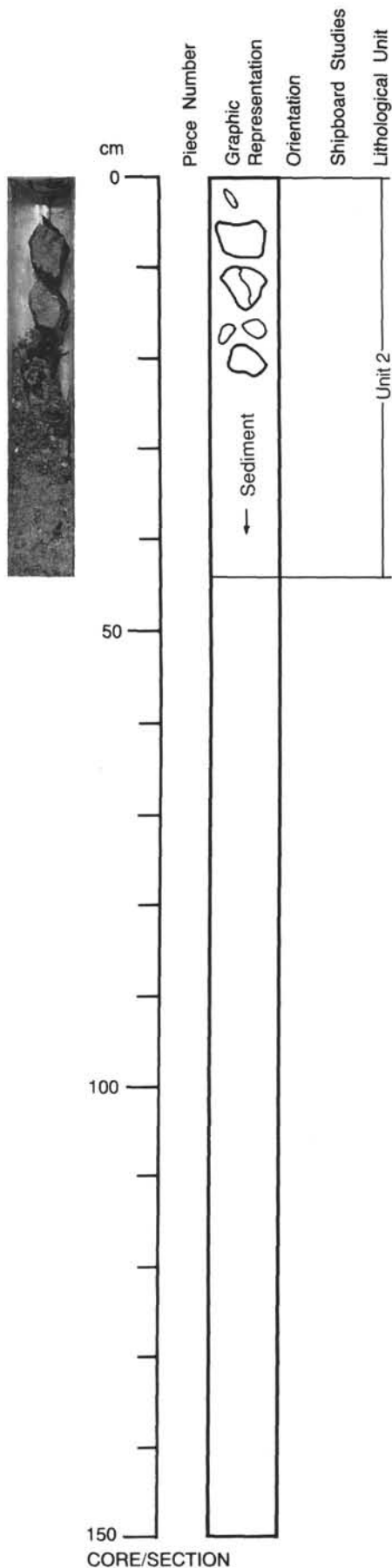
Texture: Variable serpentinization.

Vein material: Numerous: anastomosing, filled with dark gray, amorphous serpentine <2 mm wide; fibrous, steeply dipping packets, <5 mm wide, composed of light green to white and fibrous (chrysotile) serpentine.

125-779A-33R-1

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 1 (7 fragments)



COLOR: Greenish gray to bluish gray (5BG 5/1 to 5B 5/1).

LAYERING: Not visible.

DEFORMATION: Wavy cleavage surface on orthopyroxene; spinels arrayed in crude trains.

PRIMARY MINERALOGY:

Olivine - Mode: 85-95%.
 Crystal size: 5-10 mm.
 Crystal shape: Irregular.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Orthopyroxene - Mode: 5-15%.
 Crystal size: 2-5 mm.
 Crystal shape: Elongate.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 70-95%.
 Texture: N/A.
 Vein material: <1 mm wide, filled with dark gray-black serpentine.

125-779A-33R-2

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

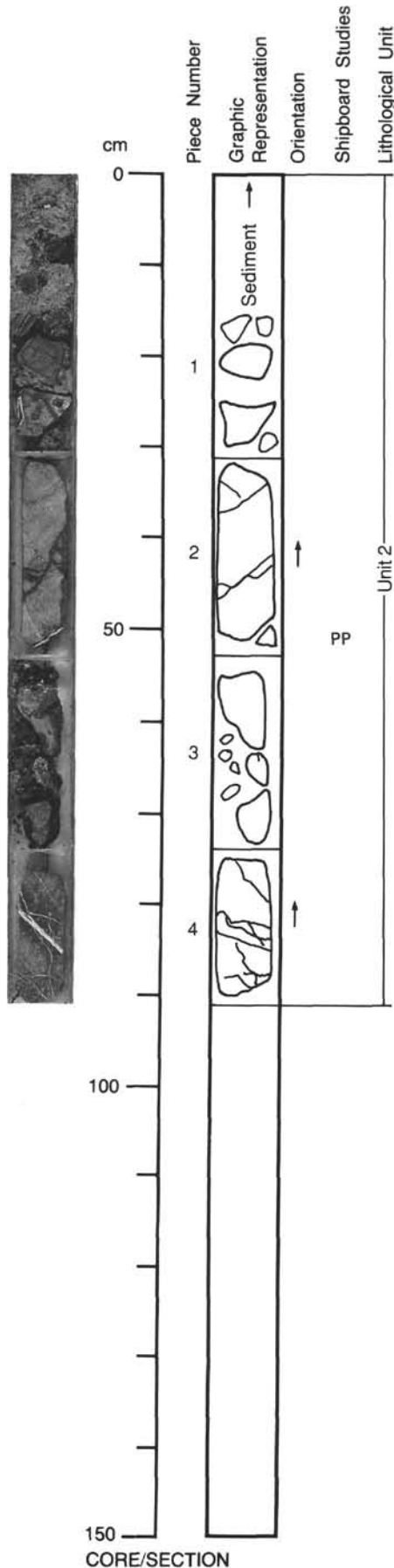
Pieces 1 and 2

COLOR: Bluish gray (5B 5/1)
LAYERING: Possible alignment of elongate pyroxene
DEFORMATION: Wavy cleavage on orthopyroxene; elongate spinels arranged in crude trains
PRIMARY MINERALOGY:
 Orthopyroxene - Mode: 40-70%.
 Crystal size: 3-5 mm.
 Crystal shape: Ragged elongate.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Olivine - Mode: 30-60%.
 Crystal size: 3-12 mm.
 Crystal shape: Ragged elongate.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Ragged elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 65-90%.
 Texture: N/A.
 Vein material: Dark gray/black amorphous serpentine-filled, <3 mm wide, dipping at 50-30 degrees; and thin <1-mm veins filled with green-white serpentinous material.

UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 3 and 4

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: Not visible.
DEFORMATION: Elongated olivine is aligned dipping subvertically; spinel trains crudely similarly aligned.
PRIMARY MINERALOGY:
 Olivine - Mode: 85-95%.
 Crystal size: 5-12 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Orthopyroxene - Mode: 5-15%.
 Crystal size: 3-4 mm.
 Crystal shape: Equant-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 65-90%.
 Texture: N/A.
 Vein material: <4 mm wide, filled with white layered serpentine, dipping at 45 degrees and, others (<2 mm) more irregular dips but similar fill.



125-779A-33R-3

UNIT 2: SERPENTINIZED HARZBURGITE**Pieces 1, 3, 4**

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: possible alignment of elongate pyroxenes.
DEFORMATION: None visible.
PRIMARY MINERALOGY:
 Olivine - Mode: 80%.
 Crystal size: Not visible.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 10-20%.
 Crystal size: 3-4 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70-80%.
 Texture: N/A.
 Vein material: <1-mm wide veins of pale-green serpentine.

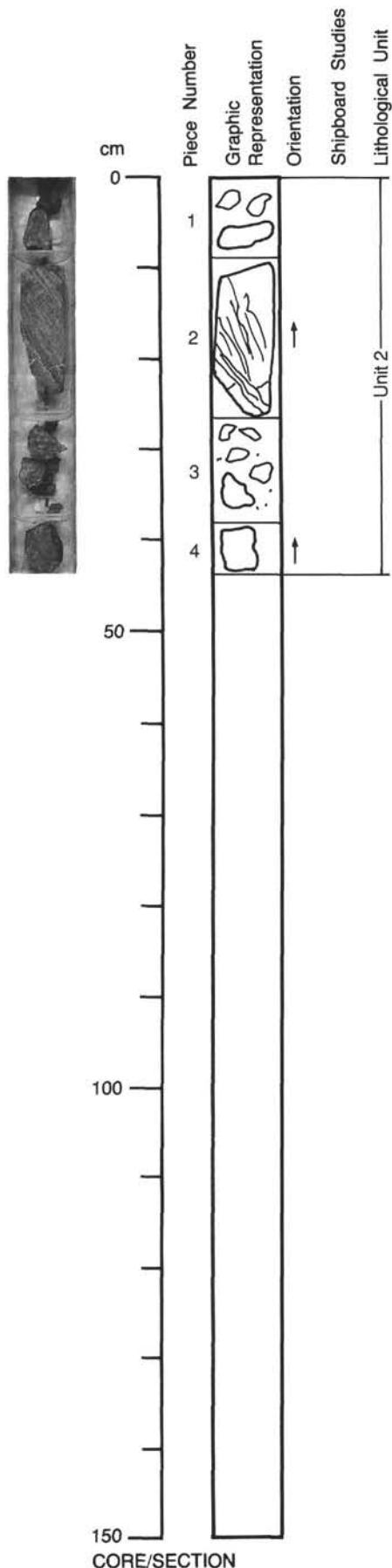
UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE**Piece 2**

COLOR: Dark greenish gray (5BG 4/1).
LAYERING: Alignment of elongate pyroxenes.
DEFORMATION: Tectonized, crystals oriented 45 degrees from side of core barrel.
PRIMARY MINERALOGY:
 Olivine - Mode: 80%.
 Crystal size: Not visible.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Orthopyroxene - Mode: 10-20%.
 Crystal size: 3-4 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.

SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 70-80%.
 Texture: N/A.
 Vein material: 0.5-cm-wide veins filled with pale-green and dark black serpentine. Veins parallel orientation of tectonized crystals. Also minor (1-mm) white veins. Larger vein has two white-green serpentine veins oriented perpendicular to it.



125-779A-34R-1

UNIT 2: SERPENTINIZED HARZBURGITE

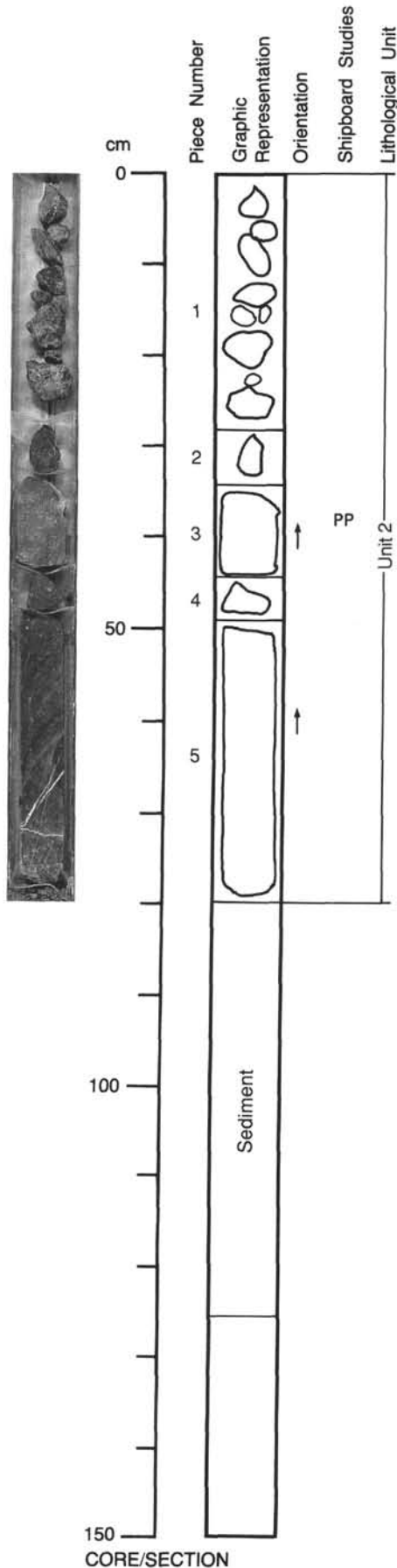
Piece 1 (multiple fragments)

COLOR: Dark greenish gray (5B 4/1).
LAYERING: None visible.
DEFORMATION: Some fracturing.
PRIMARY MINERALOGY:
 Strongly altered.
 Olivine - Mode: 85-90%.
 Crystal size: Not visible.
 Crystal shape: Not visible.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Orthopyroxene - Mode: 10-15%.
 Crystal size: 3-6 mm.
 Crystal shape: Subhedral.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 90-99%.
 Texture: Bastite orthopyroxene.
 Vein material: Some green serpentine on fragment surfaces.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 2-5

COLOR: Dark greenish gray (5B 4/1).
LAYERING: Not visible.
DEFORMATION: Some fractures.
PRIMARY MINERALOGY:
 Highly altered.
 Olivine - Mode: 85%.
 Crystal size: 2-4 mm.
 Crystal shape: Anhedral to subhedral.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Orthopyroxene - Mode: 15%.
 Crystal size: <8 mm.
 Crystal shape: Subhedral to anhedral.
 Crystal orientation: Not visible.
 Percent replacement: Variable.
 Spinel - Mode: Trace.
 Crystal size: 1 mm.
 Crystal shape: Subhedral-equant.
 Crystal orientation: Not visible.
 Percent replacement: Not visible.
SECONDARY MINERALOGY:
 Serpentine.
 Total percent: 90-99%.
 Texture: Bastite orthopyroxene, olivine-mesh.
 Vein material: White veins (<1-5 mm) all orientations from subhorizontal to vertical.



UNIT 2: TECTONIZED SERPENTINIZED HARZBURGITE

Pieces 1-3

COLOR: Bluish gray (5B 5/1).
LAYERING: Possible alignment of elongate orthopyroxene.
DEFORMATION: Elongate spinels in trains; wavy cleavage on orthopyroxene.
PRIMARY MINERALOGY:

Orthopyroxene - Mode: 15-25%.
 Crystal size: 3-5 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Olivine - Mode: 75-85%.
 Crystal size: 3-7 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: Trace.
 Crystal size: <2 mm.
 Crystal shape: Elongate-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 40-80%.
 Texture: N/A.
 Vein material: Dark black amorphous serpentine-filled vein, <3 mm wide oriented almost parallel to core in Piece 2. This vein has <1-mm-wide and 2-cm-long white-green serpentine veins running perpendicular to it. Piece 1 has white-green serpentine vein, <2 mm wide, perpendicular to core.

UNIT 2: SERPENTINIZED HARZBURGITE

Pieces 4-8

COLOR: Dark greenish gray (5B 4/1).

LAYERING: None.

DEFORMATION: Piece 8 appears to be slightly tectonized and exhibits elongation of the pyroxene crystals.

PRIMARY MINERALOGY:

Olivine - Mode: 70-75%.
 Crystal size: 1-2 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: N/A.
 Percent replacement: N/A.

Orthopyroxene - Mode: 25-30%.
 Crystal size: 1-3 mm.
 Crystal shape: Equant-elongate.
 Crystal orientation: N/A.
 Percent replacement: N/A.

Spinel - Mode: Trace.
 Crystal size: <1 mm.
 Crystal shape: Equant.
 Crystal orientation: N/A.
 Percent replacement: N/A.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 70%.
 Texture: Serpentinized.
 Vein material: <2-mm wide white-pale green serpentine (chrysotile?) veining; Piece 4 is mixed with serpentine sediment.

UNIT 2: SERPENTINIZED DUNITE (?)

Pieces 9-11

COLOR: Dark blue gray (5B 4/1).

LAYERING: None.

DEFORMATION: None visible.

PRIMARY MINERALOGY:

Olivine - Mode: 90-95%.
 Crystal size: 1-3 mm.
 Crystal shape: Equant.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

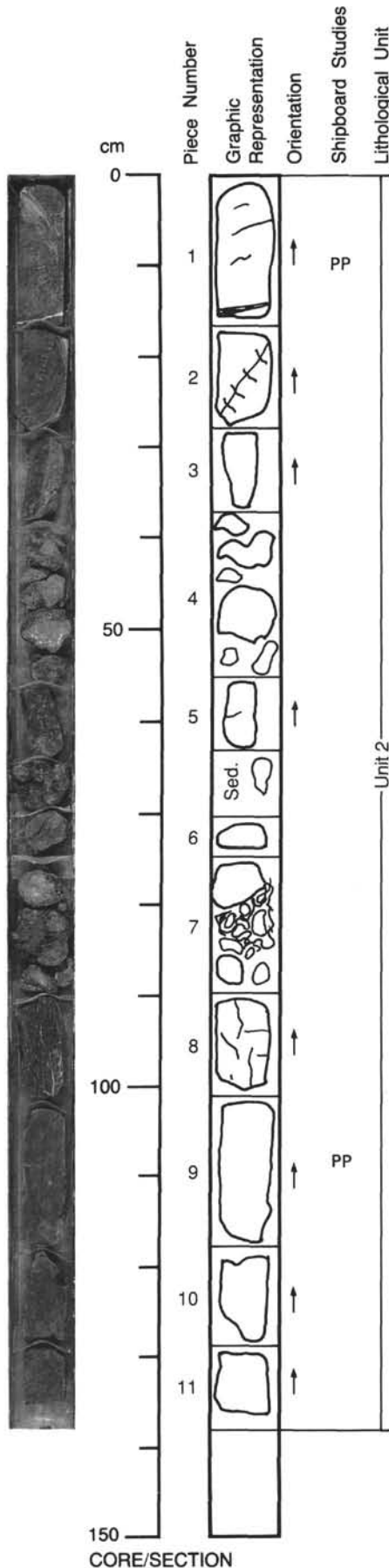
Orthopyroxene - Mode: 5-10%.
 Crystal size: 1-4 mm.
 Crystal shape: Equant-elongate.

Crystal orientation: Not visible.
 Percent replacement: Variable.

Spinel - Mode: 0-3%.
 Crystal size: <2 mm.
 Crystal shape: Equant-ragged.
 Crystal orientation: Not visible.
 Percent replacement: Variable.

SECONDARY MINERALOGY:

Serpentine.
 Total percent: 40-90%.
 Texture: N/A.
 Vein material: <2-mm-wide black/green amorphous serpentine veins.



150
CORE/SECTION

SITE 779

125-779A-3R-CC (Piece 2,13-15 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.1-4 mm

TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	20	94	1-4		Anhedral	Altered to mesh texture serpentine.
Spinel	0.1	1	0.1-0.7	Cr?	Equant-elongate	Red; altered to magnetite.
Orthopyroxene	0	5	1-3		Subhedral-anhedral	Altered to serpentine bastite and chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Chlorite	5-10	Orthopyroxene, serpentine				Bladed prismatic crystals-anhedral equant patches. 0.1-1 mm in size; green blue-brown pleochroism; distributed throughout slide and also associated with orthopyroxene bastite.
Serpentine	70-75	Olivine, orthopyroxene				Mostly lizardite and/or chrysotile distributed throughout slide forming good-poor mesh texture.
Magnetite	1	Spinel				Dusty 0.1-mm grains; some are elongated along bastite cleavages; some spinels have cores of magnetite(?).

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

COMMENTS: Spinels are equant elongate and some form short stringers. Chlorite (green-brown) pleochroic present in patches, possibly in part replacing orthopyroxene. Orthopyroxenes are all altered to serpentine, but olivine is still fresh.

125-779A-4R-01 (Piece 3,27-30 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.3-5 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	78.5	Not visible		Not visible	Altered to mesh serpentine.
Clinopyroxene	Trace	Trace	N/A		Subhedral-anhedral	As exsolution lamellae of clinopyroxene.
Spinel	1.5	1.5	0.3-1		Euhedral-anhedral	Euhedral grains are undeformed.
Orthopyroxene	<1	20	2-5		Subhedral-anhedral	Altered to serpentine bastite; some small relic olivine (now serpentized) included in bastite pseudomorphs of orthopyroxene-a relic poikiloblastic texture.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	10	Serpentine?				Dusty brown clay distributed throughout slide & associated with the serpentine.
Magnetite	1	Spinel				Altered from spinel; dusty to elongate trails distributed throughout slide.
Serpentine	87	Olivine, orthopyroxene				Lizardite and/or chrysotile mostly; distributed across slide; forms mesh and bastite textures plus possible hourglass texture in a few places.

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

COMMENTS: Fresh olivine-orthopyroxene preserved as inclusions inside spinel; some spinel are nicely equant and euhedral. Orthopyroxene is kink-banded and deformed. Some fresh material may still be present in the bastites. The absence of relic poikiloblastic texture indicates an original cumulate protolith.

125-779A-4R-01 (Piece 3,27-30 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.3-5 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	78.5	Not visible		Not visible	Altered to mesh serpentine.
Clinopyroxene	Trace	Trace	N/A		Subhedral-anhedral	As exsolution lamellae of clinopyroxene.
Spinel	1.5	1.5	0.3-1		Euhedral-anhedral	Euhedral grains are undeformed.
Orthopyroxene	<1	20	2-5		Subhedral-anhedral	Altered to serpentine bastite; some small relic olivine (now serpentinized) included in bastite pseudomorphs of orthopyroxene-a relic poikiloblastic texture.

GROUNDMASS
N/A N/A N/A N/A N/A

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	10	Serpentine?	Dusty brown clay distributed throughout slide & associated with the serpentine.
Magnetite	1	Spinel	Altered from spinel; dusty to elongate trails distributed throughout slide.
Serpentine	87	Olivine, orthopyroxene	Lizardite and/or chrysotile mostly; distributed across slide; forms mesh and bastite textures plus possible hourglass texture in a few places.

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

COMMENTS: Fresh olivine-orthopyroxene preserved as inclusions inside spinel; some spinel are nicely equant and euhedral. Orthopyroxene is kink-banded and deformed. Some fresh material may still be present in the bastites. The absence of relic poikiloblastic texture indicates an original cumulate protolith.

125-779A-4R-01 (Piece 5,42-44 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.2-4 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	83-88	Not visible		Not visible	Completely altered to mesh serpentine; some rounded pseudomorphs found.
Spinel	2	2	0.2-1.5	Cr?	Anhedral-elongate	Red brown, contain some small round olivine grains.
Orthopyroxene	0	10-15	2-4		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	Serpentine?	Dusty brown clay distributed across slide and also associated with serpentine in the veins.
Serpentine	88	Olivine, orthopyroxene	Probably lizardite and/or chrysotile forming mesh and bastitic textures; chrysotile is dominant phase in veins (1-4 mm wide) that cut across slide.
Magnetite	<1	Spinel	Dusty 0.1-mm grains; distributed throughout slide and associated with serpentine and spinel.

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

COMMENTS: Elongate spinels are arranged in ragged trains - individual serpentine veins (1-4 mm wide) cut across this alignment at a high angle. Bastite is kink-banded and deformed (wavy extinction). Rock appears to have some relic poikiloblastic textures (i.e., after a protolith cumulate). Veins are dominant across slide and consist of clays and serpentine.

125-779A-5R-01 (Piece 10A,116-120 cm) OBSERVER: HIR WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized harzburgite
 GRAIN SIZE: 1-4 mm
 TEXTURE: Mesh and bastite.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	8-10	78-83	3-4		Anhedral	Altering to serpentine mesh texture.
Clinopyroxene	Trace	Trace	<0.05		Anhedral	As anhedral dot in an orthopyroxene grain.
Spinel	1-2	2	1-3	Cr?	Euhedral-anhedral	Red; altered to magnetite.
Orthopyroxene	2	15-20	3-4		Subhedral-anhedral	Altered to serpentine bastite + chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 3	REPLACING/ FILLING Serpentine				COMMENTS Dusty brown in color and distributed throughout slide, associated with serpentine and also in veins.
Chlorite	5					Blue-green to brown pleochroism, as anhedral patches throughout slide and along orthopyroxene cleavages and edges.
Serpentine	79-81	Olivine, orthopyroxene				Lizardite and/or chrysotile defining mesh texture; chrysotile veins (1 to 4 mm wide) at various orientations in slide (see comments).
Magnetite	1	Spinel				Dusty, 0.1 mm, sometimes elongate in trains.
Brucite	Tr?	Olivine, orthopyroxene				Forms in association with serpentinization and appears mostly in second-generation veining.

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

COMMENTS: Olivine and orthopyroxene show wavy extinction. Veins show wavy extinction (2-mm-wide) and consist of chrysotile, brucite(?) and clays. Two generations of veins: 1) large (4-mm-wide) veins cut across slide completely, 2) small (1 to 2 mm-wide) and shorter (2-mm) veins cut perpendicular to 1st set, may be "Frankenstein" veins which were observed in hand sample. Spinels are elongate and ragged and are pulled apart across serpentine veins.

125-779A-5R-01 (Piece 12,108-109 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized dunite
 GRAIN SIZE: 0.2-5 mm
 TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	10	88	3-5		Anhedral	Altered to mesh serpentine.
Clinopyroxene	<1	1	<0.2		Subhedral-anhedral	As exsolution lamellae in orthopyroxene.
Spinel	0.5	1.5	0.2-0.4	Cr?	Ragged and elongated.	Altered to magnetite and possibly chlorite.
Orthopyroxene	5	10	1-2		N/A	Altered to bastite serpentine and chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	PERCENT 5-10	REPLACING/ FILLING Orthopyroxene, serpentine				COMMENTS Blue-green-brown pleochroic distributed throughout slide in association with serpentine and orthopyroxene.
Magnetite	2	Spinel				Located near spinels; in the veins; and grows as rims outlining olivine crystals.
Serpentine	72-77	Olivine, orthopyroxene				Lizardite and/or chrysotile; mesh texture is only partly developed in olivine.
Brucite	<1					Small 0.1-mm-wide veins crossing slide; post-serpentinization; magnetite is concentrated in these veins.

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

COMMENTS: Orthopyroxene and olivine have wavy extinction, deformation. Spinels form ragged strings or trains. Orthopyroxene bastite also has bent cleavages.

125-779A-5R-02 (Piece 3,14-15 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Altered serpentized harzburgite

GRAIN SIZE: 0.5-4 mm

TEXTURE: Mesh and bastite (minor)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS	
PHENOCRYSTS							
Olivine	0	83-89	Not visible		Not visible	Completely altered to serpentine mesh.	
Spinel	1-2	1-2	0.5-2	Cr?	Euhedral-subhedral	Red; fractured; altered to magnetite.	
Orthopyroxene	0	10-15	1-4		Subhedral-anhedral	Completely altered to serpentine bastite.	
GROUNDMASS							
N/A	N/A	N/A	N/A		N/A		
SECONDARY MINERALOGY							
Clays	50-60	REPLACING/ FILLING Serpentine				COMMENTS Dusty brownish clay distributed throughout slide after serpentine.	
Serpentine	38-49	Olivine, orthopyroxene					Lizardite and/or chrysotile after olivine and orthopyroxene, distributed throughout slide, chrysotile veins.
Magnetite	<1	Spinel					Dusty 0.1-mm grains; distributed throughout slide and along veins.

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

COMMENTS: This serpentized rock has been further altered to clays. Numerous veins. Two generations: 1) 0.5 mm wide and consisting of chrysotile, clays, and magnetite; mostly parallel (indicating formation in uniform stress field?); 2) vein set intersecting 1st generation at ~ 40 degree angle. Secondary mesh and bastite textures are obscured by the abundant veining.

125-779A-5R-02 (Piece 3,40-43 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-4 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS	
PHENOCRYSTS							
Olivine	<1	83-88	1-3		Anhedral	Completely altered to serpentine mesh.	
Clinopyroxene	<1	<1	0.05-0.1		Anhedral	Small grains surrounded by serpentine.	
Spinel	2	2	0.5-2	Cr?	Euhedral-anhedral	Red brown; altered to magnetite; some rimmed by chlorite.	
Orthopyroxene	1-2	10-15	1-4		Subhedral-anhedral	Altered to serpentine bastite.	
P.G.E	<0.1	<0.1	<0.05		Euhedral	Very bright reflectance grain disseminated - serpentine groundmass.	
GROUNDMASS							
N/A	N/A	N/A	N/A		N/A		
SECONDARY MINERALOGY							
Chlorite	2	REPLACING/ FILLING Serpentine, spinel				COMMENTS Small fine-grained, anhedral patches intermixed with the serpentine; also appears to be rimming a few spinels.	
Serpentine	90-91	Olivine, orthopyroxene					Lizardite and/or chrysotile present, forming characteristic bastite and mesh textures (minor hourglass texture visible).
Magnetite	1						Dusty, 0.1 mm; located throughout mesh edges and also in veins.
Brucite	2	Olivine, orthopyroxene					Yellow birefringence mineral occurring mostly in veins brucite(?).

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

COMMENTS: Orthopyroxene is kinked and has wavy extinction. Some spinels have round inclusions of possible olivine or orthopyroxene? Veins (0.05 to 2 mm wide) are abundant. They appear to be two generations which occur almost perpendicular to one another. Veins consist of mostly chrysotile, magnetite, and brucite(?). Brucite determination needs further analysis, but believe the yellow birefringence intergrown with chrysotile vein is brucite. P.G.E. refers to platinum group elements.

SITE 779

125-779A-5R-02 (Piece 4,65-69 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.1-2 mm

TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	99	Not visible		Not visible	Completely altered to serpentine mesh.
Spinel	1	1	0.1-2	Cr?	Subhedral-anhedral	Red, altered to magnetite, a few round inclusions of olivine are found in some grains.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Magnetite	1-2		REPLACING/ FILLING Spinel			COMMENTS Dusty, 0.1 mm in size; distributed throughout slide, but appears concentrated in veins and mesh edges.
Serpentine	97-98		Olivine, orthopyroxene			Lizardite and/or chrysotile distributed throughout slide and forming characteristic mesh texture.
Brucite	1		Olivine, orthopyroxene, serpentine			Found in veins which cross slide; associated with magnetite and serpentine.

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

COMMENTS: Rock is totally serpentinized. Mesh texture is well developed in areas, but is also deformed by tectonic fabric. This fabric is defined by parallel orientation of many small (<0.2-mm-wide) serpentine (chrysotile?), magnetite, brucite(?) veins oriented roughly parallel to the long axis of the slide.

125-779A-5R-02 (Piece 5,34-37 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite (tectonite)

GRAIN SIZE: 0.5-3 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	15-20	84-89	1-2		Anhedral	Altered to serpentine mesh; some neoblastic crystals may be present.
Clinopyroxene	Trace	Trace	0.05		Subhedral-anhedral	As exsolution lamellae in orthopyroxene.
Spinel	0.5	1	0.5-2	Cr?	Euhedral-anhedral	Red, altered to magnetite and chlorite(?).
Orthopyroxene	3-5	10-15	2-3		Subhedral-anhedral	Altered to serpentine bastite and chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	5		REPLACING/ FILLING Orthopyroxene, spinel, serpentine			COMMENTS Colorless to blue-yellow pleochroism, distributed as anhedral patches intermixed with serpentine, also found rimming some spinels, and along orthopyroxene cleavage planes and grain boundaries.
Serpentine	69-76		Olivine, orthopyroxene			Lizardite and/or chrysotile; forms mesh and bastite textures along with minor hourglass textures.
Magnetite	1		Spinel			Dusty, 0.1 mm, distributed throughout slide, concentrated in edges of mesh, and within veins in elongated trails.

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

COMMENTS: Olivine and orthopyroxene have wavy extinction; orthopyroxene has kink-banding. Some spinels have inclusions of anhedral olivine(?) which has been serpentinized completely. Olivine and orthopyroxene may be fresh enough for microprobing. 2-mm-wide veins cut across slide (45 degrees to long axis). These may define a foliation which is apparent in the sample. This foliation is pervasive throughout the slide.

125-779A-6R-01 (Piece 2,18-20 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-4 mm

TEXTURE: Mesh (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	15-20	77-82	3-4		Anhedral	Altered to serpentine mesh.
Clinopyroxene	1	1?	0.05-1		Euhedral-anhedral	Exsolution lamellae, as inclusions in orthopyroxene and as a primary phase.
Spinel	2	2	0.2-1	Cr?	Euhedral-subhedral	Red; altered to magnetite.
Orthopyroxene	10-15	15-20	1-4		Subhedral-anhedral	Altered to serpentine bastite; has (100) clinopyroxene exsolution lamellae.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT <1	REPLACING/FILLING Serpentine				COMMENTS Dusty brown clay, located mainly in veins, but also after serpentine.
Chlorite	3	Orthopyroxene, serpentine				Blue-green, anhedral, patches intergrown with serpentine, also forming along orthopyroxene cleavage planes.
Serpentine	58-68	Olivine, orthopyroxene				Lizardite and/or chrysotile forming characteristic mesh texture throughout slide plus minor bastite texture.
Magnetite	1	Spinel				Dusty, 0.1 mm, occurs throughout slide, also concentrated in some chrysotile veins.

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

COMMENTS: Orthopyroxene and olivine show wavy extinction; orthopyroxene is also kink-banded. Orthopyroxene has inclusions of olivine and clinopyroxenes. Chrysotile veins (0.2 mm wide) are present, some anastomosing. Olivine and orthopyroxene are still relatively fresh, rock appears relatively clinopyroxene-rich.

125-779A-8R-01 (Piece 5A,27-29 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Altered serpentinized harzburgite

GRAIN SIZE: 0.1-5 mm

TEXTURE: Mesh and minor bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	84-89	Not visible		Not visible	Completely altered to serpentine mesh.
Spinel	0.5	1	0.1-2	Cr?	Subhedral-anhedral	Red, altered to magnetite.
Orthopyroxene	0	10-15	1-5		Subhedral-anhedral	Altered to serpentine bastite.
GROUNDMASS						
P.G.E.	<0.1	<0.1	0.02-0.05		Anhedral	
SECONDARY MINERALOGY						
Clays	PERCENT 20	REPLACING/FILLING Serpentine				COMMENTS Dusty brown-red clay after serpentine and distributed throughout slide in anastomosed veins.
Serpentine	77	Olivine, orthopyroxene				Lizardite and/or chrysotile distributed throughout slide, further altered to clays.
Magnetite	2	Spinel				

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

COMMENTS: Completely serpentinized rock which has been further altered to clays. The spinel still appears relatively fresh. Some orthopyroxene have inclusions of round serpentine pseudomorphs of olivine within themselves. Chrysotile + clay veins (<0.8 mm wide) throughout slide at no particular orientation. P.G.E. refers to platinum group elements.

125-779A-8R-01 (Piece 5B,57-60 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized harzburgite
 GRAIN SIZE: 0.05-5 mm
 TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	78	Not visible		Not visible	Completely altered to serpentine mesh.
Spinel	2	2	0.05-3	Cr?	Anhedral	Red, altered to magnetite, has inclusions (see below).
Orthopyroxene	0	20	3-5		Subhedral-anhedral	Altered to bastite serpentine and chlorite.
GROUNDMASS						
P.G.E.	<<0.1	<<0.1	0.02-0.1		Anhedral	Disseminated, many
SECONDARY MINERALOGY						
Clays	10		REPLACING/ FILLING Serpentine?			COMMENTS Dusty brown clay distributed throughout slide in anastomosed veins.
Chlorite	1		Orthopyroxene, serpentine			As anhedral, fine-grained patches intermixed with serpentine, and near bastite grains.
Serpentine	57-67		Olivine, orthopyroxene			Lizardite and/or chrysotile distributed throughout slide forming bastite and mesh textures.
Brucite	20-30		Olivine, orthopyroxene			Formed as a by-product of serpentinization and is associated with serpentine.

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

COMMENTS: Bastite is deformed (wavy extinction) and former exsolution lamellae are bent. Cr-spinel is anhedral and arranged in ragged trains, subparallel to elongation of bastite. Spinels have apparent inclusions of rounded serpentine and chrysotile pseudomorphs of olivine(?) or orthopyroxene. Minor chrysotile and brucite veins (< 1 mm wide) in slide. P.G.E. refers to platinum group elements.

125-779A-8R-01 (Piece 8A,82-83 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Tectonized serpentinized dunite
 GRAIN SIZE: 0.1-0.4 mm
 TEXTURE: Felted tectonized texture

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	45-50	93	0.1-4		Euhedral-anhedral	Altering to serpentine; some are neoblastic.
Clinopyroxene	Trace	Trace	<0.2		Anhedral	As exsolution lamellae.
Spinel	2	2	0.5-2	Cr?	Euhedral-anhedral	Red brown, altered to magnetite?
Orthopyroxene	4	5	1-4		Subhedral-anhedral	Altered to serpentine; deformed crystals.
GROUNDMASS						
P.G.E.	<0.01	<0.01	0.05		Disseminated.	
SECONDARY MINERALOGY						
Serpentine			REPLACING/ FILLING Olivine, orthopyroxene			COMMENTS Antigorite and/or chrysotile mostly; needles and fibers of crystals are localized, proximal to a vein set and invade the olivine from the vein.
Magnetite	2		Spinel			As dusty 0.1-mm grains; forms ragged trails.

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

COMMENTS: Exsolution lamellae, bastitic grains, and primary olivine have wavy extinction. Recrystallized, small olivine grains in shear zone of larger optically continuous olivine grain (hot shear fabric) (120 degree triple junction). This slide appears tectonized, but olivine is fresh and big enough for probing. P.G.E. refers to platinum group elements.

125-779A-8R-01 (Piece 8B,90-93 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Tectonized serpentized dunite

GRAIN SIZE: 0.8-4 mm

TEXTURE: Felted tectonized texture

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	40-50	96	1-4		Euhedral-anhedral	Altering to serpentine, some are neoblastic.
Spinel	0.5	1	0.8-1	Cr	Euhedral-ragged	Deep red, altered to magnetite.
Orthopyroxene	2	3	1-3		Subhedral-anhedral	Altered to serpentine, deformed crystals.
GROUNDMASS						
P.G.E.	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	5	Serpentine?				Dusty brownish clay distributed throughout slide.
Serpentine	42-52	Olivine, orthopyroxene				Antigorite blades and chrysotile fibers mainly, but lizardite may also be present.
Magnetite	<1	Spinel?				Dusty 0.1-mm grains along olivine boundaries, sometimes occur as ragged trains.

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

COMMENTS: Quite fresh. Olivine grains are large enough and fresh enough for probing. Original texture obscured by serpentine feather-like crystals. Olivine and orthopyroxene have wavy extinction, deformation. The whole slide appears tectonized and some olivine grains have been somewhat sheared. A few smaller olivine grains may have been recrystallized. P.G.E. refers to platinum group elements.

125-779A-9R-01 (Piece 3,15-17 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metamorphosed volcanic sandstone

GRAIN SIZE: 0.1 to <1 mm

TEXTURE: Sandstone

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	Trace	N/A	Not visible		N/A	
Plagioclase	0	1	<1 mm		Not visible	Altered.
Clinopyroxene	2	2	< 1 mm		N/A	Lining.
Spinel	Trace	N/A	N/A		Not visible	
GROUNDMASS						
Glass	N/A	70-80	N/A		Anhedral	Altered. Fills in matrix in volcanic fragment.
Plagioclase	0	20-30	0.1-0.2		Subhedral	Altered.
Clinopyroxene	10-20	10-20	0.1-0.2		Subhedral	Lining.
Opaque	2	2	0.1		Subhedral	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	40-50	Glass matrix			Dusty.	
Chlorite	10-15					
Hornblende	20					Pale brown to pale green in color, elongation positive, extinction angle is 5-10 degrees.

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

COMMENTS: This rock contains many kinds of lithic and mineral fragments, which are mainly volcanic rocks and their derivatives. All minerals excluding augite are altered. Pale-green hornblende replacing augite is observed. Whether hornblende is metamorphic or igneous is not known.

SITE 779

125-779A-9R-01 (24-26 cm)

OBSERVER: LAG

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Silt-sized serpentine

GRAIN SIZE: Silt

TEXTURE: Detrital

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	>90?	N/A		N/A	
Spinel	<1	1	N/A		Rounded-angular-(detrital)	
Orthopyroxene	0	5	N/A		N/A	Bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	All serpentine with very small amounts of blue chlorites.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Carbonate	3					"Flowers" of micrite.
Serpentine						Chrysotile and/or lizardite.
Magnetite	1-2					

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

COMMENTS: Layered serpentine silt-sized detrital mud. Shows layers of brownish agglomerates with bacteria. One layer is felted. A clear fabric axial plane to the fold is outlined by the preferred alignment of serpentine flakes. Detrital grains of serpentine are scattered everywhere. No piece # given.

125-779A-9R-01 (54-56 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinous mudstone

GRAIN SIZE: Fine-grained

TEXTURE: Foliate tectonite (soft-sediment)

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	10-15					
Serpentine	80-90					
Magnetite	<2					

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

COMMENTS: A 5-mm prismatic fragment had been originally a serpentine vein of tectonized and serpentinized peridotite. It shows rhythmical kinking, which is similar to texture of serpentine vein observed in tectonized peridotite. Foliation is defined by parallel arrangements of serpentine crystal and brownish black cleavage. No piece number given.

125-779A-9R-01 (Piece 5,66-68 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.15 mm

TEXTURE: Micro-aphyric intersertal

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	0	15-25	0.1-0.15		Laths	100% altered to clays.
Clinopyroxene	20-30	25-35	0.05-0.15		Anhedral	10-25% altered to chlorite.
GROUNDMASS						
Glass	0	50-60	N/A		N/A	Completely altered to brown clays and chlorite.
SECONDARY MINERALOGY						
Clays	PERCENT 50-60	REPLACING/FILLING Glass, plagioclase, veins				COMMENTS Brown clays after glass and plagioclase and forming many veins.
Carbonate	<1-1	Cavities				0.5 mm across.
Zeolites	<5	Vein				Low index of refraction, colorless, determination uncertain.
Chlorite	15-20	Veins, glassy matrix, clinopyroxene				Pale-green, minor radiating fabric, but mostly after clinopyroxene and matrix.
Prehnite/pumpellyite	2-4	Veins				Lime-green in color with radiating habit; the two minerals appear to be intimately intermixed.
Magnetite?	<1	Matrix				Random, anhedral crystals, black, opaque, in matrix, <0.5 mm.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)	FILLING		SHAPE

COMMENTS: Rare radiating intergrowths of plagioclase and clinopyroxene. Crystallization sequence=clinopyroxene-plagioclase.

125-779A-9R-01 (Piece 8,97-99 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: <0.01-0.03 mm

TEXTURE: Aphyric, glassy

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	60-70	N/A		N/A	Completely altered/recrystallized.
Plagioclase	0	10-20	0.01-0.03		Subhedral, laths	Random occurrence, occasionally aggregated with clinopyroxene.
Clinopyroxene	10-15	20-40	0.01-0.02		Subhedral	Microphenocrysts within glassy/finely crystalline matrix.
SECONDARY MINERALOGY						
Clays	PERCENT	REPLACING/FILLING Glass, plagioclase				COMMENTS Brown, amorphous clays after glass and pseudomorphs after plagioclase.
Chlorite	10-30	Glass, clinopyroxene, veins				Most is in veins with prehnite and pumpellyite, 1-5% replaces clinopyroxene and glass.
Sphene	<2	Matrix				
Prehnite/pumpellyite	5-15	Veins				Veins up to 1.5 mm wide of intermixed prehnite and pumpellyite apparently in equilibrium, both are green and have wavy extinction.
Magnetite	1	?				Found as clusters of anhedral crystals (0.01 mm).
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)	FILLING		SHAPE

COMMENTS: Original crystallization sequence was plagioclase-clinopyroxene. Difficult to distinguish chlorite from prehnite/pumpellyite. They appear intimately intergrown in veins.

SITE 779

125-779A-9R-01 (Piece 9A, 106-108 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: <0.01-0.02

TEXTURE: Aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass/matrix	0	50-60	N/A		N/A	100% altered to clays and chlorite.
Plagioclase	0	10-15	0.01-0.02		Lath, subhedral	85-100% altered (saussuritized) to clays.
Clinopyroxene	<5	25-40	0.01-0.02		Subhedral	50-95% altered to clays.
Spinel	<1	<1	0.01-0.02		Subhedral	Probably alteration products.
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	45-60	Glass, matrix, plagioclase				Brown amorphous clays pervasive alteration (illite?).
Chlorite	25-35	Glass, matrix, clinopyroxene				Pale-green, slightly pleochroic, in matrix and may form after clinopyroxene.
Prehnite/pumpellyite	5-10	Vein				Occurs intimately associated in veins, as radiating bundles with wavy extinction and bow-tie structure.
Magnetite	<1	Spinel?				Randomly distributed, but locally altered, anhedral blebs, black opaque.

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

COMMENTS: Very fine-grained rock altered to prehnite/pumpellyite facies and showing lower greenschist facies alteration. Prehnite and pumpellyite appear to be in equilibrium with each other.

125-779A-9R-02 (Piece 4B, 52-54 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Tectonized serpentized harzburgite

GRAIN SIZE: 0.5-5 mm

TEXTURE: Mesh (and minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	20-30	83.5-	2-4		Anhedral	Altered to serpentine mesh.
Clinopyroxene	1	1	<0.5		Anhedral	As exsolution lamellae and small patches.
Spinel	1.5	1.5	0.05-1	Cr?	Subhedral-anhedral	Red, altered to magnetite.
Orthopyroxene	10	10-15	1-5		Subhedral-anhedral	Altered to serpentine bastite.
GROUNDMASS						
P.G.E.	<0.1	N/A	N/A		N/A	Found disseminated 0.03 mm grains in veins with magnetite + serpentine.
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	2	Serpentine				Dusty brown clay distributed throughout slide and also concentrated in small chrysotile veins.
Chlorite	1					Anhedral patches intergrown with serpentine; also minor (0.1-mm-wide) veins which cut across mesh texture.
Magnetite	1	Spinel				Dusty 0.1-mm sized; analyzed in elongated ragged trails which usually follow chrysotile veining.
Serpentine		Olivine, orthopyroxene				Lizardite and/or chrysotile altered from olivine and orthopyroxene and distributed throughout slide.

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

COMMENTS: Olivine and orthopyroxene have wavy extinctions; clinopyroxene exsolution lamellae are bent also. Orthopyroxene has minor olivine and clinopyroxene inclusions. The northwest corner of the slide shows a good example of mesh texture developed by the intersecting of 2 generations of veins: small 0.1-mm-wide chlorite vein (Fe-Mg-rich) cut by second generation chrysotile and magnetite veins <0.05 mm wide. Slide appears tectonized. P.G.E. refers to platinum group elements.

125-779A-10R-01 (Piece 3,26-29 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized tectonized dunite(?)

GRAIN SIZE: 0.05-2 mm

TEXTURE: Mesh in areas; tectonized

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	55	94	0.1-2	Fo90	N/A	2V=+85--+90 degrees; altered to serpentine mesh, but mesh texture is poorly developed.
Clinopyroxene	<0.1	<0.1	0.05		Anhedral	Clots besides orthopyroxene.
Spinel	0.5	1	0.05-1	Cr?	Subhedral-anhedral	Red, altered to magnetite and chlorite.
Orthopyroxene	1	5	1-2		Subhedral-anhedral	Altered to serpentine bastite and chlorite.
GROUNDMASS						
PGE/sulfide	<0.01	<0.01	0.5		N/A	Disseminated rounded grains.
SECONDARY MINERALOGY						
MINERALOGY	PERCENT	REPLACING/ FILLING		COMMENTS		
Chlorite	3	Orthopyroxene, spinel, serpentine		Blue-green to brown pleochroism; forms anhedral patches intermixed with serpentine and also forms along orthopyroxene grains, colorless chlorite rims some spinels.		
Serpentine	37	Olivine, orthopyroxene		Lizardite and chrysotile are mainly present. They are mostly concentrated near the central 1-cm-wide chrysotile vein, less serpentinization near the edges of the slide.		
Magnetite	3	Spinel		Dusty 0.1-mm grains; distributed throughout slide, also concentrated in veins.		
Brucite	Trace	Serpentine		Might be occurring along with serpentine in the veins.		
VESICLES/CAVITIES						
Vesicles	PERCENT	LOCATION	SIZE (mm)	FILLING		SHAPE
Vesicles	0					

COMMENTS: Orthopyroxene and primary olivine have wavy extinction; olivine shows mylonitization with recrystallization of neoblastic olivine with 120 degrees triple junction!!! Slide has veins criss-crossing it. A beautiful 1-cm-wide chrysotile vein cuts the slide. This vein is also sheared in some places. This vein also cuts across an earlier generation (5-mm-wide) vein of serpentine which is perpendicular to it. P.G.E. refers to platinum group elements.

125-779A-10R-01 (Piece 5,39-43 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Tectonized serpentinized dunite

GRAIN SIZE: 0.5-7 mm

TEXTURE: Felted, tectonized

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	40	97	0.5-7		Subhedral-anhedral	Altered to serpentine, neoblasts(?), deformed.
Spinel	0.5	1	0.5-2	Cr?	Anhedral	Red-red brown, some have inclusions of olivine? clinopyroxene?
Orthopyroxene	2	3	1-3		Subhedral-anhedral	Altered to serpentine bastite; deformed crystals.
GROUNDMASS						
P.G.E.	<0.05	N/A	N/A		N/A	May be sulfide. Form disseminated, grains and veins <= 0.25 mm.
SECONDARY MINERALOGY						
MINERALOGY	PERCENT	REPLACING/ FILLING		COMMENTS		
Carbonate	1	?		Not calcite; refractive index is higher than calcite; found in association with tectonized portion of slide.		
Serpentine	51	Olivine, orthopyroxene		Lizardite, chrysotile, antigorite all present; concentrated mainly on edges of tectonized fresher zone in middle. Antigorite-rich veins (<3 mm wide) cut across lizardite and chrysotile areas and fresher olivine, orthopyroxene areas.		
Magnetite	2	Spinel		Dusty 0.1-mm size anhedral grains which forms elongated trails and concentrates mostly in veins.		
Brucite	3	Olivine, orthopyroxene		Usually found in completely serpentinized portion on edge of slide.		

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

COMMENTS: This section contains two different types of rocks. In one portion the olivine and orthopyroxene are fresher and are intensely elongated with wavy extinction and kink-banding. some olivine appears recrystallized. Portion of slide appears tectonized and somewhat sheared. In the other portion the minerals are completely altered to serpentine (lizardite, antigorite and chrysotile); olivine to antigorite and brucite; orthopyroxene to bastite; Cr-spinel is still fresh-looking. This portion appears to be a serpentinization rind around the fresher minerals. It appears on both sides of the tectonized fresher minerals. Also the serpentinized part may show prograde metamorphism because of the presence of orthopyroxene-lizardite-antigorite. P.G.E. refers to platinum group elements.

125-779A-10R-01 (Piece 6,54-57 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Tectonized serpentized dunite

GRAIN SIZE: 0.1-4 mm

TEXTURE: Tectonized

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	50	97	1-4		Anhedral	Altered to serpentine (blades and fibers).
Spinel	0.5	1	0.1-2	Cr?	Euhedral-anhedral	Red, altered to magnetite.
Orthopyroxene	2	3	1-2		Subhedral-anhedral	Altered to serpentine.
GROUNDMASS						
P.G.E. ?	<0.1	N/A	N/A		N/A	Disseminated and with magnetite in veins.
SECONDARY MINERALOGY						
Serpentine	42		REPLACING/ FILLING Olivine, orthopyroxene			Mostly antigorite and chrysotile; serpentine forms mostly elongated fibers across olivine cleavages and fractures. Associated with serpentine and intermixed with it.
Brucite	3		Olivine			Fine-grained (0.1 mm); located in veins, altered from spinels.
Magnetite	2		Spinel			

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

COMMENTS: Olivine and orthopyroxene are deformed and show wavy extinctions and kink-banding. Olivine shares in wavy extinction of serpentine (ductilely deformed bent along with serpentine), but also forms subgrains. Most easily visible in some long olivine lamellae, which are segmented, but individual segments have undulatory extinction. Therefore, deformation at high temperature and/or high confining pressure. Minerals also appear slightly elongated; serpentine formation and texture is interesting because of formation along olivine cleavages. P.G.E. refers to platinum group elements.

125-779A-10R-02 (Piece 1,28-31 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-5 mm

TEXTURE: Bastite (poor)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	88	Not visible		Not visible	Completely altered to serpentine; mesh texture is very poorly developed.
Spinel	Trace	<1	<0.05		Subhedral-anhedral	Altered to magnetite?
Orthopyroxene	0	12	1-5		Anhedral?	Altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	96		REPLACING/ FILLING Olivine, orthopyroxene			Lizardite and chrysotile mainly throughout entire slide. No good mesh texture is visible; minor bastitic texture is visible.
Magnetite	<1		Spinel			Dusty and fine-grained, appears concentrated next to veins.
Brucite?	3?		Olivine, orthopyroxene			Yellow interference color mineral with slightly different relief than serpentine; intermixed with serpentine.

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

COMMENTS: Veins (1-3 mm wide) of chrysotile cutting across slide larger vein (3 mm wide) may have post-dated smaller (1 mm wide) veins. These small ones are oriented almost perpendicular to the larger one. Slide is completely serpentized with no relic mineralogy left.

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125-779A-11R-01 (Piece 2,6-9 cm)

OBSERVER: VAN

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-3 mm

TEXTURE: Mesh and (minor) bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	<1	87	0.1-0.3		Anhedral	Altered to serpentine mesh texture but a few relic grains are still visible.
Clinopyroxene	Trace	Trace	0.1-0.2		Anhedral	One anhedral grain visible near larger orthopyroxene.
Spinel	1	1	0.1-1	Cr?	Subhedral-anhedral	Red; appear disseminated.
Orthopyroxene	0	12	0.5-3		N/A	Altered to serpentine bastite; few orthopyroxene (bastite) grains have inclusions of anhedral olivine?

GROUNDMASS
N/A N/A N/A N/A

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Serpentine	98	Olivine, orthopyroxene	Lizardite and/or chrysotile form mesh-texture throughout slide. The mesh is cut by a later-stage chrysotile vein (3 mm wide).
Magnetite	<1	Spinel	Dusty grains throughout slide.
Brucite	<1	Olivine, orthopyroxene	Yellow interference color mineral appears in smaller (<0.5 mm wide) veins crosscutting serpentine; XRD is necessary.

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

COMMENTS: Orthopyroxene is kinked and has wavy extinction. This slide is completely serpentinized. A larger (3 mm wide) chrysotile vein crosses slide at 45 degrees orientation to the long axis of slide.

125-779A-11R-01 (Piece 3,14-18 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized harzburgite
 GRAIN SIZE: 0.05-5 mm
 TEXTURE: Mesh (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	Tr?	82	Not visible		Not visible	Completely altered to serpentine mesh texture, but small inclusions in orthopyroxene(?) still remain.
Clinopyroxene	1.5	1.5	0.05-0.3		Anhedral	As exsolution lamellae, also as fresh grains.
Spinel	1.5	1.5	0.5-2	Cr?	Subhedral-anhedral	Red; some are elongated.
Orthopyroxene	0	15	1-5		Subhedral-anhedral	Altered to serpentine bastite; has (100) clinopyroxene exsolution lamellae.
GROUNDMASS						
P.G.E. (sulfide)	<0.01	N/A	N/A		N/A	Disseminated, rare with magnetite in serpentine.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Serpentine	97	Olivine, orthopyroxene				Lizardite and/or chrysotile, forming mostly mesh texture with minor bastite texture throughout the slide. The mesh appears undeformed in areas, but somewhat deformed in other areas.
Magnetite	<1	Spinel				Dusty 0.1-mm grains scattered throughout slide.

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

COMMENTS: Orthopyroxene has wavy extinction and clinopyroxene exsolution lamellae are bent; some appear slightly elongated. Some spinels and orthopyroxene have inclusions which are now rounded serpentine pseudomorphs after olivine? (or orthopyroxene or clinopyroxene); orthopyroxene also have inclusions of anhedral clinopyroxene which is still very fresh. Completely serpentinized rock but the clinopyroxene is fresh. Clinopyroxene-rich harzburgite. P.G.E. refers to platinum group elements.

125-779A-11R-01 (Piece 5,34-36 cm) OBSERVER: TER WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized dunite
 GRAIN SIZE: <0.1 mm
 TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	99	Not visible		Not visible	Completely altered to mesh textured serpentine.
Spinel	Trace	1	0.2	Cr	Subhedral-anhedral	Cr=red; 1 small grain present and elongated.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Serpentine	100	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh texture, large chrysotile veins cross slide and cut mesh texture.
Magnetite	Trace	Spinel				Dusty grains in trace amounts across slide.

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

COMMENTS: Quality of this thin section is bad. It covers a small area and is too thin, therefore quality of optical determination is low. 1 to 3-mm-wide chrysotile veins run throughout the slide cutting across mesh texture.

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125-779A-12R-01 (Piece 6,38-42 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-4 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	10	86	2-4		Subhedral-anhedral	Altered to serpentine mesh texture.
Clinopyroxene	1	1	0.05		Anhedral	As exsolution lamellae and small anhedral grains.
Spinel	1	1	0.2-0.8	Cr?	Euhedral-anhedral	Red; altered to magnetite and chlorite (see comments).
Orthopyroxene	8	12	0.5-4		Subhedral-anhedral	Altered to serpentine bastite; has exsolution lamellae of clinopyroxene; altered to chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	2	REPLACING/ FILLING Serpentine? orthopyroxene, spinel				COMMENTS Blue-green yellow pleochroic anhedral patches distributed throughout serpentine and along orthopyroxene cleavages grain boundaries; some spinels.
Serpentine	78	Olivine, orthopyroxene				Lizardite and/or chrysotile altering from olivine and orthopyroxene, forming mesh and minor bastite texture.
Magnetite	<1	Spinel				A few dusty 0.1-mm grains throughout slide.
VESICLES/CAVITIES						
Vesicles	0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Orthopyroxene has wavy extinction, kink-banding; inclusions of olivine and clinopyroxene. Olivine has wavy extinction and is altering to textured serpentine. One 0.8-mm euhedral spinel has two different rinds. The first has anomalous brown interference colors (some oxide phase) and surrounds the spinel. This is then further rimmed by anomalous blue interference colors (chlorite and/or serpentine). May be tectonized because mesh is deformed in portions of the slide.

125-779A-13R-01 (Piece 1,2-5 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-4 mm

TEXTURE: Mesh (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	87	Not visible		Not visible	Completely altered to serpentine mesh.
Spinel	<1	1	0.05-1	Cr	Subhedral-anhedral	Red brown, altered to magnetite.
Orthopyroxene	0	12	1-4		Subhedral-anhedral	Altered to serpentine bastite and chlorite.
GROUNDMASS						
P.G.E./sulfide	<0.1	N/A	N/A		N/A	With magnetite, as isolated grains in matrix, <0.1 mm, moderate abundance.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	<1	Serpentine				Dusty light brown clay distributed throughout slide and in mesh texture edges.
Chlorite	2	Orthopyroxene, serpentine				Fine-grained anhedral patches intermixed with serpentine minerals along orthopyroxene cleavages in bastites.
Magnetite	<1	Spinel				Dusty, fine grains distributed throughout slide.
Serpentine	95	Olivine, orthopyroxene				Lizardite and/or chrysotile distributed throughout slide in mesh and bastite textures.

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

COMMENTS: Orthopyroxene bastites have wavy extinction. Rock is strongly serpentinized with no relic mineral grains present. Mesh texture is strongly developed in portions of slide. In other portions it is poorly developed. Slide appears slightly tectonized(?) because of the deformation of the mesh in places. P.G.E. refers to platinum group elements.

125-779A-13R-02 (0-3 cm) OBSERVER: HIR WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Pebbly serpentinous mudstone (debris flow)

GRAIN SIZE: Fine-coarse parallel "melange" fabric

TEXTURE: Tectonite (soft sediment), foliate

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Spinel	<1	N/A	N/A		N/A	Cr-spinel, dark red.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	20-30					Dusty brownish clay.
Serpentine	70-80					
Magnetite	<2					

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

COMMENTS: Spectacular "melange" structure. Ductile boudinage and brittle fracture (former dominant) of large clasts in fine-grained matrix. Strong foliation and layer II shortening. No piece # given.

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125-779A-13R-02 (Piece 1,50-54 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-5 mm

TEXTURE: Mesh and bastite (developing)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	20-25	79-84	0.5-3		Anhedral	Altering to serpentine mesh texture.
Clinopyroxene	<1	<1	0.1-1		Anhedral	As exsolution lamellae; anhedral grains near orthopyroxene.
Spinel	<1	1	0.1-1	Cr?	Subhedral-anhedral	Red; altered to magnetite.
Orthopyroxene	10-15	15-20	1-5		Subhedral-anhedral	Altered to serpentine bastite texture, have inclusions of olivine?
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	2	REPLACING/ FILLING Orthopyroxene, spinel, serpentine				Blue-green to yellow pleochroism (weak), in fine-grained anhedral patches intermixed with serpentine and orthopyroxene also rimming some spinel.
Serpentine	54-64					Lizardite and/or chrysotile forming mesh and bastite textures throughout slide. Some minor bladed antigorite may be present.
Magnetite	2	Spinel				Dusty 0.1-mm grains throughout slide; also some form elongated trails with minor chrysotile veins (<0.2 mm). Plus moderate abundance of platinum group elements, some sulfide (< 0.1 mm), disseminated.

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

COMMENTS: Orthopyroxene has wavy extinction and clinopyroxene exsolution lamellae are bent. Olivine has wavy extinction. Some anhedral olivine inclusions occur in orthopyroxene crystals. Cleavage of magnetite infilled with silicate. Some portions of slide appear tectonized (? mylonitized) because of disruption of mesh, olivine and orthopyroxene grains into finer grains.

125-779A-13R-03 (Piece 1,9-11 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.2-6 mm

TEXTURE: Cumulative (primary) altering to mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	50	86	1-5		Anhedral	Altering to serpentine mesh, highly fractured grains.
Clinopyroxene	Trace	Trace	0.2		Anhedral	Exsolution lamellae of orthopyroxene; small separate grains.
Spinel	1	2	0.3-1	Cr	Subhedral-anhedral	Red; altered to magnetite and chlorite.
Orthopyroxene	5	12	1-6		Subhedral-anhedral	Altering to serpentine bastite.
GROUNDMASS						
P.G.E./sulfide	<1	N/A	N/A		N/A	A few 0.05-0.08 mm disseminated grains.
SECONDARY MINERALOGY						
Chlorite	PERCENT 1	REPLACING/FILLING Spinel, Serpentine				COMMENTS Anomalous blue bladed crystals surrounding some spinel and intermixed with serpentine.
Serpentine	42	Olivine, orthopyroxene				Lizardite and/or chrysotile mainly altering from olivine and orthopyroxene. Concentrated along olivine fractures and orthopyroxene cleavages.
Magnetite	1	Spinel				Fine dusty grains (0.3 mm) throughout slide, also in elongated trains in some portions.

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

COMMENTS: Orthopyroxene has wavy extinction and clinopyroxene exsolution lamellae are deformed. Olivine has wavy extinction and kink-banding; olivine is still fairly fresh, but is serpentinized to mesh textured serpentine. Slide is still relatively fresh harzburgite. Spinel appear altered to some other oxide phase, then further rimmed by chlorite. P.G.E. refers to platinum group elements.

125-779A-14R-02 (Piece 3,21-24 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.5-4 mm

TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	20-25	95	0.5-4		Anhedral	Altered to serpentine mesh texture.
Clinopyroxene	<0.1	<0.1	0.5		Anhedral	Formed as small anhedral grains (rare).
Spinel	1	2	0.1-0.5	Cr	Subhedral-anhedral	Red, altered to magnetite.
Orthopyroxene	1	3	0.5-1		Subhedral-anhedral	Altered to serpentine bastite and chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 2	REPLACING/FILLING Veins				COMMENTS Dusty brown clay concentrated mainly in serpentine vein (1 mm wide) crossing slide.
Chlorite	3	Orthopyroxene, serpentine				Blue green-yellow pleochroic anhedral blades and patches throughout slide and near bastite grains along old orthopyroxene cleavages.
Serpentine	67-72	Olivine, orthopyroxene				Lizardite and/or chrysotile altering from olivine and orthopyroxene, forming mesh and bastite textures. A serpentine vein (0.1 mm wide) crossing slide.
Magnetite	1	Spinel				Dusty 0.1-mm grains; also elongated trails (<0.5 mm long) which are crudely perpendicular to main serpentine vein.

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

COMMENTS: Spinel are altered to magnetite, polyphase material present in the oxide grains, gray-yellow reflectivity.

SITE 779

125-779A-14R-01 (Piece 5A, 74-77 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.2-7 mm

TEXTURE: Cataclastic (going to mesh and bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	40	91	0.2-7		Subhedral-anhedral	Altering to serpentine mesh; some may be neoblastic(?).
Clinopyroxene	<1	<1	0.2	Cr	Subhedral-anhedral	As minor exsolution lamellae.
Spinel	1	1	0.5-1		Euhedral-anhedral	Red brown; altered to magnetite and chlorite(?).
Orthopyroxene	2	8	1-2		Subhedral-anhedral	Altering to serpentine bastite and chlorite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	2	REPLACING/ FILLING Orthopyroxene, serpentine				COMMENTS Anomalous brown interference colors (some oxide phase) rims some spinels; Blue-green to yellow pleochroic chlorite is intermixed with serpentine and along orthopyroxene cleavages.
Serpentine	54	Olivine, orthopyroxene				Lizardite and/or chrysotile altering from olivine and orthopyroxene and forming mesh and bastite textures; forming along olivine fractures and orthopyroxene cleavages. Chrysotile vein (~1 mm wide) cuts across slide.
Magnetite	1	Spinel				Dusty 0.3-mm grains, anhedral elongated trails which are concentrated within serpentine veins.

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

COMMENTS: Olivine fractures appear to parallel main serpentine (chrysotile) vein. The serpentine which forms along the olivine fractures also parallels the main vein. This may indicate formation of primary veins with secondary veins at the same time as the olivine fractures. Some olivine grains (<0.2 mm) may be neoblastic?? Spinels are altered to some other oxide phase, and are rimmed by chlorite.

125-779A-14R-02 (Piece 16,139-141 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.01-5 mm

TEXTURE: Cumulate, mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	40	78-83	0.5-4		N/A	Altering to poor-looking mesh texture serpentine, some olivine may be recrystallized.
Clinopyroxene	<1	<1	0.01		Subhedral-anhedral	As exsolution lamellae; as scattered grains.
Spinel	1	1.5	0.05-1	Cr?	Anhedral	Red
Orthopyroxene	10	15-20	0.5-5		Subhedral-anhedral	Altering to serpentine bastite texture; some orthopyroxene appears recrystallized.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	PERCENT 3	REPLACING/ FILLING Orthopyroxene, spinel				COMMENTS Blue-green to yellow pleochroism bladed grains, associated with the serpentine bastite and some spinels.
Serpentine	45	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh and bastite; chrysotile vein (2 mm wide) crosses slide and cuts earlier serpentine veins (0.5 mm wide) that run 60 degrees to it. Serpentinization is greatest near larger chrysotile vein. Dusty 0.1-mm anhedral grains located in veins.
Magnetite	1	Spinel				
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)	FILLING		SHAPE

COMMENTS: Relatively fresh tectonized serpentinized harzburgite. Elongate anhedral spinels arranged in trains; orthopyroxene is kink-banded and exsolved clinopyroxene lamellae are bent; spinel has a reaction halo, altering to some other oxide phase and chlorite surrounding that. Olivine has wavy extinction and appears kinked also. Orthopyroxene has inclusions of anhedral olivine. Some orthopyroxene and olivine may be recrystallized; slide is tectonized.

SITE 779

125-779A-14R-02 (Piece 8,77-79 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-6 mm

TEXTURE: Cumulate (primary) forming mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	40-50	80-85	0.5-5		Anhedral	Kink-banding, wavy extinction, mesh texture serpentine.
Clinopyroxene	3	3	0.01-0.5		Anhedral	As exsolution lamellae and smaller grains.
Spinel	2	2	0.05-2		Euhedral-anhedral	Red; altering to magnetite.
Orthopyroxene	10-15	15-20	0.5-6		Subhedral-anhedral	Altering to serpentine bastite; wavy extinction and recrystallization.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	PERCENT 30-45	REPLACING/FILLING Olivine, orthopyroxene				COMMENTS Lizardite and/or chrysotile forming mostly mesh and bastite textures along olivine fractures and orthopyroxene cleavages.
Magnetite	<1	Spinel				Fine-grained, disseminated, many follow olivine grain boundaries.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Relatively fresh harzburgite; highly tectonized. Serpentine alters olivine along the fractures, but appears to leave the orthopyroxene unchanged. Both olivine and orthopyroxene grains exhibit recrystallization; exsolved clinopyroxene lamellae are bent. Orthopyroxene has inclusions of anhedral olivine and possible clinopyroxene(?).

125-779A-15R-01 (Piece 4,15-17 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Clinopyroxene-rich serpentinized harzburgite

GRAIN SIZE: 0.05-4 mm

TEXTURE: Cumulate, mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	33	83-85	0.05-3		Anhedral	Altering to mesh serpentine.
Clinopyroxene	3	3	0.2-1.5		Subhedral-anhedral	Primary clinopyroxene grains; also as exsolution lamellae.
Spinel	1	2	0.05-1		Subhedral-anhedral	Red; altering to magnetite.
Orthopyroxene	12	12	0.5-4		Subhedral-anhedral	No good serpentine bastite formed; only minor alteration to serpentine.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	PERCENT 50	REPLACING/FILLING Olivine, orthopyroxene				COMMENTS Lizardite and/or chrysotile altering olivine along fractures and forming mesh texture.
Magnetite	1	Spinel				Dusty 0.1-mm grains; some elongated trails are formed.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Orthopyroxene has wavy extinction, bent exsolution lamellae but is still relatively fresh and not altered to serpentine. Olivine has wavy extinction and serpentine alteration along fractures forming mesh texture; some olivines may be recrystallized(?). Portions of slide appear fresh and portions appear altered and tectonized.

125-779A-15R-02 (Piece 3,18-20 cm)

OBSERVER: TER

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.01-5 mm

TEXTURE: Mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	21	87	1-5		Anhedral	Altering to serpentine mesh texture; appears deformed and kinked, wavy extinction.
Clinopyroxene	<1	<1	0.1-1		Subhedral-anhedral	Appears as small patches.
Spinel	1	1	0.01-1	Cr	Subhedral-anhedral	Red brown; altered to magnetite.
Orthopyroxene	7	12	1-3		Anhedral	Altered to serpentine bastite texture; wavy extinction.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	70		REPLACING/ FILLING Olivine, orthopyroxene			COMMENTS Lizardite and/or chrysotile forming mesh and bastite textures.
Magnetite	1		Spinel			Dusty 0.1-mm grains, most are concentrated in veins as elongate trails and also in mesh edges.

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

COMMENTS: Some spinels are elongated into trails; olivine is kink-banded. Olivine and orthopyroxene have wavy extinction; some orthopyroxene appear to have anhedral olivine inclusions.

125-779A-15R-02 (Piece 3,24-27 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.1-4 mm

TEXTURE: Mesh texture dominant

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	10	94-97	1-3		Anhedral	Altered to serpentine mesh texture.
Spinel	0.3	1	0.1-0.5	Cr	Subhedral-anhedral	Red brown; altered to magnetite and chlorite.
Orthopyroxene	0	2-5	1-4		N/A	Altered to serpentine bastite completely.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	<1		REPLACING/ FILLING Serpentine, spinel			COMMENTS Blue green yellow pleochroic; anhedral patches within serpentine, also rimming some spinel.
Serpentine	82		Olivine, orthopyroxene			Lizardite and/or chrysotile forms mesh texture throughout the slide.
Brucite?	5		Olivine, orthopyroxene			Occurs in veins cutting slide; XRD determination is needed.
Magnetite	2		Spinel			Dusty 0.1-mm grains; occurs concentrated in veins.

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

COMMENTS: Veining occurs mostly at 40 degrees angle from the long axis of slide. Veins also serpentine (chrysotile) and brucite, and magnetite assemblage. They are ~0.01-0.05 mm wide. Veining seems to be post-serpentinization. Mesh texture appears tectonized in portions of slide. Some spinels are rimmed by yellow-brown interference color mineral (fibers) which may be another oxide phase.

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125-779A-15R-02 (Piece 5,37-40 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized harzburgite
 GRAIN SIZE: 0.5-3 mm
 TEXTURE: Cataclastic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	40	81	0.5-2		Anhedral	Highly fractured, broken up, and altering to serpentine.
Clinopyroxene	1	1	0.1-0.3		Subhedral-anhedral	As exsolution lamellae, also anhedral grains.
Spinel	3	3	0.5-2	Cr	Subhedral-anhedral	Red brown; altered to magnetite.
Orthopyroxene	10	15	0.5-3		Subhedral-anhedral	Altered to serpentine bastite; wavy extinction.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	45	REPLACING/ FILLING Olivine, orthopyroxene				Lizardite and/or chrysotile mainly occur in larger veins, criss-crossing the slide almost perpendicular to one another.
Magnetite	1	Spinel				Dusty grains concentrated in veins mostly.

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

COMMENTS: Orthopyroxene has wavy extinction, bent clinopyroxene exsolution lamellae; olivine has wavy extinction; most of serpentine in slide is concentrated in a number of criss-crossing veins (0.2-0.5 mm wide). The rest of slide has tectonized (mylonitized) olivine and orthopyroxene grains.

125-779A-15R-02 (Piece 17,110-111 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized dunite
 GRAIN SIZE: 0.2-7 mm
 TEXTURE: Porphyroblastic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	54	97	0.2-7		Euhedral-anhedral	Relic grains are anhedral to subhedral and neoblasts are subhedral to euhedral.
Spinel	1	2	0.5-2	Cr	Euhedral-anhedral	Red; altered to magnetite, chlorite.
Orthopyroxene	Trace	Trace	3		Anhedral	No bastite visible; orthopyroxene is severely fractured and tectonized.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	2	REPLACING/ FILLING Vein				Pale brown; forming feather-like crystals.
Chlorite	<1	Spinel, serpentine				Pale green to colorless; rims some spinels and in some veins.
Serpentine	40					Mostly lizardite and/or chrysotile occurring in vicinity of major veining. Minor antigorite blades are visible.
Magnetite	2	Spinel				Dusty 0.2-mm elongated trails; concentrated in veins as well as throughout slide.

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

COMMENTS: This slide is pervasively tectonized. Recrystallized olivine subgrains occur as an aggregate of fine-grained crystals. A portion of recrystallized olivine grains occur along the cleavages or rim of the olivine crystals (7 mm across). Olivines (relic) have wavy extinction and kink-banding; spinels show alteration to another mineral phase (brown interference(?), fibers), and then to anomalous blue chlorite(?). Veins may occur as a conjugate set with 30-150 degrees orientation.

125-779A-16R-01 (Piece 3,16-19 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-10 mm

TEXTURE: Porphyroblastic, felted

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	50	86	0.1-10		Subhedral-anhedral	Kink-banded, neoblasts; hardly serpentinized, some grains appear elongated.
Spinel	1	2	0.05-2	Cr	Subhedral-anhedral	Red; altered to magnetite; some elongated.
Orthopyroxene	7	12	1-3		Subhedral-anhedral	Altered to serpentine bastite. Some grains appear elongated.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	PERCENT <1	REPLACING/FILLING Spinel				COMMENTS Colorless; anomalous, blue interference color; located around some spinels mostly.
Serpentine	40	Olivine, orthopyroxene				Appears to be mostly bladed antigorite concentrated in serpentine veins. Might be some lizardite present; chrysotile fibers are present in veins and along olivine cleavages.
Magnetite	2	Spinel				Dusty 0.3-mm elongate; distributed throughout serpentinized portion and in veins.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)	FILLING		SHAPE

COMMENTS: Elongated Cr-spinels arranged in trains; one set crossing a vein shows a well-formed "sinistral" shear. Orthopyroxene shows wavy extinction and exsolved clinopyroxene lamellae are bent. Orthopyroxene and spinels are altered but olivine appears relatively fresh, but still has wavy extinction and kink-bands. Some olivine has recrystallized into neoblastic subgrains. Veins are oriented mostly parallel and are ~40 degrees to long axis of slide (0.2-2 mm wide). Spinels are also altered to a mineral with brownish anomalous interference color (could be another oxide phase), also altered to chlorite(?).

SITE 779

125-779A-16R-01 (Piece 3,19-23 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Dunite

GRAIN SIZE: 0.01-6 mm

TEXTURE: Porphyroblastic-granoblastic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	76-81	95	0.1-6		Anhedral	Kink-banded, elongated, wavy extinction recrystallized neoblasts.
Clinopyroxene	<1	<1	0.01		Subhedral-anhedral	Small patch of crystals in slide.
Spinel	0.5	1.5	0.05-0.5	Cr?	Subhedral-anhedral	Red; some altered to magnetite; elongated trains.
Orthopyroxene	2	3	1-2		Subhedral-anhedral	Altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	PERCENT 15-20	REPLACING/ FILLING				COMMENTS Mostly antigorite blades forming 1-3 mm wide veins which cross the slide perpendicular to each other. Chrysotile fibers are also present. Lizardite may be present.
Magnetite	1					Dusty 0.1-mm anhedral grains distributed mostly in veins and along cleavages.

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

COMMENTS: Relatively fresh tectonized dunite. There were two slides made from this rock. The other slide (779A 16R-01 16-19) is described as a serpentized harzburgite. Orthopyroxene is altered to serpentine while olivine is still very fresh and recrystallized in portions; two vein sets running perpendicular to one another and composed of serpentine and magnetite; rest of slide is recrystallized. Tectonized olivine grains elongated parallel to 2nd generation veins.

125-779A-16R-01 (Piece 6,37-40 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.01-4 mm

TEXTURE: Cataclastic, granoblastic (minor mesh)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	69	83	0.01-4		Anhedral	Kink-banded, wavy extinction, elongated neoblasts; altering to serpentine (poor mesh).
Clinopyroxene	<1	<1	0.01-0.05		Anhedral	Exsolution lamellae in orthopyroxene, small anhedral patches.
Spinel	<1	2	0.05-1	Cr	Anhedral	Red; altered to magnetite.
Orthopyroxene	7	15	0.5-4		Subhedral-anhedral	Altering to serpentine bastite; has (100) lamellae of clinopyroxene, wavy extinction, elongated.

GROUNDMASS
N/A N/A N/A N/A N/A

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Serpentine	25	Olivine, orthopyroxene	Looks like bladed antigorite and fibrous chrysotile, but lizardite may also be present. Concentrated mostly in central zone.
Magnetite	2	Spinel	Dusty 0.2-mm anhedral grains concentrated mostly in 4-mm veins.
Talc?	4	Orthopyroxene	Elongation, extinction angle ~ 0 degree; high interference color; may not be talc rather mylonitized olivine; appears mostly in sheared central zone as fine-grained fibers.

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

COMMENTS: Rock is pervasively tectonized. Olivine and orthopyroxene are elongated and deformed (kink-banded and wavy extinction). Orthopyroxene appears to be more extensively altered than olivine; olivine is mostly recrystallized into smaller neoblasts; center of slide appears to be a tectonized or shear zone where most of serpentine is where the primary minerals have been altered, sheared, and practically obliterated. Away from the center zone, the primary minerals are hardly serpentinized, but are elongated, deformed, and recrystallized. Orthopyroxene has small anhedral inclusions of olivine.

SITE 779

125-779A-16R-01 (Piece 8,50-52 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.01-0.4 mm

TEXTURE: Cataclastic, granoblastic (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	68	84	0.01-4		Anhedral	Kinked, elongated, wavy extinction, neoblastic in areas, altering to serpentine (poor mesh).
Clinopyroxene	<1	<1	0.5		Anhedral	Exsolution lamellae, small subhedral to anhedral grains (also in orthopyroxene).
Spinel	<1	1	0.1-0.5		Anhedral	Dark red brown; altering to magnetite.
Orthopyroxene	7	15	0.5-4		Subhedral-anhedral	Altered to serpentine bastite, elongate, wavy extinction, recrystallized; associated with talc(?).
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT Trace	REPLACING/ FILLING Veins				COMMENTS Dusty brown clay along one edge of slide (0.2-mm-thick zone).
Serpentine	20	Olivine, orthopyroxene				Could be lizardite and/or chrysotile, also antigorite(?). Appear concentrated mostly in and near veins (0.2-0.8 mm) cutting slide.
Magnetite	1	Spinel				Dusty 0.3-mm elongate grains; located mostly in veins.
Talc?	3	Orthopyroxene				(+)Elongation, high interference colors, fibrous, extinction angle ~ 0 degree. This may or may not be talc but it is associated with alteration of orthopyroxene.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Rock is severely tectonized; olivine and orthopyroxene are deformed (kink-banded wavy extinction) and elongated. Orthopyroxene appears to be more extensively altered than olivine. Olivine is recrystallizing into small neoblasts. Orthopyroxene has rounded inclusions of olivine and anhedral to subhedral inclusions of clinopyroxene; orthopyroxene also has bent exsolution lamellae, some grains appear recrystallized. Primary crystals are all elongated in same direction which parallel the long direction of slide; some chromite appears rimmed by magnetite. Edge of slide has rim of clays.

125-779A-16R-01 (Piece 19,127-129 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.01-5 mm

TEXTURE: Granoblastic-cataclastic (felted in areas, bastite also)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	52	90	0.01- 5		Anhedral	Kink-banded, wavy extinction, neoblasts; elongated, altering to serpentine (poor mesh).
Clinopyroxene	Trace	Trace	0.01		Subhedral-anhedral	As exsolution lamellae.
Spinel	1	2	0.2-1		Anhedral	Dark red brown; altered to magnetite.
Orthopyroxene	3	8	1-4		Subhedral-anhedral	Altered to serpentine bastite and talc; kinked, wavy extinction, recrystallized.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	1		REPLACING/ FILLING Serpentine			COMMENTS Dusty brown clay located on one side of slide, intermixed with the serpentine.
Serpentine	40		Olivine, orthopyroxene			Mostly antigorite and chrysotile; might be lizardite, but difficult to tell. Serpentine is mostly in veins (0.1-0.4 mm) which cut slide and tend to alter minerals closest to veins.
Magnetite	1		Spinel			Dusty 0.5-mm elongated trains; mostly concentrated in serpentine veins (0.1-0.4 mm).
Talc?	2		Orthopyroxene			High birefringence, (+) elongation, fibrous extinction angle ~0 degree; May or may not be talc, but associated with orthopyroxene alteration.

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

COMMENTS: Slide appears tectonized. Olivine and orthopyroxene are elongated in a parallel direction that defines a fabric across the slide. Olivine and orthopyroxene are both deformed (kink-banded and wavy extinction) and recrystallized. Serpentine veins appear to have a conjugate set orientation (crudely!!) Tectonic elongation tends to follow first-generation serpentine veins. The second-generation serpentine veins cut across elongation fabric and first-generation vein set. One orthopyroxene grain has clinopyroxene lamellae and is altered to serpentine, but clinopyroxene lamellae still extend into serpentine.

SITE 779

125-779A-16R-02 (Piece 6,44-47 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-3 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	18	81	1-3		Anhedral	Wavy extinction altered to serpentine mesh.
Clinopyroxene	5	5	0.1-0.4		Equant-anhedral	Exsolution lamellae, occur at orthopyroxene edges, fresh.
Spinel	1	2	0.2-0.5	Cr	Anhedral	Red; elongated-ragged alters to magnetite, some clinopyroxene inclusions.
Orthopyroxene	5	12	1-3		Subhedral-anhedral	Ragged appearance in some grains, altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	70	REPLACING/ FILLING Olivine, orthopyroxene				COMMENTS Lizardite and/or chrysotile forming mesh and bastite textures; Chrysotile also concentrated in major vein sets crossing slide (0.5-2 mm wide).
Magnetite	1	Spinel				Dusty 0.2-mm grains, ragged trains concentrated serpentine veins.
VESICLES/CAVITIES						
Vesicles	0	LOCATION	SIZE (mm)	FILLING	SHAPE	

COMMENTS: Orthopyroxenes are kink-banded and have bent clinopyroxene exsolution lamellae. Spinels sometimes form ragged trails. Multiple vein sets with a crude conjugate set orientation. Possibly even a crude "Frankenstein" texture in an area. Appears that the 1st-generation vein set developed, then 2nd set and 3rd set, but difficult to decipher. Relatively clinopyroxene-rich harzburgite.

125-779A-16R-02 (Piece 9,61-64 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-5 mm

TEXTURE: Mesh (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	20	85	0.1-3		Anhedral	Altering to serpentine mesh, wavy extinction, neoblastic?
Clinopyroxene	2	2	0.8-2		Subhedral-anhedral	Exsolution lamellae; and near orthopyroxene margins.
Spinel	1	1	0.5-2	Cr	Ragged-anhedral	Red; altered to magnetite.
Orthopyroxene	10	12	0.5-5		N/A	Altering to serpentine bastite and chlorite; have (100) exsolution lamellae.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	1		REPLACING/ FILLING Orthopyroxene			COMMENTS Blue-green to yellow pleochroism; associated mainly along orthopyroxene cleavages and grains.
Serpentine	65		Olivine, orthopyroxene			Lizardite and/or chrysotile forming mesh and bastite texture; chrysotile also dominates in multiple veins sets (0.2-3 mm wide) crossing slide.
Magnetite	1		Spinel			Dusty 0.1-mm grains; disseminated throughout and in veins mostly.
VESICLES/CAVITIES						
Vesicles	0		SIZE (mm)		FILLING	SHAPE

COMMENTS: Relatively clinopyroxene-rich harzburgite; orthopyroxene has wavy extinction, and inclusions of clinopyroxene and olivine. Spinels have inclusions of serpentine pseudomorphs of round olivine(?); olivine and orthopyroxene may be slightly recrystallized in areas. Very complicated sets of vein criss crossing slide; may be some "Frankenstein" texture. One large vein set (1 cm wide) is cut perpendicular by minor (2 mm wide) veins.

SITE 779

125-779A-16R-02 (Piece 9,74-77 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.05-5 mm

TEXTURE: Mesh (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	48	76.5	1-3		Anhedral	Kink-banded; wavy extinction, altering to serpentine mesh.
Clinopyroxene	2	2	0.05-0.5		Subhedral-anhedral	Exsolution lamellae; small grains near orthopyroxene grains.
Spinel	1	1.5	0.05-4	Cr	Anhedral	Red; elongate trains; has inclusions of olivine(?)
Orthopyroxene	12	20	1-5		Subhedral-anhedral	Altering to serpentine bastite chlorite; (100) clinopyroxene lamellae is well developed.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
MINERALOGY	PERCENT	REPLACING/FILLING				COMMENTS
Chlorite	1	Orthopyroxene				Blue-green-pale green pleochroic; forming along orthopyroxene cleavages and grains.
Serpentine	35	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh and bastite textures throughout slide and in veins.
Magnetite	1	Spinel				Dusty 0.1-mm grains concentrated mainly in minor chrysotile veins across slide.

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

COMMENTS: Relatively fresh serpentized harzburgite; olivine and orthopyroxene have wavy extinction and kink-banded; orthopyroxene have inclusions of anhedral olivine and subhedral(?) clinopyroxene; some spinels have olivine(?) inclusions and are elongated. Rock is relatively clinopyroxene-rich. Has multiple sets of intersecting serpentine veins (0.1-0.4 mm wide). Spinel and magnetite tend to follow veins which may be 2nd generation(?).

125-779A-16R-02 (Piece 11,117-120 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.1-4 mm

TEXTURE: Mesh (minor bastite)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	12	83	0.1-4		Anhedral	Altered to serpentine mesh; wavy extinction.
Clinopyroxene	1	1	0.05-.5		Anhedral	Exsolution lamellae, grains around orthopyroxene.
Spinel	1	1	0.05-1		Subhedral-anhedral	Red, altered to magnetite; minor inclusions of olivine(?).
Orthopyroxene	10	15	0.2-4		Subhedral-anhedral	Altered to serpentine bastite; wavy extinction, (100) exsolution lamellae.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Chlorite	Trace	Orthopyroxene				Blue-green to pale-green pleochroic, forms along orthopyroxene fractures and cleavages.
Serpentine	75	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh and bastite texture. Area near veins are strongly serpentinized and decrease as go away from veins.
Magnetite	1	Spinel				Dusty 0.1-mm grains concentrated mainly in veins.

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

COMMENTS: Orthopyroxene have wavy extinction, kink-banded and clinopyroxene exsolution lamellae which are sometimes bent. Orthopyroxene also have small inclusions of clinopyroxene grains. One orthopyroxene grain appears to have recrystallized across a large fracture cutting its cleavages. Major vein set (1-2 mm wide) crossing slide and consists of serpentine and magnetite. This vein set is cut by smaller serpentine veins (0.1-3 mm wide) in "Frankenstein" orientation.

125-779A-17R-01 (Piece 17,144-145 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.01-5 mm

TEXTURE: Porphyroblastic and mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	31	98	0.01-5	Fo 95	Subhedral-anhedral	Altered to serpentine mesh, 2V=-85. Wavy extinction, neoblastic.
Spinel	1	2	0.05-5		Euhedral-anhedral	Red-brown, altered to magnetite. Minor inclusions.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Clays	2	Veins				Dusty brown-blue clays concentrated mainly in veins and in neoblastic areas; not associated with primary grains.
Serpentine	65	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh. Mostly concentrated in veins and vein sets (1-5 mm wide) crossing slide. Serpentinization of primary minerals is greatest near veins.
Magnetite	1	Spinel				Dusty black grains concentrated in veins.

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

COMMENTS: Rock is tectonized. Olivine shows wavy extinction; elongation and recrystallization into subgrains throughout most of slide. No orthopyroxene is visible as either primary or as bastite. Some olivine grains (neoblasts) show triple junction (120 degrees); possible shear planes in olivine. Veining of chrysotile is abundant throughout slide.

SITE 779

125-779A-17R-02 (Piece 3,17-20 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.1-5 mm

TEXTURE: Cataclastic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	48	73	0.1-5		Subhedral-anhedral	Kink-banded, wavy extinction, altering to serpentine (poor mesh serpentine). As exsolution lamellae. Red brown; altered to magnetite, elongate. Altered to serpentine bastite and chlorite has exsolution lamellae of clinopyroxene.
Clinopyroxene	Trace	Trace	0.25-0.5		Anhedral	
Spinel	1	2	0.2-1	Cr	Euhedral-anhedral	
Orthopyroxene	15	25	0.5-4		Subhedral-anhedral	
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	PERCENT <1	REPLACING/FILLING Orthopyroxene				COMMENTS Blue-green to pale-yellow pleochroism, found mostly along orthopyroxene cleavages and fractures.
Serpentine	35	Olivine, orthopyroxene				Mostly lizardite and/or chrysotile in wide vein across slide. Serpentinization of primary minerals is greatest in vein and its vicinity.
Magnetite	1	Spinel				Dusty 0.1-mm grains concentrated mainly in veins.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Orthopyroxene is kink-banded, wavy extinction, bent clinopyroxene exsolution lamellae. Olivine is kinked, has wavy extinction, altering to serpentine, but is mainly suffering cataclastic deformation with minor amount of neoblast formation. Slide is tectonized. Have major vein set of serpentine and magnetite (~1 cm wide) crossing slide. The elongation of olivine crudely parallel the veins orientation. Some brighter/yellowish phase in layer spinels, developed along cracks (magnetite, ferric chromite?).

125-779A-17R-02 (Piece 3,21-24 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.1-4 mm

TEXTURE: Cataclastic-granoblastic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	47	74	0.1-3		Anhedral	Kinked, wavy extinction, tectonized with minor neoblasts formation; altering to serpentine.
Clinopyroxene	Trace	Trace	N/A		Anhedral	As exsolution lamellae in orthopyroxene. Minor patches.
Spinel	1	1	0.2-0.4	Cr	Subhedral-anhedral	Altering to magnetite; minor inclusions of olivine(?).
Orthopyroxene	20	25	1-4		Subhedral-anhedral	Wavy extinction, clinopyroxene exsolution lamellae, altered to serpentine bastite(?).
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Chlorite	Trace	Orthopyroxene				Blue-green to pale-green pleochroic; associated with orthopyroxene cleavages and fractures mostly.
Serpentine	30	Olivine, orthopyroxene				Mostly lizardite and/or chrysotile; large (0.05-5 mm) serpentine veins cutting slide and altering primary minerals.
Magnetite	2	Spinel				Dusty 0.2-mm grains throughout slide and concentrated along serpentine veins.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Rock appears tectonized, but is still fairly fresh. Serpentinization occurs in veins and in the vicinity of veins and decreases as move away from veins. The fresher (non-altered) minerals have been deformed cataclastically and some minor neoblasts have formed from both olivine and orthopyroxene. Orthopyroxene has bent exsolution lamellae, wavy extinction, slight elongation and minor olivine inclusions. Olivine has wavy extinction and kink-bands, but is still fairly fresh and is elongated.

SITE 779

125-779A-17R-03 (Piece 8B, 77-80 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.05-4 mm

TEXTURE: Cataclastic (w/wo granoblastic and mesh)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	53	83	0.05-2		Subhedral-anhedral	Kink-banded; wavy extinction, lamellae-like kinks; elongate, altered to serpentine, neoblastic.
Clinopyroxene	Trace	Trace	0.05-5		Subhedral-anhedral	Exsolution lamellae; small grains near orthopyroxene.
Spinel	1	2	0.05-1		Subhedral-anhedral	Dark red brown; altered to magnetite.
Orthopyroxene	10	15	1-4		Subhedral-anhedral	Altering to serpentine bastite; wavy extinction; has inclusions of clinopyroxene(?).
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Serpentine	35	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh texture. Abundant serpentine veins (chrysotile) cutting slide at two main orientations (0.5-3 mm wide).
Magnetite	1	Spinel				Dusty grains 0.2-mm anhedral grains concentrated in elongated trains in veins.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: This slide is severely tectonized. Olivine and orthopyroxene have wavy extinction, elongation and kinks and deformed. Olivine appears more altered and fractured and recrystallized than orthopyroxene. Serpentine veins appear in a conjugate set type orientation and are abundant. In one portion it appears that primary olivine was fractured, then serpentinized into mesh texture, then recrystallized into neoblasts with little or no serpentine mesh rim around it.

125-779A-17R-03 (Piece 8B, 80-83 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.01-5 mm

TEXTURE: Granoblastic (cataclastic?)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	43	83	0.05-4		Subhedral-anhedral	Wavy extinction; altered to serpentine mesh, microgranoblastic.
Clinopyroxene	<1	<1	0.01-0.5		Anhedral	Exsolution lamellae in orthopyroxene; grains near orthopyroxene.
Spinel	1	2	N/A	Cr	Anhedral	Red; altered to magnetite; some are elongate.
Orthopyroxene	10	15	1-5		Subhedral-anhedral	Altered to serpentine bastite and chlorite, deformed wavy extinction.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Chlorite	Trace		REPLACING/ FILLING Orthopyroxene			COMMENTS Blue-green to pale-green pleochroic; forms along cleavages and cracks.
Serpentine	45		Olivine, orthopyroxene			Lizardite and/or chrysotile altering from olivine and orthopyroxene. Forming anastomosing veins throughout slide.
Magnetite	1		Spinel			Dusty 0.2-mm elongate trails concentrated in veins throughout slide.
VESICLES/CAVITIES						
Vesicles	0		LOCATION	SIZE (mm)	FILLING	SHAPE

COMMENTS: Relatively fresh tectonized harzburgite; Cr-spinel contain inclusions of primary minerals (olivine) and certain irregular veins of a more yellowish reflective phase. Orthopyroxene grains have wavy extinction and clinopyroxene exsolution lamellae are bent; spinels are elongate, ragged, and may be present in trains. Possible cumulus texture. Some of the fresh olivine is microgranular (0.05 mm).

SITE 779

125-779A-17R-04 (Piece 4,44-47 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-3 mm

TEXTURE: Granoblastic and mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	27.5	87	0.05-3		Subhedral-anhedral	Kinked, wavy extinction altering to serpentine mesh, also recrystallizing. As exsolution lamellae and minor grains in orthopyroxene. Red; altered to magnetite. Kinked, wavy extinction, altering to serpentine bastite.
Clinopyroxene	Trace	Trace	0.05-0.2		Subhedral-anhedral	
Spinel	0.5	1	0.2-0.5	Cr	Subhedral-anhedral	
Orthopyroxene	7	12	1-3		Subhedral-anhedral	
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Serpentine	65	Olivine, orthopyroxene				Lizardite and/or chrysotile occurring throughout slide and forming mesh and minor bastite textures; serpentine veins occur (0.5-3 mm wide) throughout slide.
Magnetite	1					Fine-grained, dusty, 0.1-mm grains occurring mostly in serpentine veins.

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

COMMENTS: Olivine and orthopyroxene have kink-bands, wavy extinction, deformation. Olivine appears more pervasively altered than orthopyroxene because of amount of fractures, serpentine and neoblasts. Orthopyroxene doesn't appear to be recrystallizing to any great degree. Orthopyroxene has inclusions of anhedral clinopyroxene. Serpentine veins occur at no specific orientation with a wider zone of serpentinization following the major vein.

125-779A-19R-02 (Piece 13,97-99 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Dunite

GRAIN SIZE: 0.02-5

TEXTURE: Granoblastic and felted

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	61.5	99	0.02-5	Fo95	Subhedral-anhedral	Kink-banded; wavy extinction, altered to serpentine blades and fibers, 2V=-85. Dark red-brown, altered to magnetite.
Spinel	0.5	1	0.5-1		Subhedral-anhedral	
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/FILLING				COMMENTS
Serpentine	35	Olivine				Mostly antigorite blades and chrysotile fibers forming after olivine. Possible lizardite also. Dusty 0.3-mm anhedral grains which occur in serpentine veins and along cleavages. Might be distributed within serpentinized area, but determination is very difficult.
Magnetite	2	Spinel				
Brucite?	1	Olivine, serpentine				

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

COMMENTS: Serpentine tends to form along olivine "shear" fractures. May indicate tectonized (i.e., mantle deformation). Rock appears to have deformed and recrystallized, then antigorite formed. This is apparent in the neoblasts which appear to be serpentinized. The antigorite blades don't form in a preferred orientation, but rather form a feather-like, felted texture across olivine.

125-779A-22R-01 (Piece 11,58-60 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Altered serpentized harzburgite

GRAIN SIZE: 0.01-2 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	Trace	84	0.01		Subhedral	Altered completely to serpentine mesh texture; located as 1 grain in spinel.
Spinel	1	1	0.5-2		Subhedral-anhedral	Dark brown-red; altered to magnetite.
Orthopyroxene	1	15	1-2		Subhedral-anhedral	Altered to serpentine bastite; bastite appears kinked with wavy extinctions.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	25	Serpentine				Dusty, brownish-bluish clay scattered throughout the slide. Chrysotile and/or lizardite completely replacing primary mineralogy. Forming mesh and bastite textures. The serpentine then appears to be altered to clays. Also chrysotile veins (0.5 mm wide) throughout slide.
Serpentine	70	Olivine, orthopyroxene				
Magnetite	1	Spinel				Dusty 0.2-mm grains throughout slide and along serpentine veins.
Brucite	2	Serpentine				Distributed throughout slide within later chrysotile veins.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Spinels are subhedral-anhedral and form ragged trains across the slide. Antigorite may be present in later cutting veins (0.3 mm wide) and contains brucite(?) and magnetite.

125-779A-22R-01 (Piece 11,63-65 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.02-4 mm

TEXTURE: Cumulate, mesh and bastite.

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	35	79	0.5-4		Anhedral	Altered to serpentine mesh, fractured.
Spinel	<1	1	0.02-1	Cr	Euhedral-subhedral	Red-dark brown; altered to magnetite.
Orthopyroxene	12	20	0.1-5		Subhedral-anhedral	Altered to serpentine bastite and chlorite wavy extinction, kink-banded.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Chlorite	1	Orthopyroxene				Blue-green to green pleochroism, found along orthopyroxene edges, cleavages and fractures. Lizardite and/or chrysotile forming mesh and bastite textures. Numerous chrysotile + magnetite veins (0.5 mm wide) cutting across slide.
Serpentine	50	Olivine, orthopyroxene				
Magnetite	1	Spinel				Dusty 0.2-mm grains forming elongate trains and located mostly in serpentine veins; some grains are euhedral.
Brucite?	<1	Serpentine				Possibly located in center of chrysotile + magnetite veins.
VESICLES/CAVITIES						
	PERCENT	LOCATION	SIZE (mm)		FILLING	SHAPE
Vesicles	0					

COMMENTS: Relatively coarse-grained, orthopyroxene-rich harzburgite. Orthopyroxene is still relatively fresh and not as altered as olivine. Orthopyroxene has anhedral olivine inclusions and is somewhat elongated. One spinel grain has an olivine inclusion (anhedral). One orthopyroxene grain has an interesting set of inclusions: looks slightly like sheared "Frankenstein" veining within a crystal.

SITE 779

125-779A-24R-01 (Piece 6,36-38 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.3-2 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	93	0.5-1		Anhedral	Completely altered to serpentine mesh which is well developed.
Spinel	<1	<1	0.3-1	Cr	Euhedral-anhedral	Red; altered to magnetite.
Orthopyroxene	0	7	1-2		Subhedral-euhedral	Completely altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 7	REPLACING/ FILLING Serpentine				COMMENTS Dusty, brown and blue green clay distributed throughout slide as an alteration product of serpentine.
Serpentine	93	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh and bastite textures throughout slide. Mesh texture dominant.
Magnetite	Trace	Spinel				Dusty grains concentrated in veins.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Completely serpentinized dunite. No relic mineralogy left. Appearance of clay minerals indicate the serpentine is being further altered. The mesh is well developed and does not appear to be deformed or tectonized. Veins of serpentine, magnetite, and clays criss-cross slide (0.01-2 mm wide).

125-779A-25R-01 (Piece 10B,85-87 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized dunite

GRAIN SIZE: 0.1-6 mm

TEXTURE: Mesh (poorly developed)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	20	99	1-6		Subhedral-anhedral	Altering to serpentine mesh (poorly developed). Wavy extinction.
Spinel	0.5	1	0.1-0.5		Euhedral-subhedral	Red-dark brown; altered to magnetite.
Orthopyroxene	0	Trace	2-4		Subhedral-anhedral	Altering to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	PERCENT 78	REPLACING/ FILLING Olivine				COMMENTS Lizardite and/or chrysotile forming mesh texture (poor) from serpentine. Chrysotile also forms anastomosing veins (0.1-1 mm) throughout slide.
Magnetite	1	Spinel				Dusty 0.1-mm grains concentrated along serpentine veins.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Olivine is locally recrystallized into subgrains (microgranoblasts). Some olivines appear elongated and have wavy extinction and kink-banding. Most spinels are perfectly euhedral. Serpentine veins are anastomosing and vary from 0.1-0.7 cm wide. Olivine neoblasts appear to also be serpentinizing in areas of slide.

125-779A-26R-02 (Piece 2B, 50-52 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Harzburgite

GRAIN SIZE: 0.02-5 mm

TEXTURE: Cumulate, granoblastic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	48	81	0.5-4		Subhedral-anhedral	Wavy extinction, kink-banded, altering to serpentine; locally recrystallized(?).
Clinopyroxene	<1	<1	N/A		N/A	As exsolution lamellae, inclusions in orthopyroxene, rims orthopyroxene.
Spinel	1	1.5	0.02-2	Cr	Anhedral	Red-brown, altering to magnetite.
Orthopyroxene	15	18	1-5		N/A	Wavy extinction, elongated, clinopyroxene exsolution lamellae, altering to serpentine.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	PERCENT 35	REPLACING/FILLING Olivine, orthopyroxene				COMMENTS Chrysotile and/or lizardite altering olivine and orthopyroxene to mesh and bastite texture, but still too fresh to fully develop these textures.
Magnetite	1	Spinel				Dusty 0.1-mm grains concentrated in serpentine areas and veins.

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

COMMENTS: Relatively fresh tectonized harzburgite. Some spinels have small anhedral inclusions of olivine; spinels form ragged trails sometimes. Olivine and orthopyroxene appear tectonized and deformed (wavy extinctions, elongated, kinks). Olivine is locally recrystallized into microgranoblasts; orthopyroxene appears to be recrystallized. Orthopyroxene has inclusions of clinopyroxene; clinopyroxene occurs as rims around orthopyroxene.

125-779A-26R-02 (Piece 2C, 71-75 cm)

OBSERVER: SAB

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Altered serpentized harzburgite

GRAIN SIZE: 0.01-4 mm

TEXTURE: Minor mesh and bastite in 1.5-cm-vein zone

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	2	86	0.2-1		Anhedral	Altering to serpentine mesh, wavy extinction.
Clinopyroxene	Trace	Trace	0.01-0.05		Subhedral-anhedral	As exsolution lamellae in orthopyroxene.
Spinel	1	2	0.01-2		Subhedral-anhedral	Dark brown, altered to magnetite.
Orthopyroxene	2	12	1-4		Subhedral-anhedral	Altered to serpentine bastite; wavy extinction, bent clinopyroxene lamellae.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 30	REPLACING/FILLING Serpentine				COMMENTS Dusty brown clay distributed mainly along serpentine veins.
Serpentine		Olivine, orthopyroxene				Chrysotile and/or lizardite forming multiple veins which run in various orientations through slide.
Magnetite	2	Spinel				Dusty 0.1-mm grains concentrated in vein zone.
Brucite	Trace	Serpentine				May be intermixed with serpentine and magnetite in veins.

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

COMMENTS: Slide consists mostly of 1.5-cm-wide zone of veins (serpentine, magnetite, brucite(?)) which run 45 degrees from long axis of slide. This slide has numerous crosscutting relationships. Has a moderate "Frankenstein" texture. Orthopyroxene and olivine have wavy extinctions; orthopyroxene has bent exsolution lamellae. Spinel grains are arranged in trails perpendicular to main vein zone.

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125-779A-26R-03 (Piece 3B,101-103 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Serpentinized harzburgite
 GRAIN SIZE: 0.02-5 mm
 TEXTURE: Poor mesh and bastite (from cumulate)

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	21.5	62.5	0.5-3		Anhedral	Kink-banded, wavy extinction, altered to serpentine mesh.
Clinopyroxene	1	1	0.02-0.5		Anhedral	As exsolution lamellae, grains in and around orthopyroxene also.
Spinel	1.5	1.5	0.02-2		Anhedral-ragged	Dark red brown, altered to magnetite.
Orthopyroxene	25	35	0.1-5		Subhedral-anhedral	Altering to serpentine bastite; (100) clinopyroxene lamellae are poor, wavy extinction.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Serpentine	PERCENT 50	REPLACING/FILLING Olivine, orthopyroxene				COMMENTS Chrysotile and/or lizardite altering olivine and orthopyroxene. Mesh is poorly developed because of large abundance of chrysotile and magnetite veins (0.2-0.8 mm wide).
Magnetite	1	Spinel				Dusty 0.1-mm grains concentrated in veins.

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

COMMENTS: Olivine and orthopyroxene have wavy extinction; orthopyroxene has inclusions of clinopyroxene and olivine. Major zone of multiple serpentine veins oriented ~ 50 degrees to long axis of slide. It is defined by multiple serpentine and magnetite veins and is about 1.5 cm wide. Spinel is elongated in trains perpendicular to main vein zone.

125-779A-28R-02 (109-113 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank
 ROCK NAME: Altered serpentinized dunite
 GRAIN SIZE: 0.1-1 mm
 TEXTURE: Tectonized mesh

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	0	99-10	Not visible		Not visible	Completely altered to serpentine mesh.
Spinel	Trace	Trace	0.1-0.7	Cr	Euhedral-subhedral	Red; altered to magnetite; has bent cracks in some grains.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 15-20	REPLACING/FILLING Serpentine				COMMENTS Fine-grained dusty brown clay throughout slide, also concentrated in large veins.
Serpentine	78-83	Olivine				Poorly developed mesh; large chrysotile veins; lizardite also present.
Magnetite	1	Spinel				Dusty grains concentrated in veins.
Brucite?	<1	Serpentine, 0.3-1 mm				Forms in veins, subhedral.

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

COMMENTS: No bastite texture visible. Entire slide appears to be severely deformed mesh serpentine cut by 4-mm-wide vein of chrysotile, clay, and magnetite. Slide was impregnated and veins turned purple. No piece # given.

125-779A-28R-03 (Piece 2A,26-28 cm) OBSERVER: SAB WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Serpentinized harzburgite

GRAIN SIZE: 0.05-6 mm

TEXTURE: Mesh and bastite

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Olivine	Trace	83.5	0.1		Anhedral	Completely altered to serpentine mesh; two anhedral grains present as inclusions in euhedral spinels.
Spinel	1	1.5	0.05-1	Cr	Euhedral-anhedral	Red; altered to magnetite.
Orthopyroxene	0	15	1-6		Subhedral-anhedral	Completely altered to serpentine bastite.
GROUNDMASS						
N/A	N/A	N/A	N/A		N/A	
SECONDARY MINERALOGY						
Clays	PERCENT 5	REPLACING/FILLING Serpentine				COMMENTS Dusty brown clay distributed across slide; also clay with blue-green to yellow pleochroism which is in orthopyroxene bastite grains (may be chlorite?).
Serpentine	93	Olivine, orthopyroxene				Lizardite and/or chrysotile forming mesh and bastite textures; antigorite is present in feather-like blades, but in very minor amounts (<5%).
Magnetite	<1					Dusty grains concentrated in veins and mesh edges.
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: Completely serpentinized harzburgite; spinels are nicely euhedral. One grain has two inclusions of olivine. Orthopyroxene bastites show evidence of primary mineral inclusions which have since been altered to serpentine mesh. Spinel is cracked with other phases forming within the cracks.

125-779A-31R-01 (Piece 10,102-103 cm) OBSERVER: HIR WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.15

TEXTURE: Microphyric with glassy margin

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Clinopyroxene	20-25	25-35	0.05-0.15		Subhedral	Some radiating bunches may be quench features. 10-20% alteration to chlorite.
GROUNDMASS						
Glass	0	50-60	N/A		N/A	100% altered to brown amorphous clays.
Plagioclase	0	10-20	0.01-0.2		Lath	Quench textured needles occasionally associated with clinopyroxene. 100% altered to clays.
Spinel	<1	<1	0.01-0.05		Subhedral	Black, disseminated.
SECONDARY MINERALOGY						
Clays	PERCENT	REPLACING/FILLING				COMMENTS
Chlorite	20-30	Glass, plagioclase Glass, clinopyroxene veins				Brown clay usually as pseudomorphs after plagioclase. Light-green and weakly birefringent in matrix and after clinopyroxene. Veins: colorless in plane light, but blue-gray in crossed nicols (0.03-1.5 mm).
VESICLES/CAVITIES						
Vesicles	PERCENT 0	LOCATION	SIZE (mm)		FILLING	SHAPE

COMMENTS: One half of thin section is a glassy chilled margin with >95% glass and a few quenched crystals of plagioclase. The other half is microcrystalline. Entire sample is heavily veined with chlorite veins and pervasively altered to clays.

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125-779A-31R-01 (Piece 13,119-121 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.15 mm

TEXTURE: Aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL (mm)	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	40-50	N/A		N/A	100% altered to brown clays.
Plagioclase	0	15-20	0.05-0.15		Laths, subhedral	100% altered to clays, not evenly distributed throughout thin section.
Clinopyroxene	20-25	25-40	0.05-0.1		Anhedral	10-20% altered to chlorite, occasionally intimate intergrowth with plagioclase.
Spinels	<<1	<<1	0.05		Subhedral	Black, sparse.
SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING				COMMENTS
Clays	55-75	Glass, plagioclase, veins				Brown clays pervasively altered from glass and pseudomorphs after plagioclase.
Chlorite	5-10	Veins, vesicles, cavities in matrix				Light to deep-green in plane light, mildly pleochroic blue-gray to nearly black in crossed nicols.
Pumpellyite	1-2	Vein				2-mm-wide vein, apple-green, possibly Fe-rich. Some prehnite may be intergrown.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE	COMMENTS
Vesicles	<1-1	Throughout	0.1-0.2	Chlorite	Random	Filled with bright green pleochroic chlorite.

COMMENTS: Some portions of the rock display a quench texture.

125-779A-31R-02 (Piece 3B,32-34 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.05-0.1

TEXTURE: Aphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL (mm)	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Glass	0	N/A	N/A		N/A	100% altered to brown clays.
Clinopyroxene	<5-10	25-40	0.05-0.1		Anhedral	80-100% altered to brown clays and chlorite(?).
Plagioclase	0	15-25	0.03-0.2		Laths, quench	100% altered.
Spinel	<<1	<<1	0.01-0.02		Euhedral-anhedral	Black, sparse.
SECONDARY MINERALOGY	PERCENT	REPLACING/FILLING				COMMENTS
Clays		Glass, plagioclase, clinopyroxene				Brown clays are pervasive after glass and clinopyroxene and pseudomorphs after plagioclase.
Chlorite	3-15	Cavities, clinopyroxene?				Small (0.2-0.4 mm) patches of colorless material which is blue-gray in cross nicols. Pale-green, pleochroic mineral is rarely observed.

VESICLES/CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Cavities	2-3	Throughout	0.8-1.2	Clay	Irregular

COMMENTS: Sample is extensively and pervasively altered. Occasional spherulitic intergrowths of plagioclase after clinopyroxene are present. The long (0.15-0.3 mm) and skinny (0.02-0.04 mm) nature of the plagioclase suggests a quench texture.

125-779A-31R-02 (Piece 11,103-105 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.2-1 mm, medium grains

TEXTURE: Intersertal, microphyric

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	0	10-30	0.5-0.8		Laths	100% pseudomorphed by clays; hydrogrossular.
Clinopyroxene	20-25	25-35	0.02-1		Anhedral	20-30% altered to chlorite and clays.
Spinel	<<1	<<1	0.05-0.1		Subhedral	Black, opaque, sparse.
GROUNDMASS						
Glass/matrix	0	40-55	N/A		N/A	100% altered to brown and deep green amorphous clays and hydrogrossular.
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	50-60	Glass, matrix, cavities				Brown clays. Pervasive after glass and plagioclase.
Chlorite	15-25	Clinopyroxene, glass, cavities				Pale- to deep-green in plane light, slightly pleochroic.
Hydrogrossular	<10	Glass, plagioclase				Anhedral, fine-grained.
Opaque	1-2	Matrix				Unevenly dispersed, concentrated in chlorite patches, 0.01-0.02 mm, black.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Cavities	2	Throughout	1-2	Chlorite, clay	Irregular

COMMENTS: Occasionally spherulitic intergrowths of plagioclase after clinopyroxene. Sample is extensively and pervasively altered.

125-779A-31R-02 (Piece 13,119-122 cm)

OBSERVER: JOH

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metabasalt

GRAIN SIZE: 0.3-0.9 mm

TEXTURE: Phyrlic, intersertal

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	0	5-25	0.02-0.06		Laths, subhedral	100% altered to clays + hydrogrossular?
Clinopyroxene	15-20	20-40	0.03-0.09		Subhedral	20-80 % altered, occasionally associated with plagioclase.
Spinel	<<1	<<1	0.03-0.05		Anhedral	Black, sparse.
GROUNDMASS						
Glass	0	40-70	N/A		N/A	100% altered to clays and hydrogrossular?
SECONDARY MINERALOGY						
	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	50-70	Glass, veins, plagioclase				Brown amorphous clays pervasive in sample after glass and plagioclase.
Chlorite	15-25	Patches, veins				Clinopyroxene pervasive in matrix: pale-green, slightly pleochroic, usually amorphous, although a few veins show fibrous texture.
Hydrogrossular	8-10	?				Anhedral, fine-grained.

VESICLES/ CAVITIES	PERCENT	LOCATION	SIZE (mm)	FILLING	SHAPE
Cavities	1-2	Throughout	0.1-1.5	Chlorite clay	Usually round

COMMENTS: Extensive and pervasive alteration. Original texture and mineral relationships have been observed.

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125-779A-31R-CC (Piece 5,39-41 cm) OBSERVER: HIR WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Metadiabase

GRAIN SIZE: 0.2-1 mm medium-coarse grained

TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
PHENOCRYSTS						
Plagioclase	0	20-45	0.04-0.06		Lath, euhedral	100% altered to clays and hydrogrossular.
Clinopyroxene	5-15	20-40	0.8-1.2		Subhedral	20-85% altered to clays, chlorite.
GROUNDMASS						
Glass/matrix	0	15-30	N/A		N/A	100% replaced by amorphous brown clays.
SECONDARY MINERALOGY						
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	45-65	Glass, plagioclase				Pervasive after glass (matrix) and plagioclase. Few (<5%) pseudomorphs after plagioclase.
Chlorite	15-25	Matrix, plagioclase, clinopyroxene				Around clinopyroxene and plagioclase crystals and as patches within matrix.
Hydrogrossular	15-20	Matrix, plagioclase(?)				0.2-0.4 mm, subhedral, dark red, brown, semiopaque.

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

COMMENTS: Sample is extensively and pervasively altered to clays, chlorite and hydrogrossular. Alteration masks primary mineral abundance and relationships.

125-779A-31R-CC (Piece 6,47-59 cm) OBSERVER: HIR WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Altered pyroclastic rocks, may be tuffaceous

GRAIN SIZE: <0.1 mm

TEXTURE: Clastic, layered

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Clinopyroxene	40-30	20	<0.1		Anhedral	Occurs as feather-like crystal throughout the rock.
Plagioclase	0	20	<0.1		Subhedral	Occurs as feather-like crystal throughout the rock.
Glass	0	60	N/A		N/A	
SECONDARY MINERALOGY						
SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING				COMMENTS
Clays	60-70	Matrix				Dusty brownish clay.
Chlorite	2	Vein				

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

COMMENTS: Hydrogrossular determined by XRD cannot be observed.

125-779A-31R-CC (Piece 6,47-59 cm)

OBSERVER: HIR

WHERE SAMPLED: Conical Seamount, southeast flank

ROCK NAME: Altered basalt

GRAIN SIZE: 0.5-1 mm

TEXTURE: Ophitic

PRIMARY MINERALOGY	PERCENT PRESENT	PERCENT ORIGINAL	SIZE (mm)	COMPOSITION	MORPHOLOGY	COMMENTS
Clinopyroxene	35	35	1		Subhedral	
Plagioclase	0	65	0.5-1		Subhedral	Altered to hydrogrossular and clay.

SECONDARY MINERALOGY	PERCENT	REPLACING/ FILLING	COMMENTS
Clays	10		Brownish dusty clay.
Chlorite	5		Pale-green, anomalous interference color.
Hydrogrossular	50		Birefringence ~0, high reflective index.

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