

AM-87-359

Alteration of amphibolitic wallrocks around the Tanco rare-element pegmatite,  
Bernic Lake, Manitoba

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For deposit: Table 2

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Table 2. Electron microprobe analyses of all mineral grains analyzed from amphibolitic wallrocks around the Tanco pegmatite, Manitoba, including a list of all sample locations.

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Sample Locations

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WESTERN ORE ZONE

G-01	HW; +0.00	L9-05	HW; +0.34
G-102	FW; -0.50	L9-01	HW; +0.15
G-107	FW; -1.50	L9-00	HW; +0.06
C54-101	FW; -0.00	L9-105	FW; -0.60
C54-105	FW; -0.31	L12-99	HW; +36.92
C54-107	FW; -2.92	L12-103	FW; -0.10
C60-07	HW; +3.01	L13-105	FW; -0.60
C60-02	HW; +0.18	7903-07	HW; +0.31
C60-01	HW; +0.15	7903-101	FW; -0.03
C79-101	FW; -0.10	7903-103	FW; -0.12
C79-105	FW; -0.28	7903-111	FW; -1.29
C79-110	FW; -3.08		

CENTRAL ORE ZONE

C34-15	HW; +4.61	C73-11	HW; +2.46
C34-20	HW; +1.75	C73-01	HW; +0.00
C34-13	HW; +1.00	C73-101	FW; -0.00
C34-10	HW; +0.37	C73-105	FW; -0.31
C34-07	HW; +0.25	C73-109	FW; -0.83
C34-05	HW; +0.19	7821-20	HW; +6.15
C34-04	HW; +0.12	7821-04	HW; +0.15
C34-101	FW; -0.00	7821-01	HW; +0.03
C34-102	FW; -0.03	7821-102	FW; -0.03
C34-103	FW; -0.15	7821-114	FW; -0.12
C34-107	FW; -0.65		
C37-07	HW; +2.92		
C45-01	HW; +0.00		
C45-101	FW; -0.00		

EASTERN ORE ZONE

7715-23	HW; +5.19
7715-09	HW; +0.77
7715-05	HW; +0.46
7715-01	HW; +0.03
7715-105	FW; -0.40

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HW - hanging wall; FW - footwall;  
 Sample locations are given in meters from the pegmatite contact: (+) - indicates meters above the pegmatite;  
 (-) - indicates meters below the pegmatite.

Table 2. Electron microprobe analyses of all mineral grains analyzed from amphibolitic wallrocks around the Tanco pegmatite, Manitoba.

<u>hornblende: distal amphibolite</u>				
	C54-107.1 <sup>4</sup>	C54-107.2 <sup>3</sup>	C54-107.3 <sup>5</sup>	C54-107.4 <sup>5</sup>
Wt. % oxides				
SiO <sub>2</sub>	43.93	42.90	42.70	44.75
Al <sub>2</sub> O <sub>3</sub>	11.00	10.99	11.83	9.88
MgO	6.74	6.52	6.50	7.37
FeO*	21.77	21.70	21.97	21.25
TiO <sub>2</sub>	0.45	0.41	0.56	0.43
MnO	0.40	0.37	0.43	0.41
CaO	11.25	11.31	11.21	11.49
Na <sub>2</sub> O	1.23	1.19	1.36	1.16
K <sub>2</sub> O	0.45	0.48	0.54	0.44
Rb <sub>2</sub> O	0.00	0.04	0.08	0.06
Cs <sub>2</sub> O	0.00	0.00	0.05	0.04
F	0.10	0.12	0.29	0.16
total	97.23	96.03	97.52	97.44
Atoms per formula unit, based on 23 O				
Si	6.73	6.68	6.57	6.83
Al	1.98	2.02	2.14	1.77
Mg	1.53	1.51	1.49	1.68
Fe	2.79	2.82	2.83	2.71
Ti	0.05	0.04	0.06	0.05
Mn	0.05	0.04	0.05	0.05
Ca	1.84	1.89	1.85	1.88
Na	0.36	0.36	0.40	0.34
K	0.08	0.09	0.10	0.08
F	0.10	0.13	0.14	0.07
	15.51	15.58	15.63	15.46
XNa/XCa	0.20	0.19	0.22	0.18
XMg/XCa	0.55	0.53	0.53	0.62
XAl/XFe	0.29	0.30	0.33	0.26

Superscripts denote number of analyses averaged in report. Sample numbers with two-digit suffixes (i.e. C34-02.1)

denote hanging wall samples. Those with three-digit suffixes (i.e. C34-101.1) indicate footwall samples.

FeO\* - denotes total iron as FeO.

Table 2. (cont.)

	<u>hornblende: distal amphibolite</u>					
	C34- 15.1 <sup>3</sup>	C34- 15.2 <sup>3</sup>	C34- 15.3 <sup>3</sup>	C34- 107.1 <sup>3</sup>	C34- 107.2 <sup>2</sup>	C34- 107.3 <sup>3</sup>
Wt.% oxides						
SiO <sub>2</sub>	45.55	45.64	46.16	46.28	46.31	48.54
Al <sub>2</sub> O <sub>3</sub>	10.76	10.21	10.06	11.46	11.16	9.27
MgO	9.05	9.32	9.32	11.21	11.70	12.35
FeO*	18.09	18.63	18.25	14.68	14.62	14.76
TiO <sub>2</sub>	0.46	0.49	0.57	0.46	0.51	0.38
MnO	0.20	0.23	0.26	0.25	0.28	0.31
CaO	10.73	10.61	10.27	11.37	11.33	10.68
Na <sub>2</sub> O	1.21	1.20	1.05	1.16	1.20	0.86
K <sub>2</sub> O	0.18	0.18	0.14	0.15	0.15	0.13
Rb <sub>2</sub> O	0.05	0.00	0.07	0.04	0.00	0.04
Cs <sub>2</sub> O	0.09	0.00	0.00	0.02	0.02	0.01
F	0.07	0.04	0.03	0.00	0.00	0.00
	<u>96.45</u>	<u>96.55</u>	<u>96.18</u>	<u>97.08</u>	<u>97.29</u>	<u>97.32</u>
Atoms per formula unit, based on 23 O						
Si	6.87	6.89	6.96	6.81	6.81	7.09
Al	1.91	1.82	1.79	1.99	1.93	1.59
Mg	2.04	2.10	2.09	2.46	2.56	2.69
Fe	2.28	2.35	2.30	1.81	1.79	1.80
Ti	0.05	0.05	0.06	0.05	0.06	0.04
Mn	0.02	0.03	0.03	0.03	0.03	0.04
Ca	1.73	1.71	1.66	1.79	1.78	1.67
Na	0.35	0.35	0.31	0.33	0.34	0.24
K	0.03	0.03	0.03	0.03	0.03	0.02
F	0.03	0.02	0.01	0.00	0.00	0.00
	<u>15.31</u>	<u>15.35</u>	<u>15.24</u>	<u>15.30</u>	<u>15.33</u>	<u>15.18</u>
XNa/XCa	0.20	0.20	0.19	0.18	0.19	0.14
XMg/XFe	0.89	0.89	0.91	1.36	1.43	1.49
XAl/XSi	0.28	0.26	0.26	0.29	0.28	0.29

Table 2. (cont.)

	<u>hornblende: distal amphibolite</u>				
	C73- 11.1 <sup>5</sup>	C73- 11.2 <sup>5</sup>	C73- 11.3 <sup>5</sup>	C73- 109.1 <sup>5</sup>	C73- 109.2 <sup>4</sup>
Wt.% oxides					
SiO <sub>2</sub>	45.29	45.73	47.93	43.63	43.19
Al <sub>2</sub> O <sub>3</sub>	10.71	9.08	10.31	12.62	12.79
MgO	7.49	8.17	7.54	6.88	6.66
FeO*	20.27	20.32	19.48	21.62	21.69
TiO <sub>2</sub>	0.58	0.64	0.58	0.44	0.53
MnO	0.20	0.21	0.17	0.24	0.23
CaO	11.22	11.26	8.98	10.14	10.39
Na <sub>2</sub> O	1.09	0.96	0.84	1.32	1.39
K <sub>2</sub> O	0.27	0.22	0.21	0.31	0.36
Rb <sub>2</sub> O	0.05	0.04	0.07	0.06	0.06
Cs <sub>2</sub> O	0.06	0.00	0.03	0.00	0.00
F	0.04	0.02	0.06	0.10	0.01
total	97.26	96.65	96.19	97.37	97.32
Atoms per formula unit, based on 23 O					
Si	6.85	6.97	7.19	6.63	6.59
Al	1.91	1.63	1.82	2.26	2.30
Mg	1.69	1.85	1.68	1.56	1.51
Fe	2.56	2.59	2.45	2.75	2.77
Ti	0.06	0.07	0.06	0.05	0.06
Mn	0.02	0.03	0.02	0.03	0.03
Ca	1.82	1.84	1.44	1.65	1.70
Na	0.32	0.28	0.24	0.39	0.41
K	0.05	0.04	0.04	0.06	0.07
F	0.02	0.00	0.03	0.04	0.01
	15.30	15.30	14.97	15.42	15.45
XNa/ XMg/XCa	0.18	0.15	0.17	0.24	0.24
XAl/ XFe	0.66	0.71	0.69	0.57	0.55
XAl/ XSi	0.28	0.23	0.25	0.34	0.35

Table 2. (cont.)

<u>hornblende: distal amphibolite</u>						
	7715- 23.1 <sup>5</sup>	7715- 23.2 <sup>3</sup>	7715- 23.3 <sup>4</sup>	L12- 99.1 <sup>3</sup>	L12- 99.2 <sup>3</sup>	L12- 99.3 <sup>2</sup>
Wt.% oxides						
SiO <sub>2</sub>	43.72	45.27	44.98	44.57	45.52	43.57
Al <sub>2</sub> O <sub>3</sub>	10.19	8.73	9.04	10.55	7.15	8.16
MgO	8.00	8.58	8.50	8.70	10.44	9.52
FeO*	20.50	19.70	19.75	20.20	19.68	20.80
TiO <sub>2</sub>	0.76	0.67	0.67	0.63	2.61	3.36
MnO	0.27	0.28	0.28	0.34	0.44	0.49
CaO	10.82	10.87	10.95	11.66	11.21	10.78
Na <sub>2</sub> O	1.21	1.03	1.01	1.19	0.86	0.92
K <sub>2</sub> O	0.63	0.48	0.49	0.52	0.28	0.36
Rb <sub>2</sub> O	0.07	0.02	0.04	0.11	0.05	0.03
Cs <sub>2</sub> O	0.00	0.00	0.00	0.05	0.06	0.00
F	0.15	0.09	0.04	0.09	0.07	0.02
	<u>96.33</u>	<u>95.72</u>	<u>95.76</u>	<u>98.41</u>	<u>98.38</u>	<u>98.01</u>
Atoms per formula, based on 23 O						
Si	6.74	6.96	6.92	6.71	6.84	6.62
Al	1.85	1.58	1.64	1.87	1.27	1.46
Mg	1.84	1.96	1.95	1.95	2.34	2.15
Fe	2.64	2.53	2.54	2.52	2.47	2.64
Ti	0.09	0.08	0.08	0.07	0.29	0.38
Mn	0.03	0.04	0.04	0.04	0.05	0.06
Ca	1.79	1.79	1.80	1.88	1.80	1.75
Na	0.36	0.31	0.30	0.34	0.25	0.27
K	0.12	0.09	0.10	0.10	0.05	0.07
F	0.07	0.04	0.02	0.04	0.03	0.00
	<u>15.53</u>	<u>15.38</u>	<u>15.39</u>	<u>15.52</u>	<u>15.39</u>	<u>15.40</u>
XNa/ XMg/XCa	0.20	0.17	0.17	0.18	0.14	0.15
XAl/XFe	0.70	0.77	0.77	0.77	0.95	0.81
XAl/ XSi	0.27	0.23	0.24	0.28	0.19	0.22

Table 2. (cont.)

<u>hornblende: distal amphibolite</u>						
	C60- 02.1 <sup>3</sup>	C60- 02.2 <sup>4</sup>	C60- 02.3 <sup>3</sup>	C79- 110.1 <sup>3</sup>	C79- 110.2 <sup>4</sup>	C79- 110.3 <sup>3</sup>
Wt.% oxides						
SiO <sub>2</sub>	42.12	40.70	39.95	43.03	44.16	43.34
Al <sub>2</sub> O <sub>3</sub>	10.45	12.08	12.72	11.30	11.03	10.98
MgO	4.03	3.96	3.75	6.76	7.11	6.91
FeO*	26.94	26.27	26.21	20.56	20.77	21.05
TiO <sub>2</sub>	0.51	0.58	0.48	0.69	0.57	0.79
MnO	0.35	0.40	0.38	0.31	0.25	0.32
CaO	10.77	10.47	10.45	10.55	10.97	10.70
Na <sub>2</sub> O	1.34	1.60	1.72	1.31	1.11	1.33
K <sub>2</sub> O	0.45	0.51	0.58	0.34	0.29	0.34
Rb <sub>2</sub> O	0.05	0.07	0.04	0.00	0.03	0.54
Cs <sub>2</sub> O	0.03	0.04	0.00	0.09	0.04	0.00
F	0.03	0.00	0.13	0.02	0.00	0.02
	<u>97.07</u>	<u>96.69</u>	<u>96.42</u>	<u>94.96</u>	<u>96.32</u>	<u>96.31</u>
Atoms per formula unit, based on 23 O						
Si	6.65	6.46	6.37	6.71	6.78	6.70
Al	1.94	2.26	2.39	2.07	1.99	2.00
Mg	0.95	0.94	0.89	1.57	1.63	1.59
Fe	3.56	3.48	3.49	2.68	2.66	2.72
Ti	0.06	0.07	0.06	0.08	0.06	0.09
Mn	0.05	0.05	0.05	0.04	0.03	0.04
Ca	1.82	1.78	1.78	1.76	1.80	1.77
Na	0.41	0.49	0.53	0.39	0.33	0.40
K	0.09	0.10	0.12	0.06	0.05	0.06
F	0.01	0.00	0.06	0.00	0.00	0.00
	<u>15.54</u>	<u>15.63</u>	<u>15.74</u>	<u>15.36</u>	<u>15.33</u>	<u>15.37</u>
XNa/XCa	0.23	0.27	0.30	0.22	0.18	0.22
XMg/XFe	0.27	0.27	0.26	0.59	0.59	0.58
XAl/XSi	0.29	0.35	0.37	0.31	0.29	0.30

Table 2. (cont.)

	<u>hornblende: distal amphibolite</u>			
	7821- 20.1 <sup>3</sup>	7821- 20.2 <sup>2</sup>	7821- 114.1 <sup>3</sup>	7821- 114.2 <sup>3</sup>
Wt.% oxides				
SiO <sub>2</sub>	43.91	44.12	47.70	49.82
Al <sub>2</sub> O <sub>3</sub>	12.04	11.44	9.14	7.30
MgO	8.57	9.18	12.96	13.97
FeO*	20.09	20.04	15.68	14.64
TiO <sub>2</sub>	0.69	0.80	0.43	0.36
MnO	0.24	0.27	0.27	0.26
CaO	10.68	10.65	10.77	10.64
Na <sub>2</sub> O	1.35	1.35	1.03	0.72
K <sub>2</sub> O	0.33	0.32	0.14	0.09
Rb <sub>2</sub> O	0.00	0.03	0.02	0.00
Cs <sub>2</sub> O	0.02	0.00	0.00	0.00
F	0.13	0.12	0.07	0.07
	<u>98.05</u>	<u>98.33</u>	<u>98.21</u>	<u>97.87</u>
Atoms per formula unit, based on 23 O				
Si	6.60	6.62	6.96	7.22
Al	2.13	2.02	1.57	1.25
Mg	1.92	2.05	2.82	3.02
Fe	2.53	2.51	1.91	1.77
Ti	0.08	0.09	0.04	0.04
Mn	0.03	0.03	0.03	0.03
Ca	1.72	1.71	1.68	1.65
Na	0.39	0.39	0.29	0.20
K	0.06	0.06	0.03	0.01
Rb	0.00	0.00	0.00	0.00
Cs	0.00	0.00	0.00	0.00
F	0.06	0.05	0.03	0.03
	<u>15.52</u>	<u>15.53</u>	<u>15.37</u>	<u>15.22</u>
XNa/XCa	0.20	0.23	0.17	0.12
XMg/XFe	0.90	0.82	1.48	1.71
XAl/XSi	0.32	0.31	0.23	0.17



Table 2. (cont.)

<u>hornblende: proximal amphibolite</u>					
	C73- 01.1 <sup>5</sup>	C73- 01.2 <sup>5</sup>	C73- 105.1 <sup>4</sup>	C73- 105.2 <sup>5</sup>	C73- 105.3 <sup>5</sup>
Wt.% oxides					
SiO <sub>2</sub>	42.51	42.49	42.77	42.68	42.91
Al <sub>2</sub> O <sub>3</sub>	12.81	12.43	13.56	13.94	13.29
MgO	6.99	7.18	6.50	6.30	6.52
FeO*	19.69	19.87	21.23	21.12	21.17
TiO <sub>2</sub>	0.64	0.60	0.60	0.52	0.60
MnO	0.32	0.34	0.27	0.27	0.29
CaO	11.15	11.11	11.03	10.92	10.66
Na <sub>2</sub> O	1.39	1.41	1.34	1.37	1.38
K <sub>2</sub> O	0.62	0.66	0.38	0.37	0.41
Rb <sub>2</sub> O	0.04	0.06	0.01	0.00	0.04
Cs <sub>2</sub> O	0.00	0.06	0.00	0.00	0.00
F	0.55	0.59	0.06	0.13	0.09
	<u>96.71</u>	<u>96.81</u>	<u>97.75</u>	<u>97.62</u>	<u>97.36</u>
Atoms per formula unit, based on 23 O					
Si	6.54	6.55	6.77	6.65	6.53
Al	2.32	2.26	2.53	2.51	2.39
Mg	1.60	1.65	1.53	1.57	1.48
Fe	2.53	2.56	2.81	2.67	2.70
Ti	0.07	0.07	0.07	0.06	0.07
Mn	0.04	0.04	0.03	0.03	0.04
Ca	1.84	1.83	1.84	1.82	1.74
Na	0.41	0.42	0.41	0.40	0.41
K	0.12	0.13	0.07	0.07	0.08
F	0.27	0.29	0.03	0.06	0.04
	<u>15.74</u>	<u>15.80</u>	<u>16.09</u>	<u>15.84</u>	<u>15.48</u>
XNa/XCa	0.22	0.23	0.22	0.22	0.24
XMg/XFe	0.69	0.64	0.54	0.59	0.55
XAl/XSi	0.35	0.39	0.37	0.38	0.37

Table 2. (cont.)

<u>hornblende: proximal amphibolite</u>				
	C34- 10.1 <sup>4</sup>	C34- 10.2 <sup>3</sup>	C34- 102.1 <sup>3</sup>	C34- 102.2 <sup>4</sup>
Wt.% oxides				
SiO <sub>2</sub>	44.19	43.38	46.80	46.88
Al <sub>2</sub> O <sub>3</sub>	12.52	12.63	10.12	10.24
MgO	7.25	7.03	11.95	11.91
FeO*	19.99	20.09	14.83	14.83
TiO <sub>2</sub>	0.61	0.60	0.52	0.58
MnO	0.27	0.31	0.34	0.25
CaO	10.83	10.34	11.36	11.43
Na <sub>2</sub> O	1.22	1.36	1.20	1.23
K <sub>2</sub> O	0.30	0.31	0.14	0.18
Rb <sub>2</sub> O	0.04	0.01	0.08	0.06
Cs <sub>2</sub> O	0.00	0.00	0.00	0.00
F	0.18	0.16	0.30	0.27
	<u>97.40</u>	<u>96.23</u>	<u>97.63</u>	<u>97.85</u>
Atoms per formula unit, based on 23 O				
Si	6.68	6.64	6.89	6.88
Al	2.23	2.28	1.75	1.77
Mg	1.63	1.60	2.62	2.60
Fe	2.52	2.57	1.82	1.82
Ti	0.07	0.07	0.06	0.06
Mn	0.03	0.04	0.04	0.03
Ca	1.75	1.69	1.79	1.80
Na	0.35	0.40	0.34	0.35
K	0.05	0.06	0.03	0.03
F	0.08	0.08	0.14	0.13
	<u>15.39</u>	<u>15.43</u>	<u>15.48</u>	<u>15.47</u>
XNa/XCa	0.20	0.24	0.19	0.19
XMg/XFe	0.65	0.62	1.44	1.43
XAl/XSi	0.33	0.34	0.25	0.26

Table 2. (cont.)

<u>hornblende: proximal amphibolite</u>						
	7715- 05.1 <sup>3</sup>	7715- 05.2 <sup>2</sup>	7715- 05.3 <sup>3</sup>	L9- 03.1 <sup>2</sup>	L9- 03.1 <sup>4</sup>	L9- 03.3 <sup>3</sup>
Wt.% oxides						
SiO <sub>2</sub>	43.23	44.31	43.96	46.91	48.72	47.82
Al <sub>2</sub> O <sub>3</sub>	11.47	11.11	11.38	8.96	6.97	8.00
MgO	7.89	7.69	7.56	10.59	11.90	11.02
FeO*	21.25	20.85	21.14	17.23	16.19	16.74
TiO <sub>2</sub>	0.69	0.77	0.65	0.57	0.51	0.42
MnO	0.23	0.24	0.25	0.30	0.31	0.31
CaO	10.72	11.31	11.43	11.76	11.98	11.73
Na <sub>2</sub> O	1.09	1.19	1.14	0.99	0.80	0.87
K <sub>2</sub> O	0.45	0.51	0.50	0.43	0.27	0.29
Rb <sub>2</sub> O	0.03	0.00	0.01	0.00	0.00	0.02
Cs <sub>2</sub> O	0.05	0.00	0.05	0.02	0.02	0.06
F	0.07	0.12	0.11	0.29	0.35	0.27
	<u>97.16</u>	<u>98.10</u>	<u>98.11</u>	<u>98.02</u>	<u>98.02</u>	<u>97.55</u>
Atoms per formula unit, based on 23 O						
Si	6.61	6.70	6.66	6.97	7.18	7.10
Al	2.06	1.98	2.03	1.57	1.21	1.39
Mg	1.80	1.73	1.71	2.34	2.61	2.44
Fe	2.72	2.64	2.68	2.14	2.00	2.08
Ti	0.08	0.08	0.07	0.06	0.06	0.04
Mn	0.03	0.03	0.03	0.04	0.04	0.04
Ca	1.76	1.83	1.85	1.87	1.89	1.87
Na	0.32	0.35	0.33	0.28	0.23	0.25
K	0.09	0.10	0.09	0.08	0.05	0.05
F	0.03	0.06	0.05	0.13	0.16	0.13
	<u>15.50</u>	<u>15.50</u>	<u>15.50</u>	<u>15.38</u>	<u>15.43</u>	<u>15.39</u>
XNa/XCa	0.18	0.19	0.18	0.15	0.12	0.13
XMg/XFe	0.66	0.66	0.64	1.09	1.30	1.17
XAl/XSi	0.31	0.29	0.30	0.23	0.17	0.20

Table 2. (cont.)

<u>hornblende: proximal amphibolite</u>						
	C60- 07.1 <sup>3</sup>	C60- 07.2 <sup>3</sup>	C60- 07.3 <sup>2</sup>	C79- 105.1 <sup>3</sup>	C79- 105.2 <sup>3</sup>	C79- 105.3 <sup>2</sup>
Wt.% oxides						
SiO <sub>2</sub>	41.08	40.68	40.51	42.64	44.37	41.79
Al <sub>2</sub> O <sub>3</sub>	12.98	13.75	12.95	12.37	12.08	13.43
MgO	3.88	3.61	3.93	6.78	7.38	6.38
FeO*	25.40	25.39	25.50	20.75	19.27	20.78
TiO <sub>2</sub>	0.45	0.49	0.53	0.54	0.35	0.69
MnO	0.34	0.39	0.43	0.31	0.27	0.30
CaO	10.85	10.49	10.44	10.78	10.95	10.54
Na <sub>2</sub> O	1.55	1.62	1.70	1.32	1.14	1.50
K <sub>2</sub> O	0.39	0.39	0.44	0.35	0.31	0.44
Rb <sub>2</sub> O	0.05	0.04	0.03	0.03	0.03	0.02
Cs <sub>2</sub> O	0.05	0.00	0.06	0.00	0.00	0.04
F	0.16	0.09	0.13	0.34	0.36	0.28
	<u>97.17</u>	<u>96.93</u>	<u>96.65</u>	<u>96.21</u>	<u>96.49</u>	<u>96.18</u>
Atoms per formula unit, based on 23 O						
Si	6.45	6.39	6.41	6.59	6.75	6.47
Al	2.40	2.54	2.41	2.25	2.17	2.45
Mg	0.91	0.84	0.92	1.56	1.67	1.47
Fe	3.33	3.33	3.37	2.68	2.45	2.69
Ti	0.05	0.06	0.06	0.06	0.04	0.08
Mn	0.04	0.05	0.06	0.04	0.03	0.04
Ca	1.82	1.77	1.77	1.78	1.78	1.75
Na	0.47	0.49	0.52	0.39	0.33	0.45
K	0.07	0.07	0.09	0.07	0.06	0.09
F	0.08	0.04	0.06	0.16	0.17	0.14
	<u>15.62</u>	<u>15.58</u>	<u>15.67</u>	<u>15.58</u>	<u>15.45</u>	<u>15.63</u>
XNa/XCa	0.26	0.28	0.29	0.22	0.18	0.26
XMg/XFe	0.27	0.25	0.27	0.58	0.68	0.55
XAl/XSi	0.37	0.40	0.38	0.34	0.32	0.38

Table 2. (cont.)

<u>hornblende: proximal amphibolite</u>				
	7821- 01.1 <sup>3</sup>	7821- 01.2 <sup>3</sup>	7821- 102.1 <sup>3</sup>	7821- 102.2 <sup>3</sup>
Wt.% oxides				
SiO <sub>2</sub>	49.70	44.57	45.04	45.20
Al <sub>2</sub> O <sub>3</sub>	11.09	11.70	11.68	11.70
MgO	9.07	9.03	9.38	9.42
FeO*	18.03	19.64	19.00	18.75
TiO <sub>2</sub>	0.45	0.64	0.59	0.57
MnO	0.23	0.27	0.31	0.26
CaO	8.36	10.63	10.48	10.85
Na <sub>2</sub> O	0.78	1.21	1.14	1.12
K <sub>2</sub> O	0.22	0.39	0.28	0.29
Rb <sub>2</sub> O	0.00	0.04	0.02	0.00
Cs <sub>2</sub> O	0.02	0.00	0.08	0.03
F	0.16	0.28	0.01	0.09
	<u>98.12</u>	<u>98.39</u>	<u>98.02</u>	<u>98.26</u>
Atoms per formula unit, based on 23 O				
Si	7.27	6.67	6.71	6.72
Al	1.91	2.06	2.05	2.05
Mg	1.98	2.01	2.08	2.09
Fe	2.20	2.45	2.36	2.33
Ti	0.05	0.07	0.07	0.06
Mn	0.03	0.03	0.04	0.03
Ca	1.15	1.70	1.72	1.73
Na	0.22	0.35	0.33	0.32
K	0.04	0.07	0.05	0.05
Rb	0.00	0.00	0.00	0.00
Cs	0.00	0.00	0.00	0.00
F	0.07	0.13	0.01	0.04
	<u>14.92</u>	<u>15.54</u>	<u>15.42</u>	<u>15.42</u>
XNa/XCa	0.19	0.21	0.19	0.19
XMg/XFe	0.90	0.82	0.88	0.90
XAl/XSi	0.26	0.31	0.31	0.31

Table 2. (cont.)

<u>plagioclase: distal amphibolite</u>					
	L12- 99.1 <sup>3</sup>	L12- 99.2 <sup>2</sup>	7715- 23.1 <sup>3</sup>	7715- 23.2 <sup>3</sup>	7715- 23.3 <sup>2</sup>
Wt.% oxides					
SiO <sub>2</sub>	61.30	60.40	60.98	62.71	60.63
Al <sub>2</sub> O <sub>3</sub>	24.69	24.90	24.55	23.53	24.48
CaO	5.77	6.12	5.73	5.48	5.56
Na <sub>2</sub> O	8.44	8.27	8.33	8.01	7.91
K <sub>2</sub> O	0.08	0.06	0.07	0.05	0.63
Rb <sub>2</sub> O	0.04	0.05	0.05	0.05	0.07
Cs <sub>2</sub> O	0.00	0.00	0.05	0.04	0.05
SrO	0.12	0.07	0.05	0.12	0.11
BaO	0.11	0.00	0.08	0.07	0.07
FeO*	0.09	0.10	0.17	0.24	0.21
	<u>100.63</u>	<u>99.97</u>	<u>100.08</u>	<u>100.39</u>	<u>99.73</u>
Cations per 8 O					
Si	2.71	2.69	2.71	2.77	2.71
Al	1.29	1.31	1.29	1.22	1.29
Ca	0.27	0.29	0.27	0.26	0.27
Na	0.72	0.71	0.72	0.69	0.69
K	0.00	0.00	0.00	0.00	0.04
Fe	0.00	0.00	0.01	0.01	0.01
	<u>4.99</u>	<u>5.00</u>	<u>5.00</u>	<u>4.96</u>	<u>5.01</u>
An	27.3	29.0	27.5	27.4	28.0
XAl/XSi	0.48	0.49	0.48	0.44	0.48
Superscripts indicate number of analyses averaged per report.					
Sample numbers with two-digit suffixes (i.e. C34-01.1) denote hanging wall samples. Those with three-digit suffixes (C34-101.1) denote footwall samples.					
FeO* - total iron as FeO.					
An - denotes anorthite content					

Table 2. (cont.)

	<u>plagioclase: distal amphibolite</u>					
	C73- 11.1 <sup>3</sup>	C73- 11.2 <sup>5</sup>	C73- 11.3 <sup>5</sup>	C73- 109.1 <sup>3</sup>	C73- 109.2 <sup>3</sup>	C73- 109.3 <sup>4</sup>
Wt.% oxides						
SiO <sub>2</sub>	56.17	55.77	55.43	58.44	59.69	61.00
Al <sub>2</sub> O <sub>3</sub>	27.32	27.78	27.34	26.16	25.66	24.16
CaO	9.53	9.91	10.93	7.48	6.97	4.91
Na <sub>2</sub> O	6.19	6.05	5.54	7.23	7.71	8.27
K <sub>2</sub> O	0.03	0.04	0.04	0.23	0.07	0.69
Rb <sub>2</sub> O	0.00	0.00	0.00	0.00	0.00	0.00
Cs <sub>2</sub> O	0.02	0.00	0.00	0.03	0.00	0.00
SrO	0.14	0.13	0.13	0.11	0.11	0.11
BaO	0.00	0.00	0.00	0.00	0.00	0.01
FeO*	0.36	0.21	0.26	0.31	0.09	0.27
	<u>99.74</u>	<u>99.96</u>	<u>99.67</u>	<u>99.99</u>	<u>100.29</u>	<u>99.43</u>
Cations per 8 O						
Si	2.54	2.51	2.48	2.62	2.66	2.73
Al	1.45	1.48	1.47	1.38	1.34	1.27
Ca	0.46	0.48	0.53	0.36	0.33	0.24
Na	0.54	0.53	0.45	0.63	0.66	0.72
K	0.00	0.00	0.00	0.01	0.01	0.04
Fe	0.01	0.01	0.06	0.01	0.00	0.01
	<u>5.00</u>	<u>5.01</u>	<u>4.99</u>	<u>5.01</u>	<u>5.00</u>	<u>5.01</u>
An	46.0	47.5	54.1	36.4	33.3	25.0
XAl/XSi	0.57	0.59	0.59	0.53	0.50	0.47

Table 2. (cont.)

	<u>plagioclase: distal amphibolite</u>					
	C34- 15.1 <sup>3</sup>	C34- 15.2 <sup>3</sup>	C34- 15.3 <sup>3</sup>	C34- 107.1 <sup>4</sup>	C34- 107.2 <sup>4</sup>	C34- 107.3 <sup>4</sup>
<u>Wt.% oxides</u>						
SiO <sub>2</sub>	58.47	57.70	56.34	55.98	53.61	54.44
Al <sub>2</sub> O <sub>3</sub>	26.55	26.70	27.27	27.89	29.21	27.45
CaO	8.04	8.37	8.81	9.55	11.65	9.80
Na <sub>2</sub> O	7.00	6.85	6.07	6.09	4.80	5.49
K <sub>2</sub> O	0.08	0.04	0.40	0.05	0.14	0.08
Rb <sub>2</sub> O	0.03	0.05	0.04	0.02	0.05	0.04
Cs <sub>2</sub> O	0.00	0.00	0.05	0.02	0.00	0.00
SrO	0.14	0.11	0.07	0.16	0.09	0.07
BaO	0.00	0.02	0.00	0.04	0.00	0.03
FeO*	0.16	0.27	0.05	0.11	0.39	0.99
	<u>100.47</u>	<u>100.11</u>	<u>99.11</u>	<u>99.91</u>	<u>99.94</u>	<u>98.38</u>
<u>Cations per 8 O</u>						
Si	2.61	2.59	2.55	2.52	2.43	2.50
Al	1.39	1.41	1.45	1.48	1.56	1.49
Ca	0.38	0.40	0.43	0.46	0.56	0.48
Na	0.60	0.59	0.53	0.53	0.42	0.49
K	0.00	0.00	0.02	0.00	0.01	0.00
Fe	0.01	0.01	0.00	0.00	0.01	0.04
	<u>4.99</u>	<u>5.00</u>	<u>4.98</u>	<u>4.99</u>	<u>4.99</u>	<u>5.00</u>
An	38.8	40.4	44.8	46.5	57.1	49.5
XAl/XSi	0.53	0.54	0.57	0.59	0.64	0.60



Table 2. (cont.)

<u>plagioclase: distal amphibolite</u>				
	C54-107.1 <sup>4</sup>	C54-107.2 <sup>4</sup>	C54-107.3 <sup>4</sup>	C54-107.4 <sup>2</sup>
Wt.% oxides				
SiO <sub>2</sub>	60.28	58.59	59.63	59.80
Al <sub>2</sub> O <sub>3</sub>	25.80	25.92	25.11	25.22
CaO	7.10	7.66	6.65	6.56
Na <sub>2</sub> O	7.77	7.41	7.96	7.99
K <sub>2</sub> O	0.04	0.05	0.06	0.06
Rb <sub>2</sub> O	0.03	0.03	0.02	0.03
Cs <sub>2</sub> O	0.05	0.08	0.06	0.03
SrO	0.13	0.14	0.16	0.10
BaO	0.00	0.00	0.00	0.01
FeO*	0.11	0.20	0.15	0.14
	<u>100.31</u>	<u>100.09</u>	<u>99.80</u>	<u>99.95</u>
Cations per 8 O				
Si	2.66	2.62	2.67	2.67
Al	1.34	1.37	1.32	1.33
Ca	0.33	0.37	0.32	0.31
Na	0.66	0.64	0.69	0.69
K	0.00	0.00	0.00	0.00
Fe	0.00	0.01	0.01	0.01
	<u>4.99</u>	<u>5.01</u>	<u>5.01</u>	<u>5.01</u>
An	33.3	36.6	31.7	31.0
XAl/XSi	0.50	0.52	0.49	0.50

Table 2. (cont)

<u>plagioclase: distal amphibolite</u>					
	7821- 20.1 <sup>3</sup>	7821- 20.2 <sup>2</sup>	7821- 20.3 <sup>3</sup>	7821- 114.1 <sup>3</sup>	7821- 114.2 <sup>2</sup>
Wt.% oxides					
SiO <sub>2</sub>	54.52	54.46	56.43	50.36	51.26
Al <sub>2</sub> O <sub>3</sub>	29.23	29.47	27.61	31.76	32.24
CaO	10.23	10.18	9.04	13.60	13.14
Na <sub>2</sub> O	5.56	5.59	6.15	3.31	3.36
K <sub>2</sub> O	0.04	0.04	0.04	0.03	0.06
Rb <sub>2</sub> O	0.00	0.00	0.00	0.04	0.00
Cs <sub>2</sub> O	0.04	0.00	0.00	0.00	0.00
SrO	0.09	0.05	0.16	0.09	0.06
BaO	0.04	0.00	0.03	0.00	0.03
FeO*	0.40	0.26	0.43	0.20	0.09
	<u>100.15</u>	<u>100.05</u>	<u>99.89</u>	<u>99.38</u>	<u>100.24</u>
Cations per 8 O					
Si	2.53	2.45	2.54	2.30	2.32
Al	1.53	1.57	1.46	1.71	1.72
Ca	0.46	0.48	0.44	0.67	0.64
Na	0.45	0.48	0.54	0.29	0.29
K	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.01	0.02	0.01	0.00
	<u>4.98</u>	<u>4.99</u>	<u>5.00</u>	<u>4.99</u>	<u>4.97</u>
An	50.5	50.0	44.9	69.8	68.8
XAl/XSi	0.60	0.64	0.57	0.74	0.74

Table 2. (cont.)

plagioclase: distal amphibolite

C79-                      C79-  
110.1<sup>3</sup>                      110.2<sup>3</sup>

Wt.% oxides

SiO <sub>2</sub>	57.40	58.58
Al <sub>2</sub> O <sub>3</sub>	26.95	26.60
CaO	8.38	7.82
Na <sub>2</sub> O	6.62	7.14
K <sub>2</sub> O	0.03	0.04
Rb <sub>2</sub> O	0.01	0.02
Cs <sub>2</sub> O	0.02	0.09
SrO	0.15	0.00
BaO	0.00	0.00
FeO*	0.35	0.13
	<u>99.91</u>	<u>100.43</u>

Cations per 8 O

Si	2.58	2.61
Al	1.43	1.40
Ca	0.40	0.37
Na	0.58	0.62
K	0.00	0.00
Fe	0.01	0.00
	<u>5.00</u>	<u>5.00</u>

An	40.8	37.4
XAl/XSi	0.55	0.54

Table 2. (cont.)

<u>plagioclase: proximal amphibolite</u>					
	L9- 03.1 <sup>3</sup>	L9- 03.2 <sup>3</sup>	L9- 03.3 <sup>2</sup>	7715- 05.1 <sup>3</sup>	7715- 05.2 <sup>3</sup>
Wt.% oxides					
SiO <sub>2</sub>	58.21	58.36	57.55	55.42	57.58
Al <sub>2</sub> O <sub>3</sub>	25.80	25.79	26.10	28.51	25.65
CaO	7.70	7.30	7.24	9.17	8.87
Na <sub>2</sub> O	7.49	7.79	7.62	6.21	6.45
K <sub>2</sub> O	0.07	0.09	0.68	0.26	0.57
Rb <sub>2</sub> O	0.10	0.03	0.16	0.05	0.24
Cs <sub>2</sub> O	0.00	0.00	0.06	0.00	0.11
SrO	0.11	0.04	0.02	0.00	0.00
BaO	0.07	0.06	0.10	0.07	0.18
FeO*	0.20	0.08	0.19	0.21	0.37
	<u>99.75</u>	<u>99.60</u>	<u>99.66</u>	<u>99.90</u>	<u>99.98</u>
Cations per 8 O					
Si	2.56	2.65	2.62	2.49	2.67
Al	1.44	1.35	1.38	1.50	1.28
Ca	0.39	0.38	0.38	0.46	0.41
Na	0.60	0.61	0.58	0.57	0.51
K	0.00	0.01	0.04	0.02	0.08
Fe	0.01	0.00	0.01	0.01	0.04
	<u>4.99</u>	<u>5.00</u>	<u>5.01</u>	<u>5.05</u>	<u>4.99</u>
An	39.4	38.4	39.6	44.7	44.6
XAl/XSi	0.56	0.51	0.53	0.60	0.48

Superscripts denote the number of analyses averaged per report.

Samples with two-digit suffixes (e.g. L9-01.1) are hanging wall samples, and samples with three-digit suffixes (e.g. L9-101.1) are footwall samples.

FeO\* - total iron as FeO.

An - indicates anorthite content.

Table 2. (cont.)

<u>plagioclase: proximal amphibolite</u>			
	C73-01.1 <sup>4</sup>	C73-01.2 <sup>4</sup>	C73-01.3 <sup>5</sup>
Wt.% oxides			
SiO <sub>2</sub>	53.49	53.55	53.61
Al <sub>2</sub> O <sub>3</sub>	28.77	29.00	28.70
CaO	10.95	11.30	11.15
Na <sub>2</sub> O	4.93	4.81	5.10
K <sub>2</sub> O	0.03	0.04	0.03
Rb <sub>2</sub> O	0.00	0.00	0.00
Cs <sub>2</sub> O	0.02	0.00	0.00
SrO	0.09	0.09	0.10
BaO	0.00	0.00	0.00
FeO*	0.01	0.17	0.09
	<u>98.29</u>	<u>98.96</u>	<u>98.79</u>
Cations per 8 O			
Si	2.45	2.44	2.45
Al	1.55	1.56	1.55
Ca	0.54	0.55	0.55
Na	0.44	0.43	0.45
K	0.00	0.00	0.00
Fe	0.00	0.01	0.00
	<u>4.98</u>	<u>4.99</u>	<u>5.00</u>
An	54.5	56.1	55.0
XAl/XSi	0.63	0.64	0.63

Table 2. (cont.)

<u>plagioclase: proximal amphibolite</u>					
	C73- 105.1 <sup>2</sup>	C73- 105.2 <sup>3</sup>	C73- 105.3 <sup>2</sup>	C73- 105.4 <sup>5</sup>	C73- 105.5 <sup>5</sup>
Wt.% oxides					
SiO <sub>2</sub>	55.11	55.41	55.67	56.92	56.31
Al <sub>2</sub> O <sub>3</sub>	26.95	26.21	29.19	27.34	27.90
CaO	9.50	8.25	10.26	9.07	9.48
Na <sub>2</sub> O	5.36	6.58	5.99	6.41	6.04
K <sub>2</sub> O	0.07	0.11	0.06	0.05	0.06
Rb <sub>2</sub> O	0.02	0.03	0.04	0.00	0.00
Cs <sub>2</sub> O	0.02	0.00	0.07	0.05	0.00
SrO	0.05	0.13	0.18	0.10	0.14
BaO	0.09	0.09	0.00	0.00	0.00
FeO*	0.21	0.07	0.15	0.16	0.09
	<u>97.38</u>	<u>96.88</u>	<u>100.61</u>	<u>100.41</u>	<u>100.00</u>
Cations per 8 O					
Si	2.51	2.51	2.47	2.55	2.53
Al	1.50	1.50	1.53	1.45	1.48
Ca	0.48	0.44	0.49	0.43	0.46
Na	0.49	0.56	0.52	0.57	0.52
K	0.00	0.00	0.00	0.00	0.00
Fe	0.01	0.00	0.00	0.01	0.00
	<u>4.99</u>	<u>5.01</u>	<u>5.01</u>	<u>5.01</u>	<u>4.99</u>
An	49.5	44.0	48.5	43.0	46.9
XAl/XSi	0.60	0.54	0.62	0.57	0.58

Table 2. (cont.)

	<u>plagioclase: proximal amphibolite</u>			
	C34- 10.1 <sup>5</sup>	C34- 10.2 <sup>3</sup>	C34- 10.3 <sup>4</sup>	C34- 10.4 <sup>3</sup>
Wt.% oxides				
SiO <sub>2</sub>	57.28	55.74	56.23	57.46
Al <sub>2</sub> O <sub>3</sub>	26.77	28.19	27.55	27.27
CaO	7.70	9.89	9.30	8.84
Na <sub>2</sub> O	6.70	5.92	6.23	6.59
K <sub>2</sub> O	0.27	0.07	0.06	0.03
Rb <sub>2</sub> O	0.00	0.00	0.04	0.07
Cs <sub>2</sub> O	0.01	0.02	0.00	0.00
SrO	0.13	0.09	0.08	0.04
BaO	0.00	0.00	0.00	0.00
FeO*	0.27	0.14	0.14	0.10
	<u>99.15</u>	<u>100.06</u>	<u>99.64</u>	<u>100.45</u>
Cations per 8 O				
Si	2.59	2.51	2.54	2.57
Al	1.42	1.49	1.46	1.44
Ca	0.37	0.48	0.45	0.42
Na	0.59	0.52	0.55	0.57
K	0.01	0.00	0.00	0.00
Fe	0.01	0.01	0.01	0.00
	<u>4.99</u>	<u>5.01</u>	<u>5.01</u>	<u>4.99</u>
An	38.5	48.0	45.0	42.4
X <sub>Al</sub> /X <sub>Si</sub>	0.55	0.59	0.57	0.56

Table 2. (cont)

<u>plagioclase: proximal amphibolite</u>					
	C34- 102.1 <sup>3</sup>	C34- 102.2 <sup>4</sup>	C34- 102.3 <sup>4</sup>	C79- 105.1 <sup>3</sup>	C79- 105.2 <sup>3</sup>
Wt.% oxides					
SiO <sub>2</sub>	53.57	54.25	51.77	59.73	57.58
Al <sub>2</sub> O <sub>3</sub>	29.37	28.85	30.57	25.11	26.95
CaO	11.13	10.46	12.57	7.00	8.22
Na <sub>2</sub> O	4.91	5.19	4.15	7.58	6.80
K <sub>2</sub> O	0.04	0.04	0.03	0.06	0.07
Rb <sub>2</sub> O	0.05	0.01	0.02	0.25	0.04
Cs <sub>2</sub> O	0.00	0.00	0.04	0.00	0.00
SrO	0.16	0.12	0.13	0.14	0.12
BaO	0.03	0.00	0.00	0.08	0.11
FeO*	0.11	0.08	0.07	0.36	0.09
	<u>99.61</u>	<u>99.00</u>	<u>99.35</u>	<u>100.32</u>	<u>99.89</u>
Cations per 8 O					
Si	2.44	2.47	2.36	2.67	2.58
Al	1.57	1.54	1.65	1.32	1.42
Ca	0.54	0.51	0.61	0.33	0.27
Na	0.43	0.46	0.37	0.66	0.72
K	0.01	0.00	0.00	0.00	0.00
Fe	0.00	0.00	0.00	0.01	0.00
	<u>4.99</u>	<u>4.98</u>	<u>4.99</u>	<u>4.99</u>	<u>4.99</u>
An	55.7	52.6	62.2	33.3	27.3
XAl/XSi	0.64	0.62	0.70	0.49	0.55



Table 2. (cont.)

<u>plagioclase: proximal amphibolite</u>					
	7821- 01.1 <sup>3</sup>	7821- 01.2 <sup>3</sup>	7821- 102.1 <sup>4</sup>	7821- 102.2 <sup>3</sup>	7821- 102.3 <sup>4</sup>
Wt.% oxides					
SiO <sub>2</sub>	51.28	50.98	51.50	50.99	50.92
Al <sub>2</sub> O <sub>3</sub>	31.53	31.15	31.06	30.82	31.52
CaO	12.57	12.88	12.86	13.97	12.68
Na <sub>2</sub> O	3.38	3.59	3.80	3.21	3.60
K <sub>2</sub> O	0.11	0.04	0.03	0.03	0.06
Rb <sub>2</sub> O	0.00	0.02	0.00	0.00	0.02
Cs <sub>2</sub> O	0.07	0.00	0.00	0.02	0.00
SrO	0.11	0.11	0.09	0.13	0.00
BaO	0.03	0.07	0.07	0.03	0.04
FeO*	0.79	0.42	0.21	0.43	0.26
	<u>99.86</u>	<u>99.26</u>	<u>99.62</u>	<u>99.60</u>	<u>99.23</u>
Cations per 8 O					
Si	2.32	2.33	2.34	2.29	2.33
Al	1.69	1.68	1.67	1.67	1.70
Ca	0.62	0.63	0.63	0.70	0.62
Na	0.30	0.32	0.34	0.29	0.32
K	0.01	0.00	0.00	0.00	0.00
Fe	0.03	0.02	0.01	0.02	0.01
	<u>4.97</u>	<u>4.98</u>	<u>4.99</u>	<u>4.97</u>	<u>4.98</u>
An	67.4	66.3	64.9	70.7	70.0
XAl/XSi	0.73	0.72	0.71	0.73	0.73