



Table T2. Whole-rock major and trace elements, Hole 1256D. (See table notes.) (Continued on next two pages.)

Core, section:				174R-1	174R-1	176R-1	178R-1	182R-1	184R-1	186R-1	193R-1	194R-1	196R-1	198R-1	198R-1	202R-1	212R-1
Interval (cm):				32–34	64–67	21–24	0–3	12–15	39–41	33–36	5–8	29–33	43–46	0–5	50–54	5–8	20–23
Depth (mbsf):				1265.71	1266.03	1276.29	1285.70	1305.01	1305.15	1319.82	1353.10	1358.19	1364.13	1369.00	1369.50	1372.80	1404.30
Lithology:				SD	SD	SD	SD	SD	SD	SD	GD	GD	GD	GD	GD	GD	GD
Rock name	Reference value	Average (N = 4)	Standard deviation	Type 3 basalt	Type 4 basalt	Type 3 basalt	Type 3 basalt	Type 4 basalt	Type 4 basalt	Type 4 basalt	Type 6 metabasalt	Type 7 metabasalt	Type 7 metabasalt	Type 6 metabasalt	Type 7 metabasalt	Type 7 metabasalt	Type 7 metabasalt
Major element oxide (wt%):																	
SiO ₂	53.71	53.77	0.15	50.91	52.18	51.45	50.75	51.33	51.86	51.41	50.90	51.73	50.17	51.72	52.07	52.15	50.60
TiO ₂	1.20	1.20	0.00	1.00	1.77	1.42	1.10	1.24	1.51	1.43	1.44	1.37	1.79	1.81	1.83	1.94	1.83
Al ₂ O ₃	14.77	14.77	0.03	14.46	13.09	13.19	14.40	13.94	13.26	13.48	13.31	13.77	13.51	13.10	13.18	12.95	13.23
FeO ^{total}	12.95	12.92	0.01	10.02	13.46	10.97	10.03	11.35	12.88	11.93	12.81	11.68	13.50	13.72	14.01	14.26	13.97
MnO	0.22	0.22	0.00	0.22	0.28	0.30	0.18	0.22	0.22	0.20	0.18	0.19	0.18	0.23	0.23	0.23	0.18
MgO	4.66	4.63	0.06	8.15	6.55	8.07	8.24	7.97	6.84	7.70	7.88	7.36	7.29	6.61	6.23	6.01	6.91
CaO	9.91	9.91	0.04	12.08	10.04	11.24	12.22	11.29	10.06	9.76	10.45	11.16	10.73	9.77	9.55	9.77	9.83
Na ₂ O	2.06	2.02	0.01	1.82	2.39	2.24	2.22	2.25	2.56	3.20	2.82	2.33	2.89	2.69	2.24	2.41	2.91
K ₂ O	0.43	0.43	0.01	0.03	0.06	0.16	0.03	0.10	0.08	0.19	0.06	0.03	0.05	0.07	0.06	0.05	0.05
P ₂ O ₅	0.10	0.10	0.00	0.09	0.14	0.12	0.08	0.09	0.12	0.11	0.11	0.11	0.15	0.15	0.15	0.16	0.15
LOI				1.59	0.98	2.36	1.00	0.83	0.91	1.18	0.64	0.45	0.26	0.64	0.72	0.47	0.46
Total:	100.00	99.97		100.38	100.94	101.52	100.25	100.62	100.31	100.58	100.61	100.18	100.53	100.51	100.27	100.41	100.10
Mg#:				59.2	46.4	56.7	59.4	55.6	48.6	53.5	52.3	52.9	49.0	46.2	44.2	42.9	46.9
Trace element (ppm):																	
Sc	36.20	35.23	2.94	45.23	47.25	47.68	44.63	43.22	45.01	46.44	42.45	43.29	46.91	45.43	47.14	46.07	48.99
V	270.0	262.3	17.4	280.4	413.0	345.1	304.6	335.7	382.8	389.6	345.4	336.1	429.1	418.4	420.6	449.2	456.8
Ga	17.40	17.46	0.94	14.98	18.24	15.10	15.68	15.64	17.64	16.17	15.95	16.25	18.14	17.75	18.04	18.23	19.64
Rb	20.10	20.65	0.25	0.31	0.54	1.50	0.18	0.94	0.83	1.65	0.53	0.13	0.19	0.59	0.37	0.39	0.23
Sr	191.8	194.5	3.5	70.4	84.6	86.8	83.1	73.5	83.6	103.2	90.7	71.4	95.9	86.5	76.3	79.0	96.8
Y	22.80	23.08	0.58	25.4	43.4	35.1	27.8	31.0	38.2	35.2	34.1	32.7	41.4	42.4	44.0	45.8	44.9
Zr	92.00	98.13	2.58	53.3	101.1	82.3	59.2	69.9	89.1	84.0	75.7	76.4	93.9	99.2	113.9	117.8	96.5
Cs	0.916	0.913	0.017	0.009	0.012	0.010	0.005	0.001	0.010	0.004	0.002	0.001	0.001	0.003	0.003	0.001	0.002
Ba	171.0	174.7	2.81	10.31	18.81	29.52	6.26	15.19	12.57	35.72	10.03	7.97	9.24	15.73	11.78	11.39	12.29
La	10.59	10.88	0.22	2.27	3.57	3.23	2.06	2.20	3.08	2.46	2.93	2.69	3.37	3.52	4.03	4.10	3.97
Ce	23.08	23.60	0.31	6.46	10.64	9.29	6.22	7.08	9.11	7.74	9.25	8.18	10.37	10.69	11.70	12.14	11.61
Pr	3.03	3.07	0.04	1.10	1.96	1.70	1.10	1.23	1.57	1.39	1.48	1.40	1.75	1.91	2.03	2.07	1.90
Nd	12.95	13.25	0.39	5.78	10.17	8.67	6.19	7.01	8.83	7.69	8.36	7.75	9.34	10.26	11.01	11.30	10.68
Sm	3.31	3.37	0.08	2.09	3.74	3.12	2.32	2.54	3.32	2.87	3.11	2.81	3.56	3.62	3.88	3.84	3.98
Eu	1.09	1.13	0.04	0.77	1.33	1.06	0.82	0.95	1.17	1.05	1.14	0.99	1.30	1.30	1.39	1.39	1.36
Gd	3.69	3.74	0.10	3.02	5.47	4.42	3.40	3.71	4.55	4.26	4.22	3.98	5.30	5.29	5.59	5.89	5.65
Tb	0.62	0.62	0.02	0.59	1.08	0.87	0.65	0.74	0.91	0.84	0.85	0.82	1.03	1.05	1.06	1.11	1.04
Dy	3.79	3.84	0.10	3.83	6.73	5.41	4.27	4.91	5.90	5.35	5.51	5.13	6.37	6.77	6.69	7.04	6.88
Ho	0.80	0.82	0.03	0.83	1.51	1.22	0.97	1.05	1.30	1.18	1.20	1.14	1.44	1.50	1.53	1.61	1.59
Er	2.26	2.29	0.07	2.63	4.52	3.70	2.86	3.19	4.07	3.61	3.60	3.49	4.17	4.43	4.44	4.61	4.59
Yb	2.03	2.07	0.05	2.49	4.35	3.43	2.80	3.06	3.84	3.45	3.44	3.27	4.19	4.28	4.36	4.58	4.41
Lu	0.30	0.31	0.01	0.39	0.68	0.55	0.43	0.48	0.61	0.55	0.55	0.52	0.65	0.67	0.69	0.71	0.66
Hf	2.30	2.45	0.06	1.49	2.75	2.23	1.56	1.77	2.33	2.20	1.97	1.92	2.40	2.63	2.93	2.96	2.57
Th	2.21	2.28	0.07	0.19	0.26	0.25	0.13	0.13	0.23	0.21	0.20	0.18	0.19	0.26	0.28	0.31	0.21
U	0.50	0.50	0.01	0.06	0.07	0.07	0.04	0.04	0.07	0.06	0.07	0.05	0.06	0.08	0.08	0.09	0.07

Notes: SD = sheeted dike, GD = granoblastic dike, G1 = Gabbro 1, UDS = upper dike screen, G2 = Gabbro 2, LDS = lower dike screen. Major element oxide based on JB-2 reference values from Imai et al. (1995), trace elements based on W-2 reference values from Eggins et al. (1997). FeO^{total} = total Fe as FeO.



Table T2 (continued). (Continued on next page.)

Core, section:	214R-2	215R-1	215R-2	216R-1	219R-1	221R-1	222R-1	222R-2	223R-1	223R-1	223R-2	227R-1	227R-2
Interval (cm):	24–27	20–23	56–59	138–142	5–8	61–64	73–78	60–63	8–12	88–91	133–137	72–76	50–59
Depth (mbsf):	1412.60	1415.92	1417.69	1419.19	1430.05	1440.21	1445.33	1446.70	1449.37	1450.18	1452.11	1469.21	1470.51
Lithology:	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	G1	UDS	UDS
Rock name	Disseminated oxide gabbro	Disseminated oxide olivine gabbro	Disseminated oxide olivine gabbro	Olivine gabbro	Orthopyroxene- bearing olivine gabbro	Orthopyroxene- bearing olivine gabbro	Orthopyroxene- bearing olivine gabbro	Olivine gabbro	Orthopyroxene- bearing olivine gabbro	Orthopyroxene- bearing olivine gabbro	Olivine gabbro	Type 8 metabasalt	Type 8 metabasalt
Major element oxide (wt%):													
SiO ₂	49.63	49.90	48.20	49.74	50.17	51.16	47.74	49.02	47.76	48.46	50.02	50.40	50.40
TiO ₂	1.17	1.36	0.65	0.92	0.83	1.56	0.65	0.51	0.49	0.69	0.82	1.55	1.56
Al ₂ O ₃	15.84	16.10	14.27	15.76	15.35	14.99	14.15	15.89	14.7	15.7	14.63	13.57	13.74
FeO ^{total}	9.71	9.83	9.03	8.06	8.54	10.13	8.99	7.81	8.59	8.09	8.46	13.06	12.32
MnO	0.14	0.14	0.13	0.13	0.15	0.17	0.13	0.12	0.13	0.12	0.15	0.22	0.17
MgO	7.54	7.05	12.85	8.50	8.57	7.20	12.72	9.96	12.07	11.11	10.20	7.58	7.42
CaO	12.61	11.89	12.07	13.50	12.99	11.00	12.01	13.20	12.64	12.36	13.14	11.23	11.49
Na ₂ O	2.55	2.92	2.16	2.42	2.30	3.12	2.07	2.30	1.90	2.27	2.23	2.47	2.66
K ₂ O	0.07	0.09	0.08	0.09	0.10	0.09	0.08	0.08	0.10	0.09	0.08	0.03	0.04
P ₂ O ₅	0.07	0.10	0.04	0.07	0.07	0.17	0.04	0.04	0.03	0.04	0.05	0.09	0.10
LOI	0.60	0.63	0.64	0.67	0.71	0.78	1.29	0.73	1.48	1.11	0.52	0.37	0.46
Total:	99.93	100.00	100.12	99.85	99.77	100.36	99.86	99.66	99.89	100.04	100.30	100.57	100.37
Mg#:	58.1	56.1	71.7	65.3	64.1	55.9	71.5	69.5	71.5	71.0	68.2	50.8	51.8
Trace element (ppm):													
Sc	41.77	40.09	42.59	40.66	44.46	41.94	38.40	38.21	38.19	32.91	46.54	46.91	46.23
V	272.8	287.4	310.5	240.9	232.9	429.3	213.7	179.2	171.2	170.1	254.3	461.1	412.7
Ga	15.38	16.49	16.04	13.61	14.78	19.49	12.74	13.69	12.92	13.43	14.74	17.85	17.62
Rb	0.45	0.44	0.46	0.45	0.71	0.34	0.31	0.42	0.71	0.32	0.59	0.13	0.22
Sr	92.0	99.2	98.2	84.6	90.6	97.9	78.0	88.6	76.1	85.6	88.6	82.4	79.8
Y	26.0	26.4	27.4	21.0	22.9	43.3	16.4	15.8	13.3	16.1	23.2	33.6	35.1
Zr	51.4	65.8	69.0	44.0	55.2	148.5	33.2	28.5	23.3	38.1	44.2	80.0	80.7
Cs	0.004	0.004	0.004	0.003	0.007	0.003	0.006	0.002	0.007	0.000	0.003	0.005	0.004
Ba	9.62	9.74	10.83	21.94	17.47	9.52	8.89	8.04	9.07	6.57	9.75	7.02	6.31
La	2.33	2.60	2.93	2.26	1.83	3.65	2.01	1.65	1.41	1.88	1.82	2.84	2.87
Ce	7.35	7.50	7.94	7.08	5.54	11.21	5.80	4.86	3.59	5.04	5.48	8.41	9.01
Pr	1.27	1.22	1.37	1.28	0.92	2.03	0.91	0.81	0.55	0.78	0.95	1.44	1.53
Nd	6.94	6.53	7.14	6.57	5.31	10.68	4.61	4.13	3.14	4.07	5.27	8.01	8.21
Sm	2.44	2.39	2.51	2.22	1.93	3.97	1.53	1.51	1.16	1.40	1.92	2.94	3.03
Eu	0.97	1.09	0.99	0.90	0.83	1.14	0.75	0.70	0.60	0.72	0.80	1.05	1.15
Gd	3.34	3.29	3.50	3.01	2.73	5.65	2.16	1.97	1.67	1.99	2.82	4.17	4.38
Tb	0.64	0.64	0.68	0.52	0.54	1.05	0.39	0.37	0.32	0.37	0.53	0.79	0.85
Dy	4.12	4.11	4.34	3.36	3.59	6.89	2.55	2.33	2.02	2.45	3.53	5.37	5.71
Ho	0.91	0.96	0.96	0.73	0.77	1.54	0.57	0.55	0.46	0.57	0.81	1.19	1.23
Er	2.61	2.72	2.69	2.14	2.31	4.44	1.65	1.60	1.36	1.60	2.33	3.48	3.63
Yb	2.50	2.57	2.67	1.99	2.26	4.27	1.56	1.47	1.30	1.54	2.22	3.33	3.41
Lu	0.39	0.39	0.40	0.29	0.33	0.63	0.24	0.23	0.20	0.23	0.33	0.51	0.53
Hf	1.39	1.75	1.80	1.17	1.46	3.69	0.83	0.75	0.63	0.95	1.20	2.01	2.05
Th	0.13	0.13	0.15	0.11	0.12	0.36	0.08	0.07	0.05	0.08	0.09	0.21	0.19
U	0.04	0.05	0.05	0.03	0.04	0.11	0.03	0.03	0.02	0.05	0.03	0.07	0.06



Table T2 (continued).

Core, section:	230R-2	231R-3	231R-3	234R-1	234R-1
Interval (cm):	104–109	59–63	123–127	1–2	7–9
Depth (mbsf):	1485.54	1491.15	1491.79	1502.50	1502.57
Lithology:	G2	G2	G2	LDS	LDS
Rock name	Gabbronorite	Disseminated oxide olivine- bearing gabbronorite	Disseminated oxide gabbronorite	Type 8 metabasalt	Type 8 metabasalt
Major element oxide (wt%):					
SiO ₂	50.48	49.78	50.78	49.05	49.58
TiO ₂	1.16	1.15	0.96	1.38	1.37
Al ₂ O ₃	14.38	14.65	14.65	13.91	13.86
FeO ^{total}	9.49	9.96	9.09	12.16	12.1
MnO	0.16	0.17	0.16	0.16	0.17
MgO	8.25	8.95	8.63	8.28	8.27
CaO	12.7	12.55	12.78	12.09	12.04
Na ₂ O	2.56	2.39	2.41	2.41	2.44
K ₂ O	0.05	0.06	0.05	0.02	0.02
P ₂ O ₅	0.08	0.04	0.03	0.02	0.03
LOI	0.88	0.61	0.57	0.94	0.42
Total:	100.18	100.29	100.10	100.43	100.29
Mg#:	60.8	61.6	62.9	54.8	54.9
Trace element (ppm):					
Sc	46.21	45.51	48.85	47.13	45.93
V	283.6	340.0	331.3	394.1	387.8
Ga	15.48	15.17	15.71	16.11	16.51
Rb	0.28	0.24	0.21	0.10	1.83
Sr	92.4	96.0	97.2	88.3	92.5
Y	31.6	21.5	25.4	18.5	19.8
Zr	62.3	34.1	32.0	15.5	19.7
Cs	0.003	0.002	–	0.003	0.008
Ba	9.03	7.33	7.20	5.16	5.60
La	2.48	1.37	1.45	0.74	0.72
Ce	7.28	4.11	4.83	2.40	2.41
Pr	1.28	0.73	0.89	0.46	0.50
Nd	7.42	3.97	4.87	2.97	3.03
Sm	2.92	1.73	2.01	1.36	1.49
Eu	1.00	0.85	0.86	0.70	0.73
Gd	4.03	2.43	3.14	2.14	2.32
Tb	0.78	0.48	0.57	0.44	0.45
Dy	5.02	3.28	3.82	2.90	3.12
Ho	1.12	0.76	0.88	0.64	0.72
Er	3.23	2.23	2.57	1.92	2.04
Yb	3.04	2.09	2.47	1.77	1.94
Lu	0.46	0.31	0.36	0.28	0.30
Hf	1.65	0.95	0.89	0.56	0.68
Th	0.15	0.07	0.10	0.02	0.02
U	0.04	0.02	0.03	0.01	0.01