Fryer, P., Pearce, J. A., Stokking, L. B., et al., 1992
Proceedings of the Ocean Drilling Program, Scientific Results, Vol. 125

27. PETROLOGICAL STUDIES OF PERIDOTITES FROM DIAPIRIC SERPENTINITE SEAMOUNTS IN THE IZU-OGASAWARA-MARIANA FOREARC, LEG 125[1]

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ABSTRACT

Refractory spinel peridotites were drilled during Leg 125 from two diapiric serpentinite seamounts: Conical Seamount in the Mariana forearc (Sites 778–780) and Torishima Forearc Seamount (Sites 783–784) in the Izu-Ogasawara forearc. Harzburgite is the predominant rock type in the recovered samples, with subordinate dunite; no lherzolite was found.

The harzburgite is diopside-free to sparsely diopside-bearing, with modal percentages of diopside that range from 0% to 2%. Spinels in the harzburgites are chrome-rich (Cr/[Cr + Al] = 0.38–0.83; Fe^{3+}/[Fe^{3+} + Cr + Al] = 0.01–0.07). Olivine and orthopyroxene are magnesian (Mg# = 0.92). Discrete diopsides reveal extreme depletion of light rare earth elements. Primary hornblende is rare. The bulk major-element chemistry shows low average values of TiO_2 (trace), Al_2O_3 (0.55%) and CaO (0.60%), but high Mg# (0.90).

These rocks are more depleted than the abyssal peridotites from the mid-oceanic ridge. They are interpreted as residues of extensive partial melting (= 30%), of which the last episode was in the mantle wedge, probably associated with the generation of incipient island-arc magma, including boninite and/or arc-tholeiite. These depleted peridotites probably represent the residues of melting within mantle diapirs that developed within the mantle wedge.

INTRODUCTION

Detailed bathymetric maps have enabled scientists to recognize many topographic highs in the forearc regions along the Izu-Ogasawara (=Bonin)-Mariana trench (Fig. 1) within 20 to 120 km of the trench axis. A large number of conical topographic highs with bases ranging from 20 to 50 km have been identified along the Mariana forearc region (Fryer et al., 1985; Fig. 2) and also along the Izu-Ogasawara forearc where they are less densely distributed (Taylor and Smoot, 1984; Fig. 3). Some of the topographic highs in the Mariana and Ogasawara forearcs have been studied by Bloomer (1983), Bloomer and Hawkins (1983), Ishii (1985a), Fryer and Fryer (1987), Ishii et al. (1989a), Sakai et al. (1990), and Fryer, Pearce, Stokking, et al. (1990), who concluded that these topographic highs originated from serpentinite diapirs derived from the upper part of the mantle wedge.

More than 50 conical topographic highs are also found in the Mariana forearc region. One of these highs (Conical Seamount) was drilled at Sites 778, 779, and 780, Leg 125 (Table 1). Several conical topographic highs are also found in the Izu-Ogasawara forearc region. One of these highs (Torishima Forearc Seamount) was drilled at Sites 783 and 784, Leg 125 (Table 1).

Here, we report the geochemical and petrological characteristics of the peridotites drilled from the Conical and Torishima forearc seamounts (Table 2). As mentioned above, several studies have been carried out on the serpentine diapiric seamounts in the Izu-Ogasawara-Mariana forearc. However, these include few chemical analyses of minerals. A large number of chemical analyses, including rare earth elements of constituent clinopyroxenes, are reported here. These data are compared with data of other peridotites dredged from the inner trench wall (Bloomer and Hawkins, 1983) and used to discuss the origin of the peridotites.

SAMPLE LOCATIONS

The present arc-trench gap is 150 to 200 km wide in the Mariana Island arc region. More than 50 topographic highs are scattered along the forearc within 120 km of the trench axis (Fryer and Smoot, 1985). These seamounts are conical in shape, are 10 to 30 km in diameter at their bases, and are 500 to 2000 m high. Conical Seamount (19.5° N), which is 15 km in diameter at the base and 1100 m in height from the base, is located about 80 km west of the trench axis (Table 1). The crest of the seamount is 3100 m below sea level (Fig. 4). SeaMark II, *Alvin* submersible, and seismic reflection studies revealed that the seamounts were formed by the protrusion of unconsolidated serpentine mud flows and debris (Fryer et al., 1990). A number of serpentinized ultramafic rocks were recovered from *Alvin* dives and dredges by the *Atlantis II* (Saboda et al., 1987; Fryer et al., 1990).

Sites 778, 779, and 780 are located (Fig. 4) on Conical Seamount (Fryer, Pearce, Stokking, et al., 1990). Site 778 (Hole 778A) is situated about halfway up the southern flank of the seamount, at a water depth of 3913.7 m. Hole 778A was drilled to a depth of 107.6 meters below seafloor (mbsf) with 21% recovery. Site 779 (Holes 779A and 779B) is situated about halfway up the southern flank of the seamount, at a water depth of 4947.2 m. Penetration was successful to a sub-bottom depth of 317.2 m at Hole 779A, which had an average recovery of 22.9%. Site 780 (Holes 780A–780D) is situated on the west-southwest side of the seamount summit. Hole 780C was drilled to a depth of 163.5 mbsf with 9% recovery.

The present arc-trench gap in the Izu-Ogasawara island arc region is about 200 km wide. At the southern end of this arc system, the Ogasawara Islands (27° N), which are a type locality of boninite, are located midway between the volcanic front and the trench axis (Fig. 1). In the middle of the arc (31°–33° N), in the Torishima and Hachijojima region, several topographic highs were observed to the west of the Ogasawara Trench axis within 20 to 40 km of the trench (Fig. 3). These seamounts are conical in shape, are 10 to 40 km in diameter at their bases, and are 500 to 2000 m high. Drilling was carried out on the Torishima Forearc Seamount (Table 1) during Leg 125 (Fryer, Pearce, Stokking, et al., 1990).

Torishima Forearc Seamount (30.9° N) is located about 145 km northeast-east of Torishima ("tori" means bird and "shima" means island in Japanese) and 40 km west of the trench axis. This seamount is 30 km in diameter at its base and 1400 m high from its base. The crest of the seamount is 3750 m below sea level (Fig. 5). About 320

[1]Fryer, P., Pearce, J. A., Stokking, L. B., et al., 1992. *Proc. ODP, Sci. Results,* 125: College Station, TX (Ocean Drilling Program).

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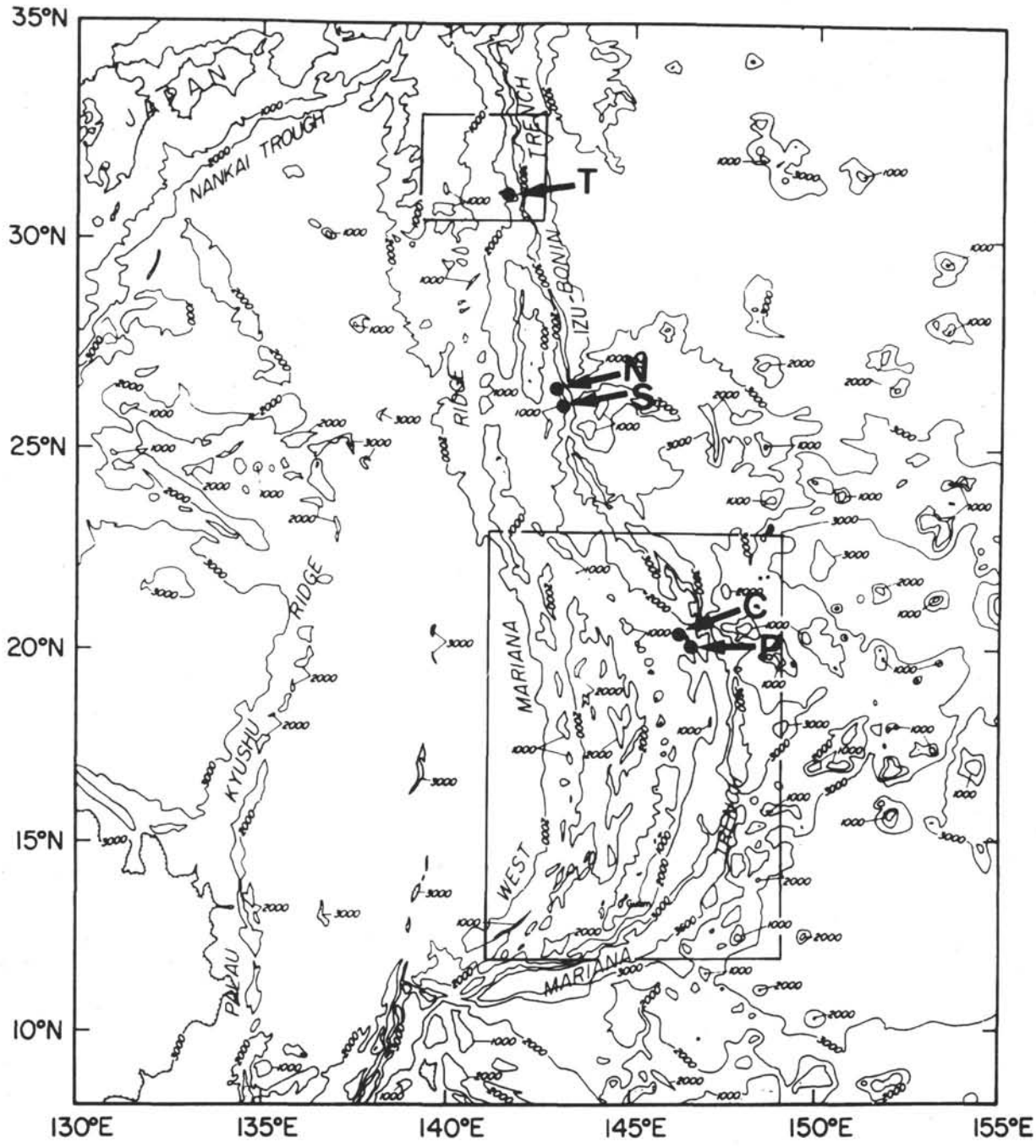


Figure 1. Bathymetric map of the Izu-Ogasawara-Mariana island arc regions, modified from Fryer and Smoot (1985). Diapiric seamounts in the forearc regions referred to in this paper are shown by solid circles. T = Torishima Forearc Seamount, N and S = Ogasawara Paleo-Land (north and south, respectively), C = Conical Seamount, and P = Pacman Seamount. Bathymetry in fathoms. Boxes indicate areas shown in Figures 2 and 3.

samples, including basement rocks of basic and ultrabasic composition, were recovered by dredging during a *Hakuho Maru* KH87-3 cruise (Ishii et al., 1989a). Lithologic descriptions of dredge samples and other information are given in the preliminary report of the KH87-3 cruise (Kobayashi, 1989).

Horine et al. (1990) conducted detailed seismic reflection profiling and gravity modeling studies on the seamount and indicated that the forearc near the seamount is composed of low-density material (serpentine) that extends as deep as the décollement (see fig. 14B, p. 14, in Horine et al., 1990).

Sites 783 and 784 are located on Torishima Forearc Seamount (Fryer, Pearce, Stokking, et al., 1990; Fig. 5). Site 783 (Hole 783A) is situated on the northern, midflank part of the seamount, at a water depth of 4648.8 m. Hole 783A was drilled to a depth of 168.2 mbsf. The average core recovery was 27.9%, although the average recovery of serpentine-bearing core (120.0–158.6 mbsf) was lower (24.3%). Site 784 (Hole 784A) is located on the lowermost western flank of the seamount. One hole was drilled (Hole 784A) to a sub-bottom depth of 425.3 m with a recovery of 51.3%, but the average recovery of serpentine-bearing core (321.1–425.3 mbsf) is less, about 25.6%.

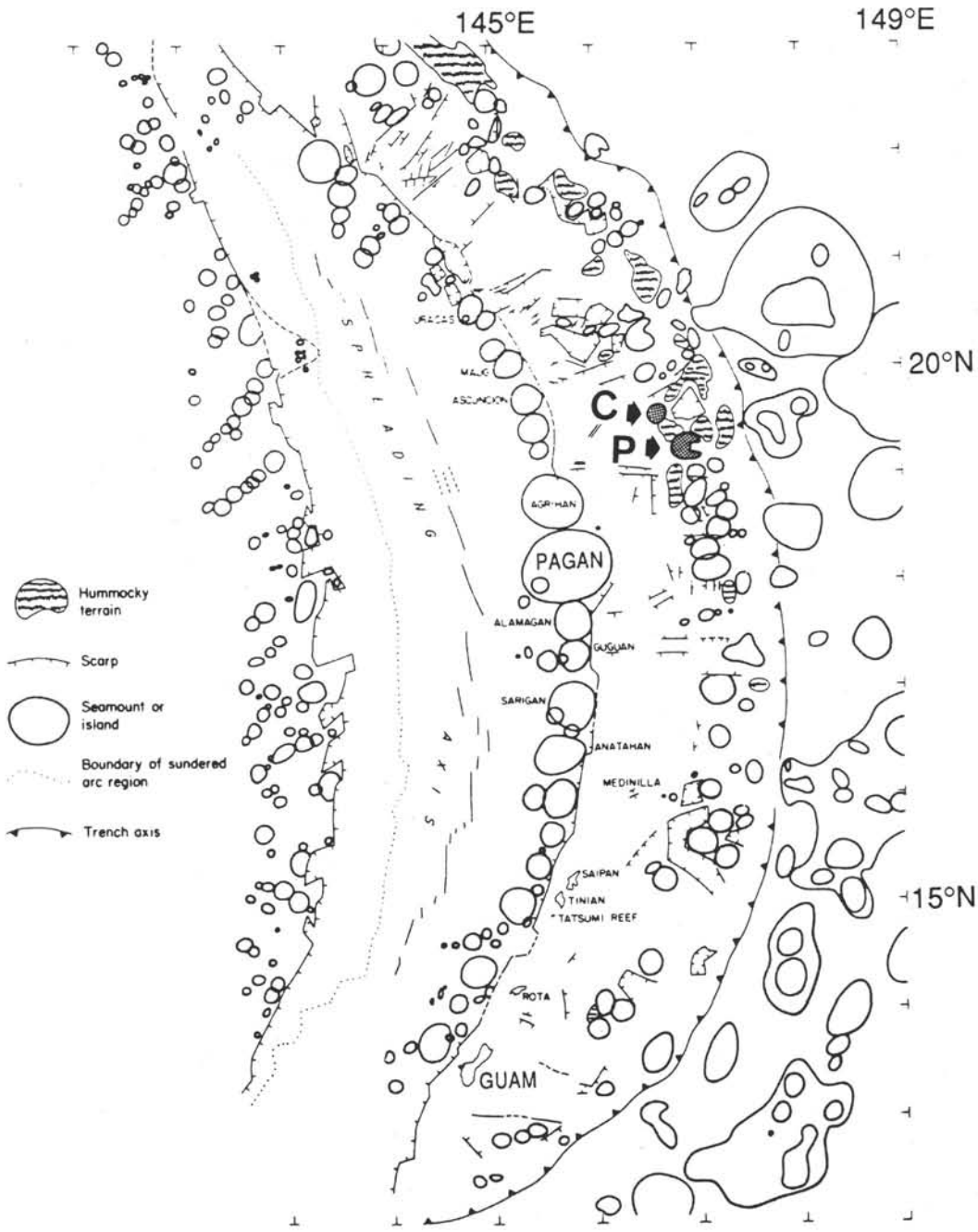


Figure 2. Geologic sketch map of the Mariana Island arc region, showing distribution of the major seafloor features (Fryer et al., 1985). C = Conical Seamount and P = Pacman Seamount. Area shown is indicated in Figure 1.

ANALYTICAL METHODS

Chemical compositions of minerals were determined with an ARL Model SEMQ electron probe microanalyzer (EPMA) at the Department of Mineral Sciences, Smithsonian Institution, using the approach of Jarosewich et al. (1980) based on that of Bence and Albee (1968). Analyzed minerals include chromian-spinel, olivine, and pyroxenes. More than 2000 analyses were obtained from 53 relatively fresh samples (Table 3). Hornblendes were analyzed by a JEOL Model JCXA-733 EPMA at Ocean Research Institute, University of Tokyo, using the analytical method of Otsuki (1983) based on that of Bence and Albee (1968).

In-situ analyses of diopsides for rare earth elements were carried out by N. Shimizu and K. M. Johnson with a Cameca Model IMS-3f ion microprobe at the Massachusetts Institute of Technology, using the approach of Johnson et al. (1990) based on that of Shimizu et al. (1978). Wet chemical analyses of a small subset of the drilled peridotites were performed by H. Haramura for comparison with shipboard X-ray fluorescence (XRF) analyses (Table 4).

ROCKS DRILLED FROM FOREARC SEAMOUNTS

Shipboard descriptions of recovered samples from each hole are given in the *Initial Reports* of Leg 125 (Fryer, Pearce, Stokking, et

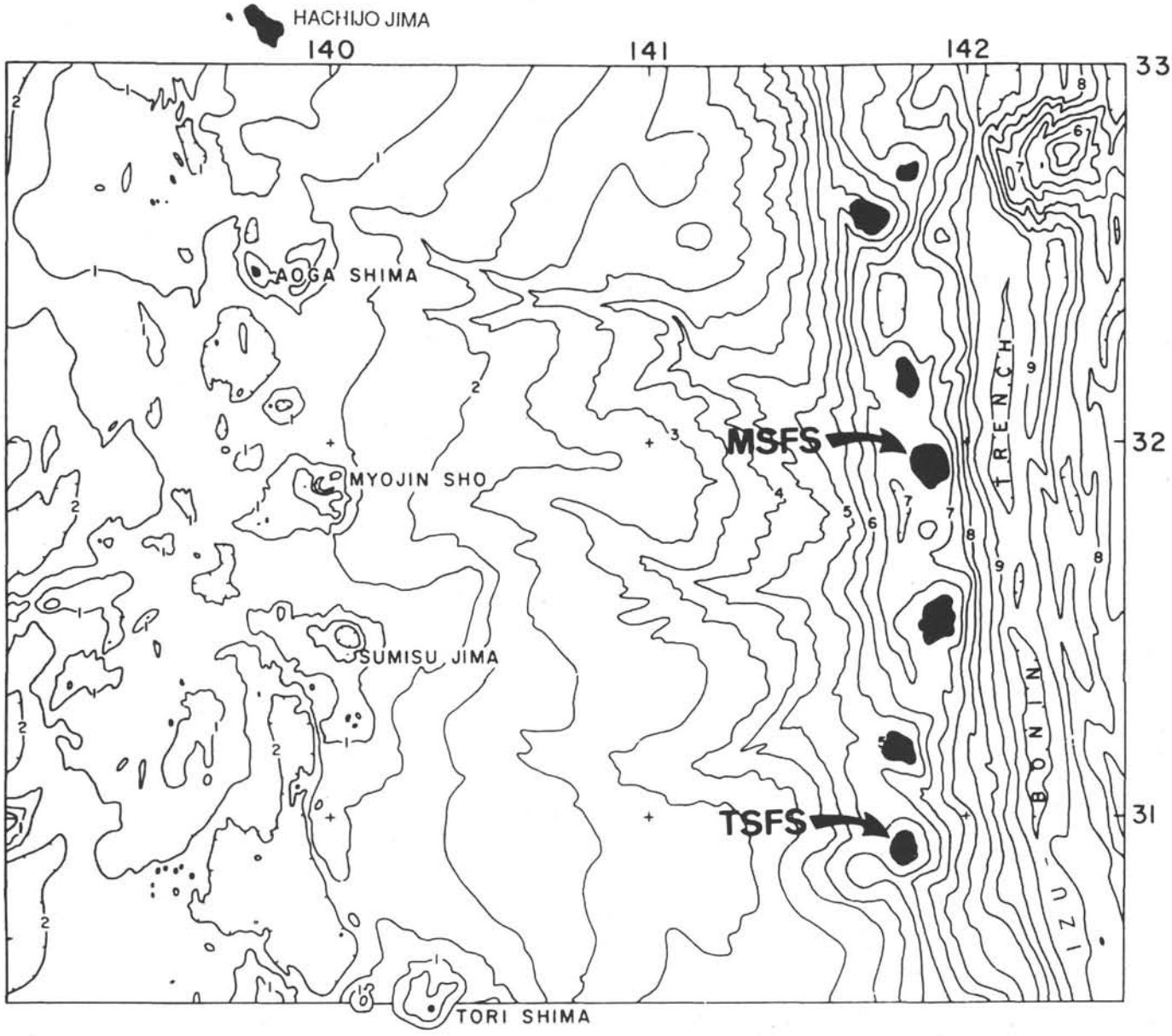


Figure 3. Bathymetric map of the Hachijojima and Torishima forearc region (B. Taylor, pers. comm., 1990), showing several conical topographic highs or forearc seamounts (hatched). TSFS = Torishima Forearc Seamount and MSFS = Myojin-Sho Forearc Seamount. Bathymetry in kilometers.

al., 1990). The lithologies of the recovered samples are summarized in Table 2, based on shipboard investigations.

Conical Seamount

A total of about 653.5 m of "basement" penetration into the serpentinite body was achieved in the seven holes, 778A through 780D, in Conical Seamount. The recovered core (about 142.0 m; 21.7% of total penetration) consists of serpentine-derived soft sediments (74.1 m; 11.3%) and lithic clasts (67.8 m; 10.4%).

The recovered soft sediments mainly consist of clay-, marl-, silt-, and sand-sized serpentine showing phacoidal and sheared textures, and some convolute structures that contain various lithic clasts. The collected rocks (67.8 m total) include serpentinized harzburgite (50.5 m; 74.4% of the total rocks), dunite (10.9 m; 16.2%), metagabbro (2.85 m; 4.2%), metabasalt (2.75 m; 4.1%), metasediment (0.56 m; 0.8%), and others (0.22 m; 0.3%), including magnesite and calcite.

Torishima Forearc Seamount

A total of about 152.4 m of "basement" penetration into the serpentinite body was achieved in the two holes, 783A through 784A, in Torishima Forearc Seamount. The recovered core (about 40.12 m; 26.3% of total penetration) is composed of serpentine-derived soft sediments (29.5 m; 19.3%) and lithic clasts (10.3 m; 7.0%).

The soft sediments from the serpentinite body of the seamount consist of clay and silt-sized serpentine showing sheared phacoidal textures with vertical convolute bedding. The clasts include serpentinized harzburgite (8.5 m; 82.5%), dunite (1.7 m; 16.5%), metabasalt (0.05 m; 0.5%), and metasediment (0.05 m; 0.5%).

The relatively poor core recovery means that a significant portion of the stratigraphic section at all the sites in both the Conical and Torishima forearc seamounts was not sampled. The above-mentioned lithologic distributions (shown by length of recovered core in Table 2) can only give an approximate indication of the volume ratio of the

Table 1. Leg 125 site summary of Conical and Torishima forearc seamounts.

Hole	Latitude (N)	Longitude (E)	Water depth (m)	Number of cores	Length cored (m)	Length recovered (m)	Recovery (%)	Total penetration (m)
Conical Seamount								
778A	19°30.93′	146°39.93′	3913.70	13	107.60	22.80	21.20	107.60
779A	19°30.75′	146°41.75′	3947.20	37	319.20	73.20	23.10	317.20
779B	19°30.75′	146°41.75′	3947.20	1	9.00	8.70	96.70	9.00
780A	19°32.51′	146°39.27′	3086.80	1	3.50	3.50	100.00	3.50
780B	19°32.47′	146°39.22′	3094.00	2	18.20	10.30	56.60	27.70
780C	19°32.53′	146°39.21′	3083.40	18	163.50	14.40	8.80	163.50
780D	19°32.55′	146°39.20′	3088.90	7	32.40	9.10	28.10	41.80
Torishima Forearc Seamount								
783A	30°57.86′	141°47.27′	4648.80	18	168.20	47.00	27.90	168.20
784A	30°54.49′	141°44.27′	4900.80	45	425.30	218.30	51.30	425.30

rocks that constitute the serpentinite seamounts. The lithologies resemble those of ophiolite sequences. The drilled rocks from both seamounts may have been part of ophiolite bodies which could be called "forearc proto-ophiolites" (Ishii et al., 1989b). Moreover, we emphasize that no lherzolite was recovered in any of the holes.

About 53 peridotites were selected for detailed petrologic studies (Table 3), 31 samples from Conical Seamount (24 harzburgites and 7 dunites) and 22 samples from Torishima Forearc Seamount (20 harzburgites and 2 dunites).

RESULTS

Petrography of the Harzburgites

Harzburgite is the predominant rock type in the peridotitic samples drilled during Leg 125; it makes up 76% of the lithic samples in the core. Dunite makes up the remaining 16%, the other 8% consisting of fragments of metabasic rock; no lherzolite was observed. Harzburgites constitute 80.7% of the 52.3 m of ultramafic rocks collected at Hole 779A in Conical Seamount and the rest are dunites. Some harzburgites show marked foliation and lineation, which are common features of ultramafic tectonites from ophiolites (Coleman, 1977). Protogranular textures are common and porphyroclastic textures also were observed. Some olivine and orthopyroxene grains have kink-banding and/or bending and exhibit wavy extinction.

Most of these peridotites are serpentinized to an extent of 80% to 100%; lizardite, chrysotile, and a trace amount of antigorite are present. Serpentinized olivine and orthopyroxene commonly show mesh and bastitic textures, respectively. However, a few samples contain as much as 60% of relict minerals. On the basis of modal proportions of the constituent serpentine minerals, the serpentinized peridotites can be divided into two groups: lizardite and/or chrysotile-rich serpentinite and antigorite-rich serpentinite (Fig. 6A), which are the predominant and trace rock types in the serpentinites, respectively. X-ray diffraction (XRD) and optical observations indicate that the antigorite-rich serpentinite shown in Figure 6A also contains brucite, lizardite, and magnetite.

Primary minerals of the serpentinized harzburgite include forsterite, enstatite, chromian-spinel, ±diopside, and ±hornblende. Some olivine and orthopyroxene grains have kink-banding and/or bending and exhibit wavy extinction. Olivine with well-developed cleavages parallel to (100), (010), and (001) (= cleavable olivine, Kuroda and Shimoda, 1967) is also rarely observed (Fig. 6B). This olivine can be produced by autometamorphism. Diopside in the studied harzburgites is primarily characterized by its small grain size (0.1–1.0 mm). It is rare (0%–2% in modal volume) in both seamounts, but several diopside grains normally can be recognized under the microscope in each thin section with careful observation. Diopside occurs as clots or patches at the margins of, as well as inside, enstatite. Diopside is also found between enstatite grains. These may represent the crystallization products from interstitial liquids and/or the products of subsolidus exsolution from enstatite. Some subhedral diopsides exhibit a smoky appearance and are a possible refractory phase. Very fine diopside (100) lamellae, some of which are deformed, also are common in the enstatite. Hornblende occurs rarely as small patches near the margins of enstatite in the samples from Torishima Forearc Seamount. This may have been crystallized from an interstitial liquid (not a refractory phase). The primary minerals of the serpentinized dunite are forsterite, chromian-spinel, and ±enstatite.

Bulk Chemistry of the Peridotites

Wet chemical analyses of peridotites were performed by Haramura on the same powders that were used for shipboard XRF analyses. As shown in Table 4, the discrepancies between both analyses (given by the difference between the shore-based and shipboard analyses

Table 2. Summary of rock types recovered from drilling on Conical and Torishima forearc seamounts (based on shipboard observations).

Seamount:	Conical Seamount					Torishima Forearc Seamount			
Site number:	778	779	780	Total		783	784	Total	
Recovered rocks:	3.70 m	56.78 m	7.35 m	67.83 m	100%	1.60 m	8.70 m	10.30 m	100%
Harzburgite	1.98	42.17	6.35	50.49	(74.4)	1.55	6.95	8.50	(82.5)
Dunite	0	10.09	0.78	10.87	(16.2)	0	1.70	1.70	(16.5)
Others	1.75	4.53	0.12	6.37	(9.4)	0.05	0.05	0.10	(1.0)
Metagabbro	0	2.85	0	2.85	(4.2)	0	0	0	(0)
Metabasalt	1.20	1.55	0	2.75	(4.1)	0.05	0	0.05	(0.5)
Metasediment	0.38	0.08	0.10	0.56	(0.8)	0	0.05	0.05	(0.5)
Rest	0.15	0.05	0.02	0.22	(0.3)	0	0	0	(0)

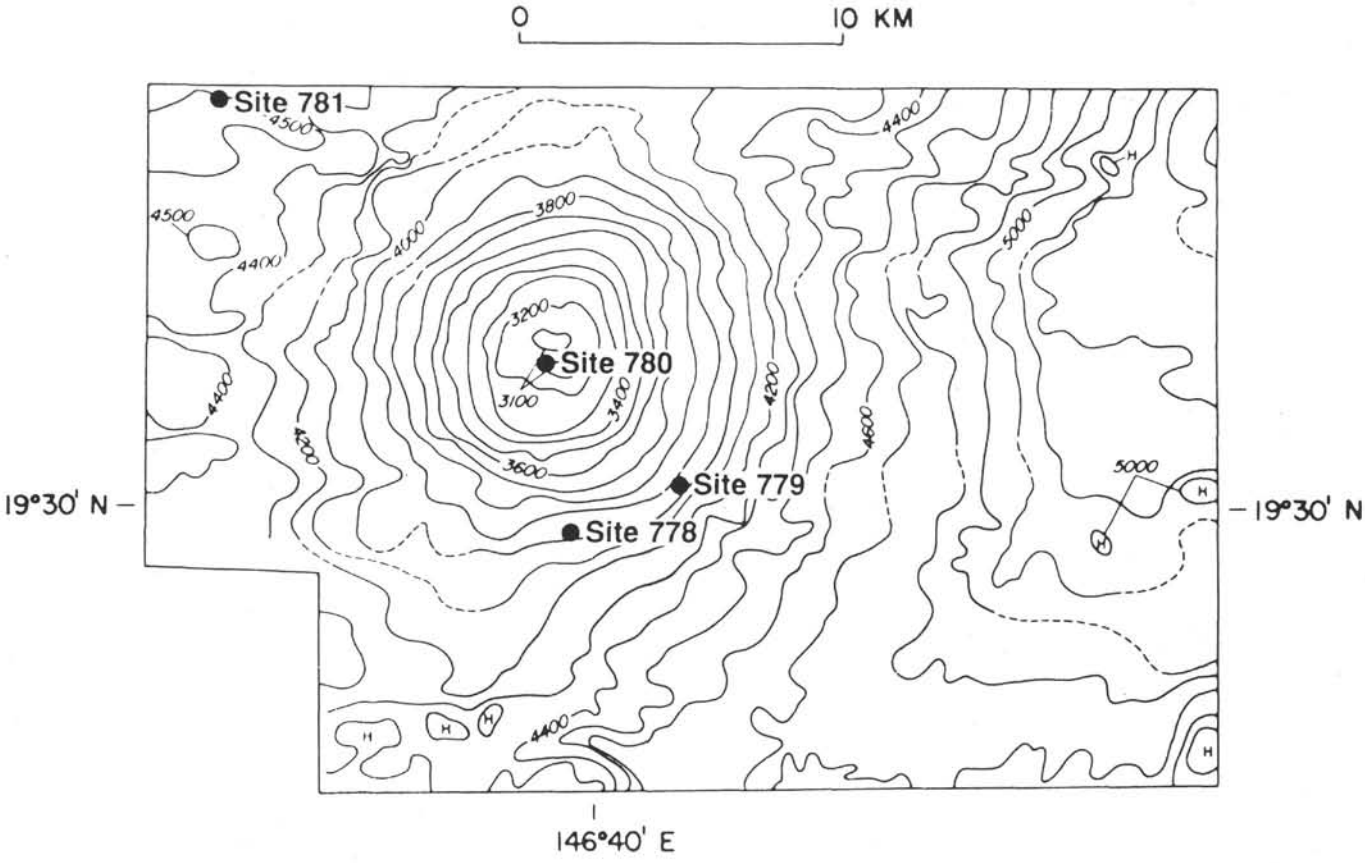


Figure 4. Bathymetric map of Conical Seamount in the Mariana forearc showing the locations of Sites 778 through 781 (Fryer, Pearce, Stokking, et al., 1990). Bathymetry in meters.

divided by the shipboard analyses) are small in the major elements (SiO_2, MgO, FeO* [total Fe as FeO]), but large in the minor elements (Al_2O_3, MnO, etc).

According to the shipboard analyses (Fryer, Pearce, Stokking, et al., 1990, and see Appendix A), all peridotites from the serpentine diapirs have low concentrations of TiO_2 (trace), Al_2O_3 (0.07%–1.01%), MnO (0.08%–0.17%), CaO (0.06%–0.86%), Na_2O (trace), P_2O_5 (trace), but have high values of in Mg/(Mg + Fe) (0.898–0.925), NiO (0.27%–0.36%), and Cr_2O_3 (0.16%–0.41%). The compositional ranges of both Al_2O_3 and CaO are narrow (Fig. 7), but a large range of Mg/(Mg + Fe) (= Mg#) was observed (Fig. 7). Possible reasons are discussed during our comparison of the chemistry of included relict minerals.

Chemistry of Primary Minerals in the Peridotite

For each sample about 10 to 20 analyses were performed by EPMA on chromian-spinel, olivine, pyroxenes, and hornblende in order to determine the extent of compositional variation.

Chromian-Spinel

Nearly all of the refractory peridotites contain some unaltered chromian-spinels, which seem to be the most resistant to serpentinization and alteration and commonly are the only original phase remaining in an otherwise totally serpentinized rock. Their chemical characteristics are shown in the $Mg/(Mg + Fe^{2+})$–$Cr/(Cr + Al)$ (Fig. 8) and Cr-Al-Fe^{3+} (Fig. 9) diagrams, and representative compositions are listed in Table 5. A full list of analyses is given in Appendix B.

Spinel compositions are sensitive indicators of temperature and bulk-rock composition and can be used as petrogenetic indicators in peridotites (Dick and Bullen, 1984). Bloomer and Hawkins (1983) noted that the spinels in noncumulate peridotites from the Mariana Trench slope clearly are distinguished from the cumulate spinels by their lower $Fe^{3+}/(Cr + Al + Fe^{3+})$ (= Fe^{3+}#) which are less than 0.08 in the noncumulate peridotites. The data presented here support this: the Fe^{3+}# values of spinels (estimated from AB_2O_4 stoichiometry) from Leg 125 peridotites range from about 0.01 to 0.04 for Conical Seamount (Fig. 9A–9C) and 0.02 to 0.07 for the Torishima Forearc Seamounts (Fig. 9D–9E). Therefore, they are consistent with noncumulate peridotites.

The spinels exhibit an antithetic variation between Cr/(Cr + Al) (= Cr#) and Mg# (Fig. 8) similar to that reported for the ultramafic rocks from the Mariana Trench slope (Bloomer and Hawkins, 1983) and for ocean-floor basalts and peridotites (Dick and Bullen, 1984). The Cr# ranges from 0.38 to 0.83 and from 0.45 to 0.68 for Conical and Torishima forearc seamounts, respectively. These ratios are greater than those for the noncumulate ultramafic rocks from the Mariana Trench (Bloomer and Hawkins, 1983). We emphasize that the compositional range of the spinels is similar to that in the Troodos and New Caledonia ophiolites (see fig. 5 in Dick and Bullen, 1984). According to the criteria of Bloomer and Hawkins (1983), the spinels analyzed here can be interpreted as residual minerals in a highly refractory mantle peridotite associated with an island arc.

Olivine, Orthopyroxene, Clinopyroxene, and Hornblende

Constituent olivine in the examined rocks has a very restricted composition in Torishima Forearc Seamount (Table 6) where the Fo

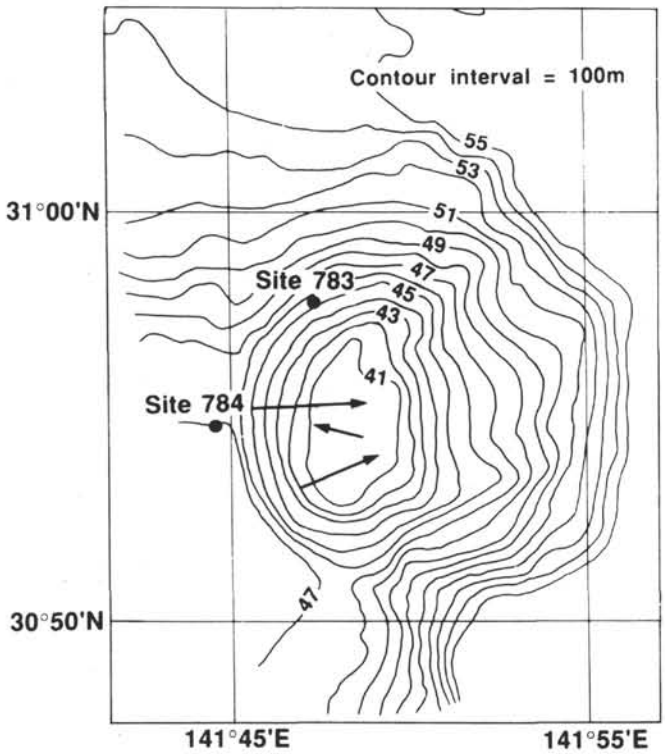


Figure 5. Bathymetric map of Torishima Forearc Seamount drilled at Sites 783 and 784 (Fryer, Pearce, Stokking, et al., 1990). Bathymetry in hundreds of meters.

content ranges only from 91.1 to 92.4 mol%, and averages 92.0 mol% (Fig. 10). On the other hand, several rocks from Conical Seamount have more magnesian olivines, ranging up to Fo_{94}, but with average of Fo_{92} (Fig. 10).

Orthopyroxenes are enstatite with a very restricted range of Mg numbers from $En_{91.5}$ to $En_{92.5}$ (Table 7, Fig. 10), apparently in chemical equilibrium with coexisting olivine. However, the Al_2O_3 and CaO content of orthopyroxene exhibits significant variation, ranging from 0.5 to 2.6 wt% and 0.4 to 0.8 wt%, respectively (partly because of fine diopside lamellae). Clinopyroxene has a restricted composition ($Ca_{48.8}Mg_{48.6}Fe_{2.6}$) (Fig. 10). However, Al_2O_3 content has a narrower and Cr_2O_3 content a wider compositional range than orthopyroxene.

Hornblende is magnesian (Mg# = 0.93) and also has a restricted composition ($Ca_{30}Mg_{65}Fe_5$) (Table 8).

Chemistry of Rare Earth Elements in Diopside

Because diopsides contain the highest concentrations of incompatible trace elements, including rare earth elements (REE) in spinel peridotites (Johnson et al., 1990), the ion microprobe has been used to analyze REE (Lu-Ce; La not analyzed) of discrete diopsides in two thin sections of harzburgites from Conical and Torishima forearc seamounts (Table 9, Fig. 11). The compositional range of the analyzed diopside is narrow (Mg# = 0.940–0.960).

Some light to middle rare earth elements (LREE to MREE) could not accurately be estimated because their concentrations are too low. Clinopyroxene REE patterns in this study are highly fractionated, and all analyzed samples exhibit continuous steep slopes from the heavy rare earth elements (HREE) to the MREE and LREE. However, they differ slightly between the two seamounts in their overall shape and degree of depletion, those from Conical Seamount being steeper than those for Torishima Forearc Seamount (Fig. 11). Those patterns are quite similar to those from the most depleted abyssal spinel peridotites reported by Johnson et al. (1990) from the Bouvet Fracture Zone near the Bouvet Hotspot in Southwest Indian Ridge (Fig. 11). The REE concentrations in diopside from the forearc seamounts are however slightly lower than those of the abyssal peridotites (Fig. 11).

DISCUSSION

Peridotites in the Forearc Region

The geological and petrological characteristics of the peridotites from Conical and Torishima forearc seamounts can be summarized as follows.

1. Both seamounts are of serpentinite composition derived from refractory spinel peridotite protoliths (Table 2).
2. Forearc serpentinite seamounts on the scale of 20- to 50-km basal diameter are more abundant in the Mariana forearc (Fig. 2) than in the Izu-Ogasawara forearc (Fig. 3) and lie within 20 to 120 km of the trench axis.
3. Harzburgite is the predominant rock type in the recovered peridotites with subordinate dunite; no lherzolite was found (Table 2).
4. The characteristics of the harzburgites are as follows:

a. They are diopside-free to sparsely diopside-bearing (0% to 2% in modal volume) harzburgites (Fig. 7) that appear to be residues from melt extraction events. This type of peridotite is called H-type (= harzburgite type) here.

b. Spinels in the harzburgites are chromian and have a large compositional range (Cr# = 0.38–0.83) (Fig. 8).

c. Olivine and orthopyroxene in the harzburgite have very restricted magnesian compositions (Mg# = 0.92) (Fig. 10).

d. Diopside REE patterns in the harzburgite are highly fractionated and exhibit LREE-depleted patterns with continuous steep slopes from the heavy to light REEs (Fig. 11).

5. These peridotites have been interpreted as ultramafic rocks associated with island arc volcanism.

According to Bloomer and Hawkins (1983), the noncumulate ultramafic rocks (excluding dunite) in the Mariana Trench slope range from diopside-free harzburgite to normal lherzolite, that is, the range of modal volume of diopside in the rocks is 0% to 9.8% (table 1 in Bloomer and Hawkins, 1983). We term this type of peridotite LH-type (= mixture of lherzolite and harzburgite) here. Those samples were dredged at 19 stations (figs. 2, 3, and 4 in Bloomer and Hawkins, 1983) along the inner wall of the southern Mariana Trench, which can be divided into two parts, according to the characteristics of the collected samples and the geological setting. The refractory peridotites dredged from the lower and mid-slopes of the trench are of LH-type (table 1 in Bloomer and Hawkins, 1983), and those dredged from the higher slopes of the trench, which are mainly from the serpentinite seamounts, are consistently H-type (table 1 in Bloomer and Hawkins, 1983).

Several hundred mantle peridotites were dredged during the *Atlantis II* and *Hakuho Maru* cruises from Conical and Torishima forearc seamounts, respectively. However, no lherzolite was reported among those ultramafic rocks dredged, either in shipboard preliminary descriptions (one of the authors, T.I., participated on both cruises) or in laboratory observations (Saboda et al., 1987; Ishii et al., 1989a). Mantle peridotites also were dredged from other forearc seamounts in the Mariana and Izu-Ogasawara areas, Pacman Seamount (19.25° N, "P" in Figs. 1 and 2) (Saboda et al., 1987) and Hahajima Seamount (26.30° N, "N" and "S" in Fig. 1) (= Ogasawara

Table 3. List of samples analyzed.

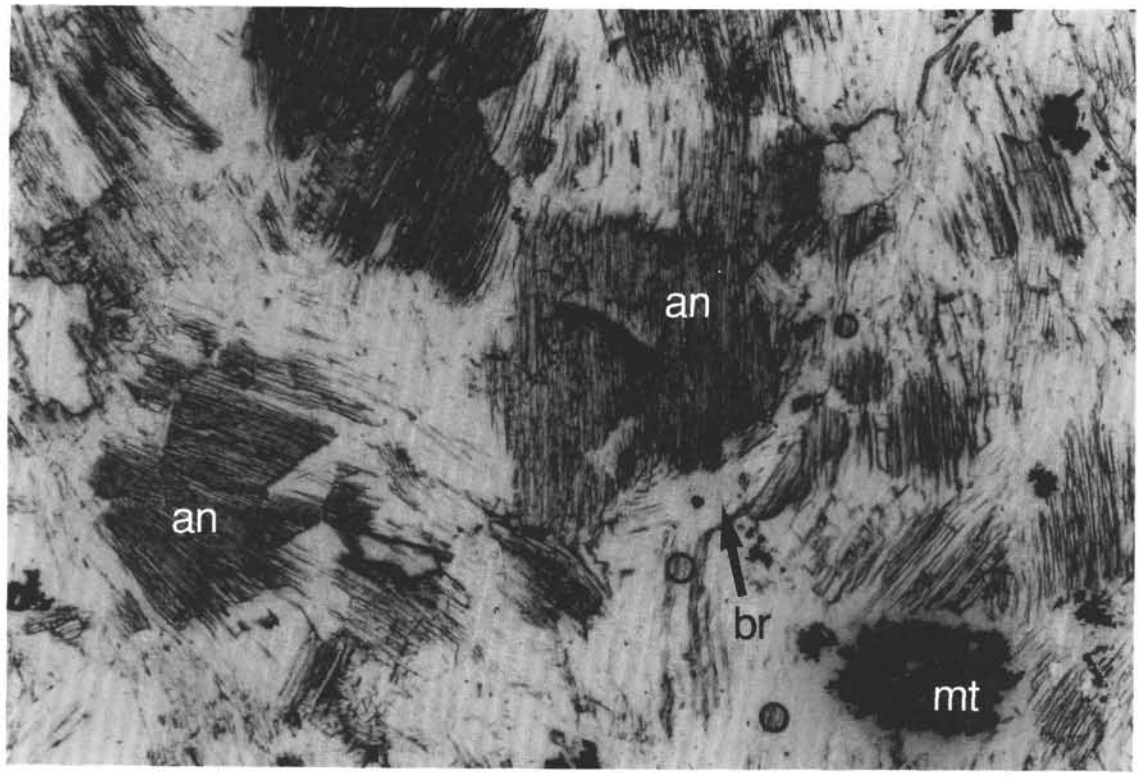
Conical Seamount				Torishima Forearc Seamount			
Hole, core, section, interval (cm)	Rock number[a]	Rock name	AMB[b]	Hole, core, section, interval (cm)	Rock number[a]	Rock name	AMBb
778A-2R-1, 53–56	H805	Harzburgite	X, W	783A-16R-CC, 14–17	H325	Harzburgite	X
778A-2R-1, 82–84	H810	Harzburgite	—	783A-16R-CC, 19–22	H330	Harzburgite	X
778A-3R-1, 4–7	H815	Harzburgite	X	783A-17R-1, 7–10	H335	Harzburgite	X
				783A-18R-1, 48–51	H340	Harzburgite	X, W
779A-3R-CC, 19–20	D908	Dunite	X, W	783A-18R-1, 75–78	H345	Harzburgite	—
779A-5R-2, 43–45	H910	Harzburgite	X	783A-18R-1, 79–82	H350	Harzburgite	—
779A-8R-1, 41–45	H916	Harzburgite	X	783A-18R-1, 100–103	H355	Harzburgite	X
779A-10R-1, 39–43	D922	Dunite	X				
779A-11R-1, 20–22	H924	Harzburgite	X	784A-37R-1, 6–90	H410	Harzburgite	X
779A-11R-1, 90–92	H926	Harzburgite	—	784A-38R-1, 68–71	H415	Harzburgite	X
779A-12R-1, 38–42	H928	Harzburgite	X	784A-38R-2, 87–89	H420	Harzburgite	X
779A-13R-2, 50–54	H930	Harzburgite	X	784A-40R-2, 33–36	D425	Dunite	X
779A-14R-2, 18–21	D934	Dunite	X	784A-41R-CC, 8–11	H435	Harzburgite	—
779A-14R-2, 139–141	H936	Harzburgite	X	784A-42R-1, 12–15	H440	Harzburgite	X
779A-15R-2, 24–27	D938	Dunite	X	784A-42R-1, 43–46	D445	Dunite	X
779A-17R-3, 80–83	H942	Harzburgite	X	784A-43R-2, 131–135	H450	Harzburgite	—
779A-19R-2, 57–60	H944	Harzburgite	—	784A-45R-1, 76–80	H455	Harzburgite	—
779A-19R-3, 53–56	H946	Harzburgite	—	784A-45R-1, 95–98	H460	Harzburgite	X
779A-22R-1, 65–69	H948	Harzburgite	X	784A-45R-1, 128–133	H470	Harzburgite	—
779A-22R-2, 18–20	D950	Dunite	X	784A-45R-2, 1–5	H475	Harzburgite	—
779A-22R-3, 55–57	H952	Harzburgite	X	784A-45R-2, 40–42	H480	Harzburgite	X
779A-25R-1, 85–87	D954	Dunite	X	784A-45R-CC, 11–14	H485	Harzburgite	—
779A-26R-2, 47–50	H956	Harzburgite	X	784A-45R-CC, 23–27	H490	Harzburgite	—
779A-26R-3, 102–105	H958	Harzburgite	X				
779A-28R-3, 26–28	H960	Harzburgite	X				
780C-6R-1, 67–69	H010	Harzburgite	X				
780C-8R-1, 94–96	D015	Dunite	X				
780C-10R-1, 11–13	H020	Harzburgite	X				
780C-16R-1, 53–59	H025	Harzburgite	X				
780C-17R-1, 2–4	D030	Dunite	—				
780C-18R-1, 65–67	H035	Harzburgite	X				
780D-5X-1, 0–4	H040	Harzburgite	—				

[a] In this paper.
[b] Analytical method of bulk chemistry: X = XRF (shipboard) and W = wet chemical (this study) methods. Dash indicates no analysis.

Table 4. Comparison of wet chemical (analyst, H. Haramura) and XRF (shipboard) analyses of refractory peridotites.

	Conical Seamount				Torishima Forearc Seamount	
Sample (cm):	125-778A-2R-1, 53–56 Harzburgite		125-779A-3R-CC, 19–20 Dunite		125-783A-18R-1, 48–51 Harzburgite	
Rock number:[a]	H805		D908		H340	
Analytic method:	Wet	XRF	Wet	XRF	Wet	XRF
Analysis number:	1	2	3	4	5	6
SiO_2	38.19	38.17	35.86	36.74	35.26	36.01
TiO_2	0.00	0.00	0.00	0.00	0.00	0.00
Al_2O_3	1.10	0.74	0.84	0.39	0.72	0.47
Fe_2O_3	4.36	6.73	2.53	7.38	4.58	7.64
FeO	2.26	—	4.12	—	2.76	—
MnO	0.07	0.10	0.07	0.10	0.07	0.12
MgO	38.07	36.59	41.63	40.31	40.02	39.35
CaO	0.00	0.07	0.00	0.14	0.33	0.66
Na_2O	0.14	0.09	0.06	0.00	0.07	0.00
K_2O	0.02	0.01	0.03	0.02	0.02	0.00
P_2O_5	0.00	0.00	0.00	0.00	0.00	0.00
NiO	0.22	0.29	0.21	0.28	0.19	0.30
Cr_2O_3	0.19	0.36	0.30	0.42	0.10	0.21
H_2O+	10.18	—	14.15	—	15.25	—
H_2O-	1.66	—	0.60	—	0.88	—
LOI	—	15.06	—	14.18	—	14.99
Total	100.46	98.21	100.40	99.96	100.25	99.75
Mg#	0.9165	0.9150	0.9207	0.9154	0.9120	0.9107

Note: Dash indicates no analysis.
[a] In this paper (see Table 3).



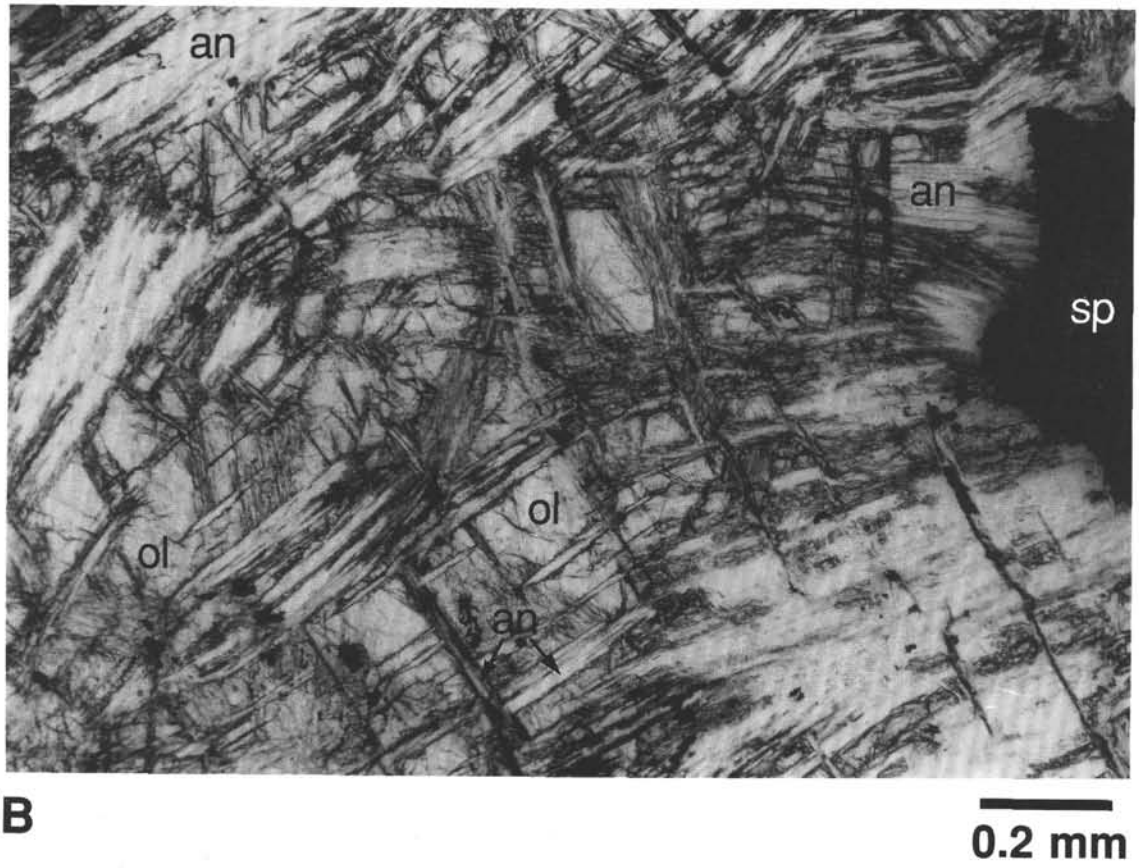


Figure 6. Photomicrographs of peridotites from Conical Seamount (single nicol). **A.** Antigorite-rich serpentinite (after dunite?), Sample 125-780C-17R-1, 2–4 cm; no. D030 in this paper. **B.** Cleavable olivine in harzburgite (Sample 125-779A-19R-2, 57–60 cm; no. H944 in this paper). Abbreviation of mineral names are as follows: an = antigorite, br = brucite, ol = olivine, mt = magnetite, and sp = chromian-spinel.

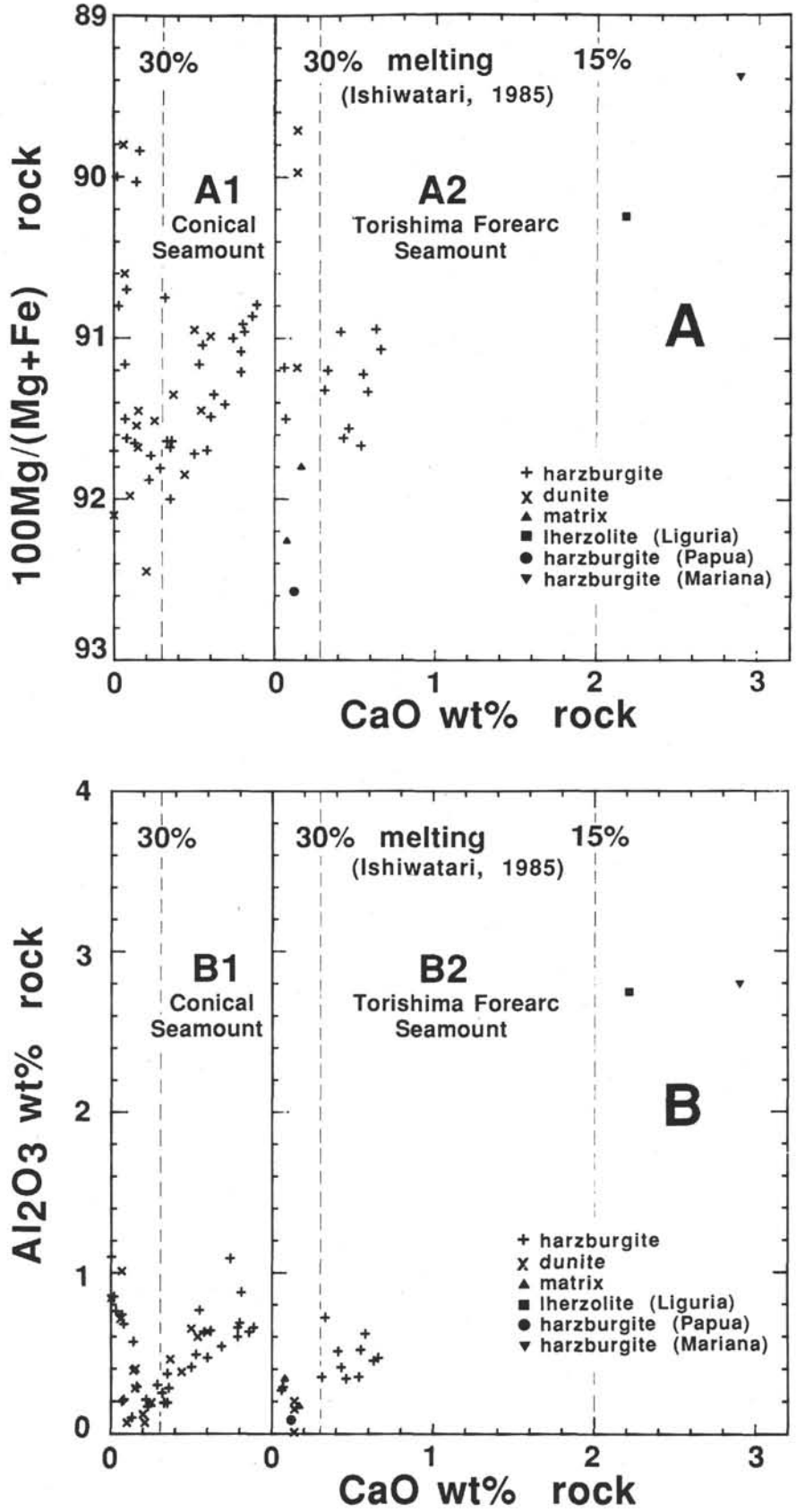


Figure 7. 100 Mg/(Fe + Mg) ratio – CaO wt% (**A**), and Al_2O_3 wt% – CaO wt% (**B**) plots of bulk chemistries of peridotites from Conical and Torishima forearc seamounts. Data source for degree of melting is Ishiwatari (1985); for Liguria, Ernst and Piccardo (1979); for Papua, Jaques and Chappell (1980); and for Mariana, Bloomer and Hawkins (1983).

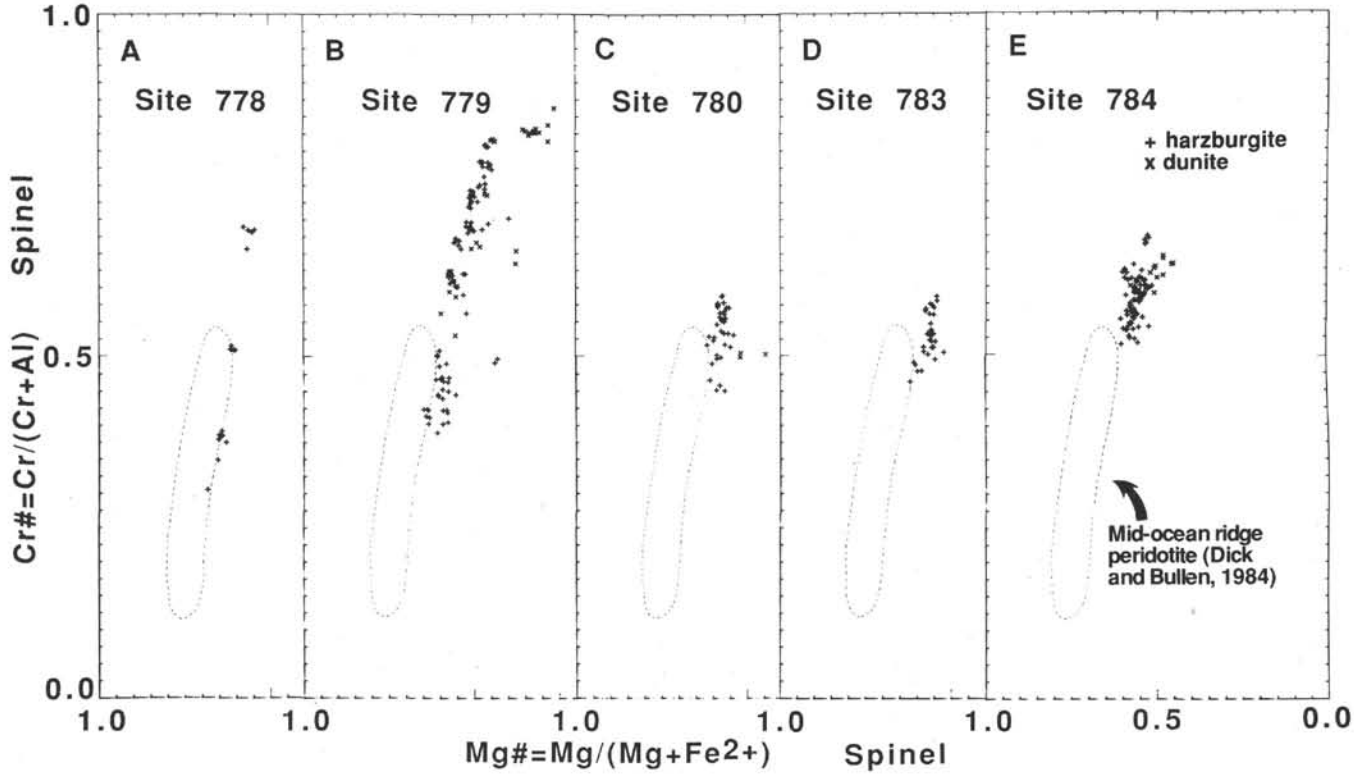


Figure 8. Cr/(Cr + Al) – Mg/(Mg + Fe^{2+}) plots of analyzed spinels in the peridotites from Conical (**A–C**) and Torishima (**D–E**) forearc seamounts.

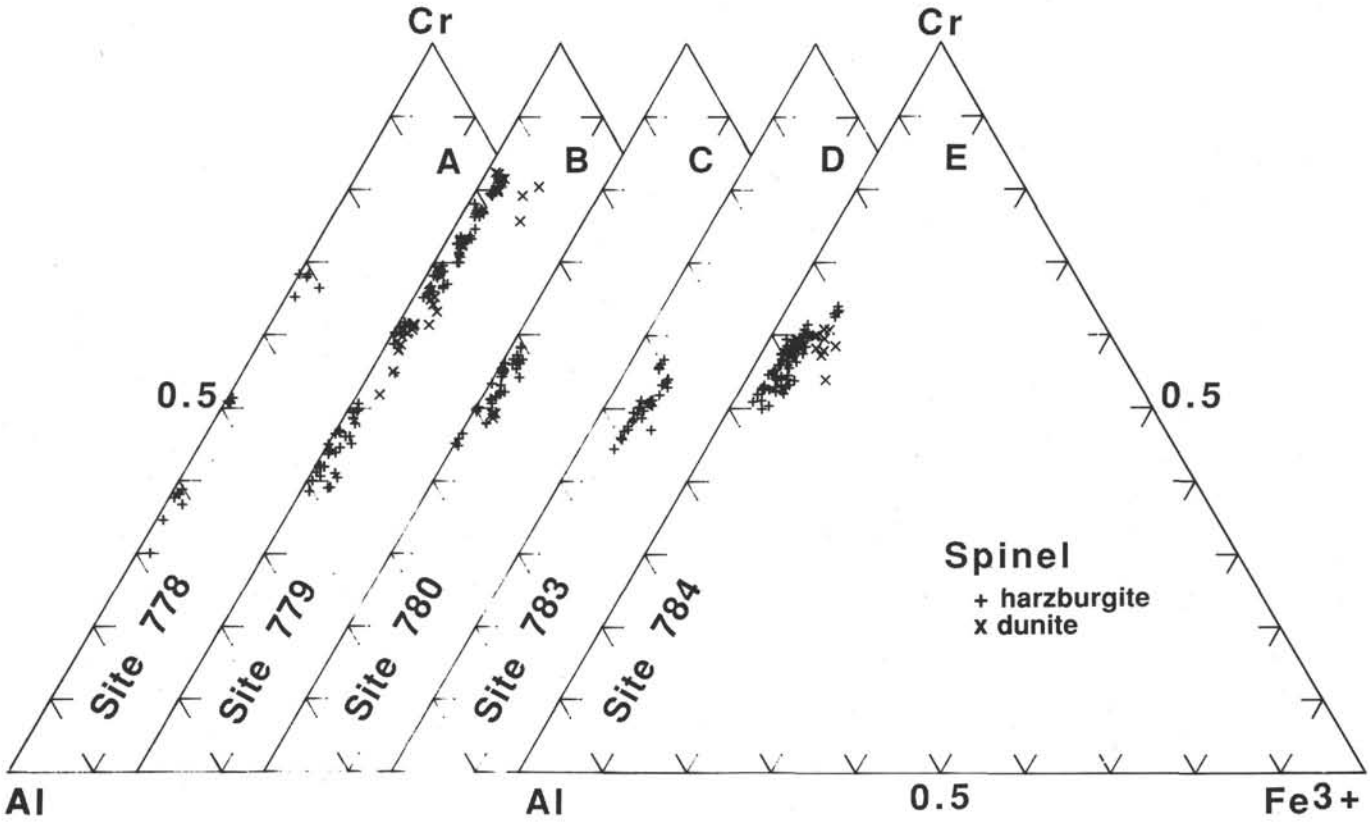


Figure 9. Cr-Al-Fe^{3+} plots of analyzed chromian-spinels in the peridotites from Conical (**A–C**) and Torishima (**D–E**) forearc seamounts.

Table 5. Selected analyses of chromian-spinels in peridotites from Conical and Torishima forearc seamounts.

	Conical Seamount								Torishima Forearc Seamount			
Site:	778		779				780		783		784	
Rock number:[a]	H810	H815	H916	H958	D908	D928	H010	D015	H345	H325	H460	D455
Point number:	Sp003	Sp014	Sp008	Sp056	Sp028	Sp317	Sp004	Sp057	Sp003	Sp062	Sp041	Sp253
Analysis number:	1	2	3	4	5	6	7	8	9	10	11	12
SiO_2	0.01	0.02	0.04	0.02	0.01	0.03	0.07	0.05	0.04	0.01	0.04	0.06
TiO_2	0.13	0.10	0.11	0.18	0.17	0.09	0.08	0.12	0.14	0.10	0.12	0.11
Al_2O_3	16.60	35.33	20.20	33.81	16.93	16.26	24.17	26.75	23.84	27.58	19.79	21.27
Cr_2O_3	54.30	33.04	49.43	35.67	51.13	53.43	44.91	39.93	41.75	39.32	47.57	46.03
Fe_2O_3	0.94	0.66	0.55	0.53	2.05	0.71	0.70	2.33	4.46	3.58	3.49	2.37
FeO	16.50	14.71	16.51	14.73	18.76	18.39	16.61	18.73	17.08	15.63	15.50	17.45
MgO	11.94	14.63	12.02	14.74	10.24	10.45	12.36	11.27	12.05	13.40	12.62	11.47
CaO	0.02	0.02	0.02	0.03	0.03	0.03	0.02	0.03	0.03	0.01	0.02	0.02
K_2O	0.00	0.01	0.03	0.01	0.02	0.02	0.02	0.02	0.03	0.01	0.03	0.01
NiO	0.25	0.23	0.16	0.26	0.30	0.21	0.22	0.25	0.28	0.31	0.28	0.24
Total	100.60	98.68	99.02	99.93	99.43	99.55	99.09	99.25	99.25	99.59	99.11	98.79
O = 32.000												
Si	0.003	0.005	0.010	0.005	0.003	0.008	0.017	0.012	0.010	0.002	0.010	0.015
Ti	0.025	0.018	0.021	0.032	0.033	0.017	0.015	0.022	0.026	0.018	0.023	0.021
Al	4.950	9.751	6.004	9.286	5.165	4.945	7.050	7.797	7.034	7.906	5.908	6.358
Cr	10.861	6.117	9.856	6.572	10.464	10.901	8.787	7.808	8.264	7.561	9.527	9.230
Fe^{3+}	0.180	0.116	0.104	0.094	0.399	0.139	0.131	0.434	0.840	0.655	0.655	0.452
Fe^{2+}	3.491	2.880	3.483	2.871	4.061	3.968	3.437	3.874	3.576	3.180	3.284	3.701
Mg	4.502	5.107	4.518	5.120	3.951	4.019	4.559	4.154	4.496	4.858	4.765	4.336
Ca	0.005	0.005	0.005	0.007	0.008	0.008	0.005	0.008	0.008	0.003	0.005	0.005
K	0.000	0.003	0.010	0.003	0.007	0.007	0.006	0.006	0.010	0.003	0.010	0.003
Ni	0.051	0.043	0.032	0.049	0.062	0.044	0.044	0.050	0.056	0.061	0.057	0.049
B	16.018	16.007	15.995	15.987	16.064	16.009	16.001	16.074	16.174	16.143	16.133	16.077
A	8.050	8.038	8.049	8.049	8.089	8.046	8.052	8.092	8.146	8.104	8.121	8.094
Cr	0.679	0.383	0.617	0.412	0.653	0.682	0.550	0.487	0.512	0.469	0.592	0.575
Al	0.310	0.610	0.376	0.582	0.322	0.309	0.441	0.486	0.436	0.490	0.367	0.396
Fe^{3+}	0.011	0.007	0.007	0.006	0.025	0.009	0.008	0.027	0.052	0.041	0.041	0.028
Mg#	0.563	0.639	0.565	0.641	0.493	0.503	0.570	0.517	0.557	0.604	0.592	0.540
Cr#	0.687	0.386	0.621	0.414	0.670	0.688	0.555	0.500	0.540	0.489	0.617	0.592

Note: Fe_2O_3 and Fe^{3+} are calculated on the basis of AB_2O_4 stoichiometry.
[a] In this paper (see Table 3).

Paleo-Land in Ishii, 1985; and Ishii et al., 1981, 1983, 1985), but again lherzolite has never been reported.

The above-mentioned facts, together with the studies reported in this paper, indicate that the serpentinite seamounts located in the higher part of the Izu-Ogasawara-Mariana trench inner slope consist of H-type peridotites which contain no lherzolite. By contrast, the middle to lower part of the southern Mariana Trench inner slope comprises LH-type peridotites consisting of both lherzolite and harzburgite. However, the possibility exists that the harzburgites of LH-type peridotite were supplied from the forearc seamounts located on the upper part of the trench slope. Note that lherzolite was dredged only from the middle to lower part of the trench inner slope. If this is a general feature, it implies that all forearc seamounts contain more depleted peridotites than those in the lower part of the inner trench wall, as schematically shown in Figure 12.

Degree of Depletion of Forearc Peridotites

Ishiwatari (1985) proposed a method for semiquantitative estimation of the degree of partial melting experienced by ophiolitic residual peridotites. This method is based principally on experimental results (Mysen and Kushiro, 1977; Jaques and Green, 1980) and assumes a fertile lherzolitic source material. The degree of partial melting can be estimated using bulk-rock chemistry in the Mg#-CaO wt% and Al_2O_3-CaO wt% diagrams (Fig. 7). For example, a lherzolite such as that from Liguria (Ernst and Piccardo, 1979), having a 12% modal clinopyroxene content, would represent the residue from <15% melting of a primary lherzolite, and a harzburgite such as that from the Papuan ultramafic belt (Jaques and Chappell, 1980), with 0.8% modal clinopyroxene (mostly clinopyroxene-free), would represent the residue from >30% melting. On this basis, the degree of partial melting experienced by the harzburgites from the serpentinite diapirs has been estimated to be about 30% (Fig. 7). Analogous systematic chemical variations also were observed among coexisting minerals in the peridotites (Ishiwatari, 1985), as shown in Figure 13. The Y_{Cr} (= Cr/[Al + Cr+ Fe^{3+}] = Cr#) of spinel and the Fo content of olivine increase, while the Al_2O_3 content of orthopyroxene decreases, as would be expected for increasing degrees of depletion in a residual peridotite.

Olivine and orthopyroxene have a restricted range of Mg# of about 0.92 ± 0.01 (Fig. 10), and the ranges of both Al_2O_3 and CaO in the bulk rocks are also narrow (Fig. 7B). On the other hand, a relatively large range of Mg# exists among bulk-rock analyses (Fig. 7A). Moreover, the bulk-rock Mg# of the soft, serpentinized matrix, derived originally from the lithic clasts, is slightly higher than that of serpentinized lithic part in the Hole 784A (Fig. 7A). These suggest that the initial bulk compositions of the harzburgites were not perfectly preserved during serpentinization, especially with respect to MgO and/or FeO contents. The high Fe^{3+}/Fe^{2+} vaiues and very high loss on ignition (LOI) also reflect this extensive serpentinization (Fryer, Pearce, Stokking, et al., 1990). We have thus assumed a certain degree of redistribution of some major elements during serpentinization. Ishiwatari's (1985) methods (Fig. 7), however, may still be applicable for qualitatively estimating the degree of depletion of residual peridotite.

Table 6. Selected analyses of olivines in peridotites from Conical and Torishima forearc seamounts.

	Conical Seamount								Torishima Forearc Seamount			
Site:	778		779				780		783		784	
Rock number:[a]	H810	H815	H916	H958	D908	D928	H010	D015	H345	H325	H460	D455
Point number:	Ol006	Ol065	Ol059	Ol065	Ol019	Ol324	Ol033	Ol042	Ol075	Ol036	Ol026	Ol246
Analysis number:	1	2	3	4	5	6	7	8	9	10	11	12
SiO_2	41.43	41.71	41.42	41.18	41.53	41.87	40.99	41.00	41.49	41.85	40.87	41.02
Al_2O_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TiO_2	0.01	0.02	0.01	0.02	0.02	0.00	0.02	0.02	0.01	0.02	0.01	0.01
Cr_2O_3	0.01	0.03	0.01	0.00	0.01	0.01	0.01	0.03	0.02	0.03	0.00	0.00
FeO*	6.49	7.19	8.06	7.61	8.01	7.73	8.02	8.90	7.62	8.23	7.58	7.59
MgO	51.87	50.08	50.49	50.06	50.11	49.64	51.05	49.94	49.94	49.20	50.49	50.54
CaO	0.00	0.04	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.02	0.02	0.01
K_2O	0.00	0.02	0.02	0.00	0.02	0.01	0.02	0.00	0.00	0.00	0.00	0.02
NiO	0.40	0.31	0.30	0.38	0.35	0.35	0.41	0.36	0.35	0.38	0.38	0.37
Total	100.21	99.40	100.31	99.26	100.05	99.62	100.53	100.26	99.43	99.73	99.35	99.56
O = 4.000												
Si	0.999	1.015	1.003	1.006	1.008	1.018	0.993	0.998	1.011	1.019	0.999	1.000
Al	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Ti	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Cr	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.001	0.000	0.001	0.000	0.000
Fe	0.131	0.146	0.163	0.156	0.163	0.157	0.162	0.181	0.155	0.168	0.155	0.155
Mg	1.864	1.816	1.823	1.823	1.813	1.799	1.843	1.813	1.814	1.785	1.839	1.837
Ca	0.000	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001	0.000
K	0.000	0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.000	0.001
Ni	0.008	0.006	0.006	0.007	0.007	0.007	0.008	0.007	0.007	0.007	0.007	0.007
Z	0.999	1.015	1.003	1.006	1.008	1.018	0.993	0.998	1.011	1.019	0.999	1.000
XY	2.002	1.971	1.993	1.987	1.984	1.964	2.015	2.002	1.977	1.962	2.002	2.000
Mg#	0.934	0.925	0.918	0.921	0.918	0.920	0.919	0.909	0.921	0.914	0.922	0.922

Note: *Total Fe as FeO.
[a] In this paper (see Table 3).

Chemical compositions of coexisting minerals of dredged samples from the Mariana Trench area (Bloomer and Hawkins, 1983), including both the lower and the upper inner trench walls, are also plotted in Figure 13. One can recognize, albeit on the basis of a small data set, that the compositional ranges of the minerals from the middle to lower trench wall are wider than those of peridotites from the serpentinite diapirs (i.e., this is consistent with the greater modal range of diopside in the former).

According to Bonatti and Michael's (1989) summaries of the petrological and mineralogical characteristics of mantle-derived spinel peridotites from various geological environments, which include the Mariana data of Bloomer and Hawkins (1983), the degree of depletion of the peridotites increases from a pre-oceanic rift to passive margins to mature oceans to subduction-related active margins. Bonatti and Michael (1989) also emphasized that peridotites from subduction zones are more depleted than the most refractory oceanic peridotites. If this is the case, one can assume that the H-type as well as LH-type peridotites in the Izu-Ogasawara-Mariana trench were derived from the upper mantle wedge associated with island arc volcanism.

Origin of Forearc Seamounts

Fryer and Fryer (1987) mentioned the origin of Conical and Pacman seamounts, and of the chain of small highs in the Izu-Ogasawara forearc (Fig. 3), which includes Torishima Forearc Seamount. On the basis of morphological and unpublished petrological data for dredged samples, including serpentinized "cumulate" ultramafics from one of the highs on Myojin-Sho Forearc Seamount (MSFS in Fig. 3), Fryer and Fryer (1987) suggested that the above chain of forearc seamounts originated by *in-situ* expansion (by 30%) of forearc basic igneous materials as a result of hydration and metamorphism. Their model differs in part from the conclusion reached by the Leg 125 Shipboard Scientific Party (Fryer, Pearce, Stokking, et al., 1990). As previously mentioned, refractory mantle peridotites also were recovered during Leg 125 from Torishima Forearc Seamount (Holes 783A and 784A), one of small highs in the Izu-Ogasawara forearc. Thus, the above-mentioned small highs in the Izu-Ogasawara can be inferred to have had a broadly similar origin to that of Conical Seamount in the Mariana forearc.

As shown in these studies, the forearc seamounts, at least those from which mantle peridotite were recovered, probably are caused by diapirically emplaced serpentinized ultramafics derived from the upper mantle wedge. Those ultramafics are primarily composed of depleted peridotites, or diopside-poor (0%–2%) harzburgite (= H-type peridotite) and dunite. By contrast, peridotites from the middle to lower slope of the Mariana Trench have more fertile peridotites, or lherzolite plus harzburgite (= LH-type) peridotite, and dunite. This contrast in the geographical distribution of these peridotite types requires an explanation.

Both types of peridotites (H- and LH-types) may have been derived from the upper part of mantle wedge. In this case, mantle heterogeneity on a scale of 20 to 50 km (which is in the range of the basal diameters of the forearc seamounts) should exist in the upper mantle. If the upper part of the mantle wedge is usually composed of slightly fertile to depleted lherzolite, as assumed by many investigators (Tatsumi et al., 1983; Sakuyama and Nesbitt, 1986), it would be very difficult to produce H- and/or LH-type peridotite bodies on the scale of 20 to 50 km by a single melting episode from the same source. Therefore, different petrogenetic processes may have to be considered for the production of the two types of forearc peridotites. The igneous history that produced H-type peridotites may have involved a higher degree of partial melting than that which produced the LH-type peridotites.

Table 7. Selected analyses of pyroxenes in peridotites from Conical and Torishima forearc seamounts.

	Conical Seamount								Torishima Forearc Seamount			
Site:	778		779				780		783		784	
Rock number:[a]	H815		H916		D908	D928	H010		H345		H460	
Point number:	Opx068	Cpx069	Opx047	Cpx040	Opx024	Opx322	Opx022	Cpx025	Opx026	Cpx020	Opx019	Cpx016
Analysis number:	1	2	3	4	5	6	7	8	9	10	11	12
SiO_2	56.61	53.22	56.58	54.01	57.04	57.52	56.62	53.20	56.810	53.70	56.58	53.44
Al_2O_3	2.06	2.64	1.83	1.20	1.46	0.91	1.70	1.49	1.61	1.13	1.70	1.490
TiO_2	0.03	0.10	0.01	0.04	0.02	0.01	0.03	0.02	0.03	0.07	0.03	0.02
Cr_2O_3	0.38	0.96	0.58	0.59	0.57	0.41	0.43	0.64	0.37	0.81	0.58	0.67
FeO*	5.09	1.58	5.43	1.69	5.09	5.32	5.59	1.50	5.50	1.93	5.46	1.90
MgO	35.01	17.18	35.42	18.40	34.83	34.21	35.49	17.78	34.48	18.03	34.57	17.70
CaO	0.42	23.57	0.35	24.13	0.61	0.74	0.34	24.74	0.43	23.61	0.65	24.02
K2O	0.02	0.02	0.00	0.03	0.01	0.03	0.00	0.01	0.00	0.04	0.00	0.00
NiO	0.05	0.05	0.04	0.04	0.10	0.08	0.10	0.11	0.10	0.17	0.07	0.10
Total	99.67	99.32	100.24	100.13	99.73	99.23	100.30	99.49	99.33	99.49	99.64	99.34
O = 6.000												
Si	1.949	1.940	1.942	1.956	1.964	1.990	1.943	1.944	1.965	1.960	1.954	1.954
Al	0.051	0.060	0.058	0.044	0.036	0.010	0.057	0.056	0.035	0.040	0.046	0.046
Al	0.032	0.053	0.016	0.008	0.023	0.027	0.012	0.008	0.030	0.008	0.023	0.018
Ti	0.001	0.003	0.000	0.001	0.001	0.000	0.001	0.001	0.001	0.002	0.001	0.001
Cr	0.010	0.028	0.016	0.017	0.016	0.011	0.012	0.018	0.010	0.023	0.016	0.019
Fe	0.147	0.048	0.156	0.051	0.147	0.154	0.160	0.046	0.159	0.059	0.158	0.058
Mg	1.796	0.933	1.812	0.993	1.787	1.764	1.816	0.969	1.777	0.981	1.779	0.964
Ca	0.015	0.920	0.013	0.936	0.023	0.027	0.013	0.969	0.016	0.923	0.024	0.941
K	0.001	0.001	0.000	0.001	0.000	0.001	0.000	0.000	0.000	0.002	0.000	0.000
Ni	0.001	0.001	0.001	0.001	0.003	0.002	0.003	0.003	0.003	0.005	0.002	0.003
Z	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000
WXY	2.004	1.988	2.013	2.009	1.999	1.987	2.016	2.014	1.997	2.003	2.003	2.004
Ca	0.8	48.4	0.6	47.3	1.2	1.4	0.6	48.8	0.8	47.0	1.2	47.9
Mg	91.7	49.1	91.5	50.1	91.4	90.7	91.3	48.8	91.0	50.0	90.7	49.1
Fe	7.5	2.5	7.9	2.6	7.5	7.9	8.1	2.3	8.100	3.0	8.0	3.0
Mg#	0.925	0.951	0.921	0.951	0.924	0.920	0.919	0.955	0.918	0.943	0.919	0.943

Note: *Total Fe as FeO.
[a] In this paper (see Table 3).

One may easily assume that mantle diapirs have a higher degree of partial melting than that of the surrounding peridotite. Ishii et al. (1989b) discussed the possible relationship between serpentine diapirs and mantle diapirs in the forearc region. They proposed a petrogenetic model whereby "the serpentine diapir producing the forearc seamount is derived from a remnant mantle diapir by remobilization through serpentinization."

The following model for the origin of the proto-ophiolites is suggested (Fig. 14):

Stage 1. Generation of a mantle diapir.

1a. Generation of a partially molten zone under hydrous conditions in the fertile to depleted lherzolite of the lower mantle wedge close to the trench in the supra-subduction zone environment (Ishii, 1985).

1b. Generation of a mantle diapir from this zone and its ascent, leaving behind a physicochemically altered migration pathway (MPMD, or migration pathway of mantle diapir) in the mantle wedge.

1c. Termination of mantle diapirism at or near the Moho (deeper than 15 km [Maekawa et al., this volume]) with a high degree of partial melting of the peridotite and the release of primary arc tholeiitic and/or boninitic magmas.

1d. Incipient arc magmatism (ca. 40 Ma, see Bloomer, 1983; Ishii, 1985; Mitchell et al., this volume) involving gabbro, dolerite, and basic lavas (Johnson et al., this volume) and leaving a remnant mantle diapir (RMD) comprising a refractory residue of depleted harzburgite (H-type peridotite).

Stage 2. Migration of forearc wedge (crust and mantle, including the RMD and its MPMD) toward the trench, caused by tectonic erosion (Bloomer, 1983) of the lower part of the wedge.

Stage 3. Generation of a serpentine diapir.

3a. Water supply from the subducting slab near the trench to the RMD through its Stage 1b MPMD.

3b. Serpentinization of the peridotite in the RMD, and its remobilization or ascent in an extensional environment (Nakamura, 1987). This may be induced by density contrast, which traps the overlying metamorphosed crustal materials, stage 1d magmatic products, and preexisting oceanic crust (Maekawa et al.; Johnson et al., both this volume).

3c. Emplacement of the serpentine diapir as a seamount on the sea-floor near the trench inner wall (ca. 5–2 Ma, see Ishii, 1985) and its lateral migration to the present position.

This is one possible model. Further case studies will enable this model to be fully tested.

ACKNOWLEDGMENTS

The authors are grateful to the crew of the *JOIDES Resolution* for their help in collecting the samples used here, and to Julian A. Pearce and two reviewers for critical readings of the manuscript, and to Kazuhito Ozawa for his suggestion and discussion. We thank Eugene Jarosewich, James E. Collins, and Joseph A. Nelen for their help with the EPMA work, Nobumichi Shimizu and Kevin T.M. Johnson with

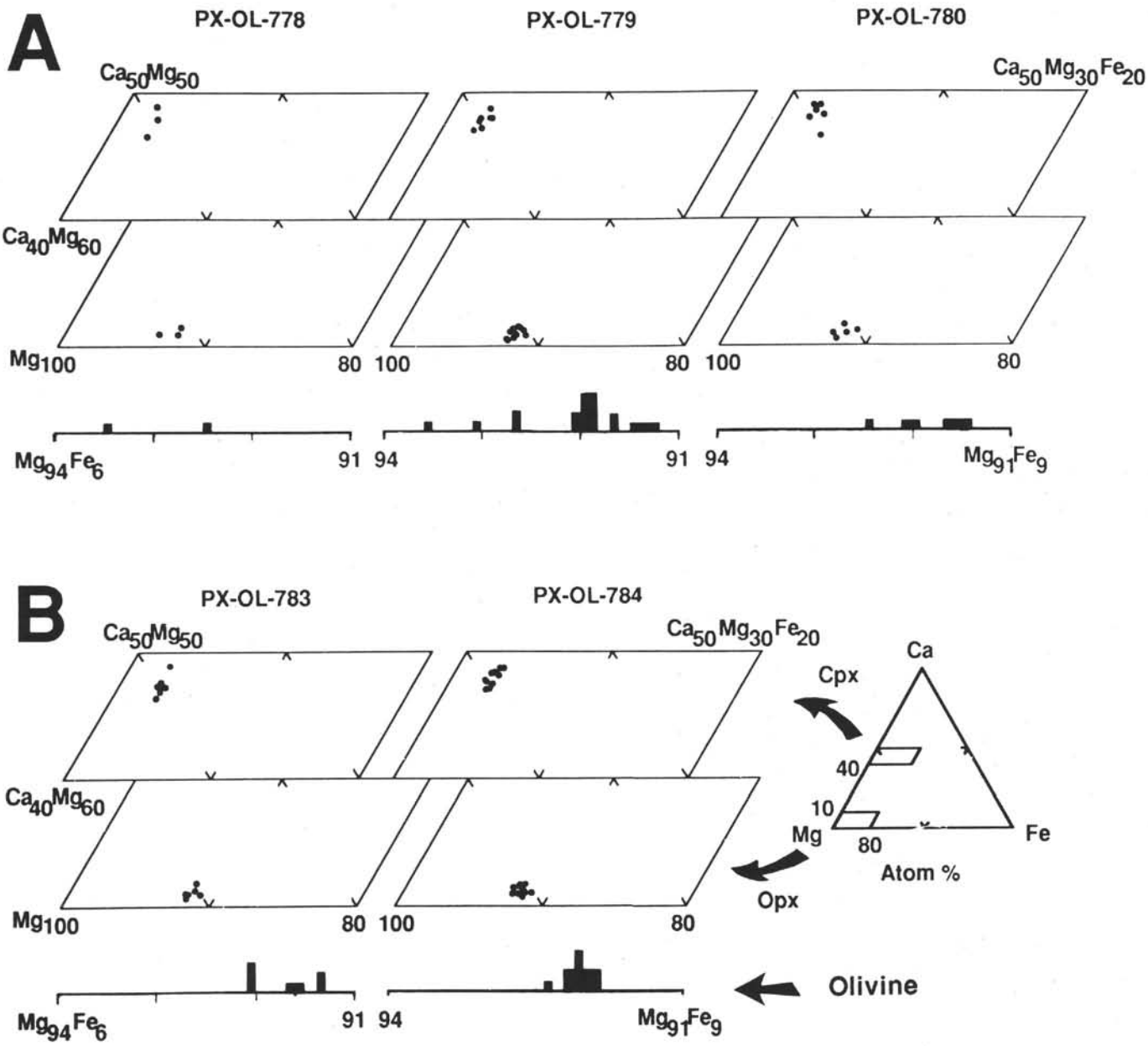


Figure 10. Ca-Mg-Fe and Mg-Fe plots of analyzed pyroxenes (PX) and olivines (OL), respectively, in the peridotites from Conical (**A**) and Torishima (**B**) forearc seamounts.

the ion microprobe work, Hiroshi Haramura and Keizo Yanai with the wet chemical analyses of rocks, and Daphne R. Ross and Jeffrey Post with the XRD work.

We thank Brian Taylor for providing bathymetric maps of the Torishima Forearc Seamount area, Masashi Nomura for computer programming, Akemi Hatanaka, Yoshiko Kishida, Makoto Tsutsumi, and Yukiko Hirata for their help in preparing the manuscript, and Frank Walkup and Richard Johnson for making polished thin sections. This research was partly supported by NSERC (Canada, #IS-0371) and the Smithsonian Institution.

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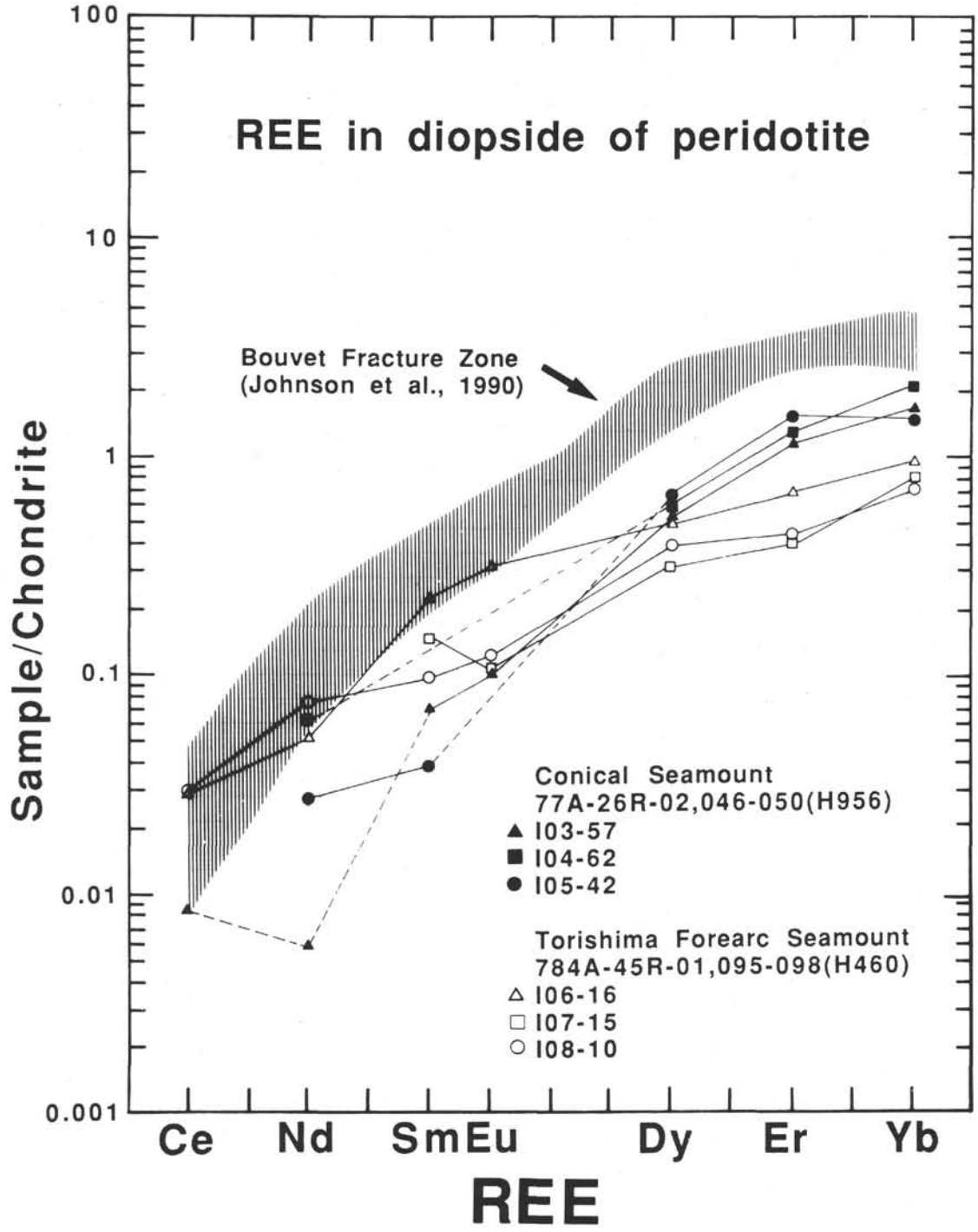

Figure 11. Chondrite-normalized REE concentrations of diopsides in the peridotites from Conical and Torishima forearc seamounts. REE patterns in both locations have steep slopes.

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Table 8. Selected analyses of hornblendes in harzburgite from Hole 783A in Torishima Forearc Seamount.

Rocks:	125-784A-41R-CC, 8–11 (H435)								125-784A-45R-CC, 23–27 (H490)			
Point number:	HB101	HB102	HB103	HB104	HB105	HB106	HB110	HB111	HB113	HB114	HB115	HB116
Analysis number:	1	2	3	4	5	6	7	8	9	10	11	12
SiO_2	48.32	48.61	49.12	47.85	48.23	47.13	47.63	47.10	46.40	46.56	47.41	47.19
Al_2O_3	10.05	9.33	8.73	9.94	9.59	10.53	10.21	10.32	10.22	10.43	9.77	9.69
TiO_2	0.15	0.16	0.15	0.14	0.14	0.14	0.14	0.14	0.09	0.08	0.16	0.11
Cr_2O_3	2.20	1.98	1.94	1.97	1.93	2.39	2.35	2.52	2.19	2.43	2.31	2.18
FeO*	2.63	2.28	2.42	2.71	2.53	2.91	3.06	2.72	2.71	2.61	2.56	2.57
MnO	0.06	0.06	0.06	0.04	0.07	0.05	0.01	0.09	0.07	0.07	0.01	0.04
MgO	19.58	19.97	20.31	19.54	20.01	19.68	19.67	19.55	19.62	19.80	19.79	19.51
CaO	12.67	12.57	13.01	12.70	12.86	12.48	12.56	12.52	12.36	12.55	12.65	12.54
Na_2O	1.52	1.36	1.27	1.47	1.40	1.74	1.60	1.64	1.80	1.86	1.65	1.58
K_2O	0.14	0.12	0.09	0.12	0.15	0.10	0.18	0.16	0.00	0.00	0.01	0.02
NiO	0.16	0.11	0.14	0.06	0.05	0.08	0.09	0.04	0.13	0.09	0.16	0.10
Total	97.49	96.55	97.24	96.56	96.96	97.24	97.50	96.80	95.60	96.49	96.48	95.53
O = 23:000												
Si	6.783	6.863	6.896	6.780	6.802	6.656	6.709	6.680	6.659	6.625	6.731	6.759
Al	1.663	1.553	1.444	1.660	1.594	1.753	1.695	1.725	1.729	1.749	1.635	1.636
Ti	0.016	0.017	0.016	0.015	0.015	0.015	0.015	0.015	0.010	0.009	0.017	0.012
Cr	0.244	0.221	0.215	0.221	0.215	0.267	0.262	0.283	0.248	0.273	0.259	0.247
Fe	0.309	0.269	0.284	0.321	0.298	0.344	0.360	0.323	0.325	0.311	0.304	0.308
Mn	0.007	0.007	0.007	0.005	0.008	0.006	0.001	0.011	0.009	0.008	0.001	0.005
Mg	4.097	4.203	4.250	4.127	4.206	4.143	4.130	4.133	4.197	4.199	4.188	4.165
Ca	1.906	1.902	1.957	1.928	1.943	1.888	1.896	1.902	1.901	1.913	1.924	1.925
Na	0.414	0.372	0.346	0.404	0.383	0.476	0.437	0.451	0.501	0.513	0.454	0.439
K	0.025	0.022	0.016	0.022	0.025	0.018	0.033	0.029	0.000	0.000	0.002	0.004
Ni	0.018	0.012	0.016	0.007	0.006	0.009	0.010	0.005	0.015	0.010	0.018	0.012
Total	15.480	15.441	15.447	15.489	15.496	15.575	15.548	15.556	15.593	15.611	15.534	15.510
Mg#	0.930	0.940	0.937	0.928	0.934	0.923	0.920	0.928	0.928	0.931	0.932	0.931
Cr#	0.128	0.125	0.130	0.117	0.119	0.132	0.134	0.141	0.126	0.135	0.137	0.131

Note: *Total Fe as FeO.

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Table 9. Ion and electron microprobe analyses of diopsides in the peridotites from Conical and Torishima forearc seamounts.

Sample (cm):	Conical Seamount 125-779A-26R-2, 46–50 (H956)			Torishima Forearc Seamount 125-784A-45R-, 95–98 (H460)		
Point number:	I03-57	I04-62	I05-42	I06-16	I07-15	I08-10
Analysis number:	1	2	3	4	5	6
(ppm)						
Ce	0.005	—	—	0.017	—	0.017
Nd	0.003	0.029	0.013	0.025	—	0.035
Sm	0.010	—	0.006	0.035	0.022	0.015
Eu	0.006	—	—	0.018	0.006	0.007
Dy	0.139	0.153	0.173	0.121	0.078	0.098
Er	0.194	0.213	0.259	0.113	0.069	0.070
Yb	0.257	0.355	0.251	0.154	0.128	0.114
Point number:	Cpx057	Cpx062	Cpx042	Cpx016	Cpx015	Cpx010
(wt%)						
SiO_2	53.52	52.51	54.04	53.44	52.79	53.58
Al_2O_3	1.64	1.82	0.83	1.49	1.73	1.20
TiO_2	0.05	0.05	0.04	0.02	0.04	0.04
Cr_2O_3	0.82	0.71	0.36	0.67	0.82	0.59
FeO*	1.59	1.76	1.37	1.90	1.99	1.73
CaO	24.07	23.94	24.80	24.02	24.02	24.33
K_2O	0.02	0.01	0.01	0.00	0.04	0.00
NiO	0.05	0.05	0.04	0.10	0.10	0.09
Total	99.49	98.24	99.72	99.34	99.01	99.16
Ca	48.2	48.4	48.4	47.9	48.1	48.5
Mg	49.4	48.9	49.5	49.1	48.7	48.8
Fe	2.5	2.8	2.1	3.0	3.1	2.7
Mg#	0.952	0.946	0.960	0.943	0.940	0.948

Notes: *Total Fe as FeO. Dashes indicate data is not available.

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Date of initial receipt: 4 October 1990
Date of acceptance: 19 August 1991
Ms 125B-129

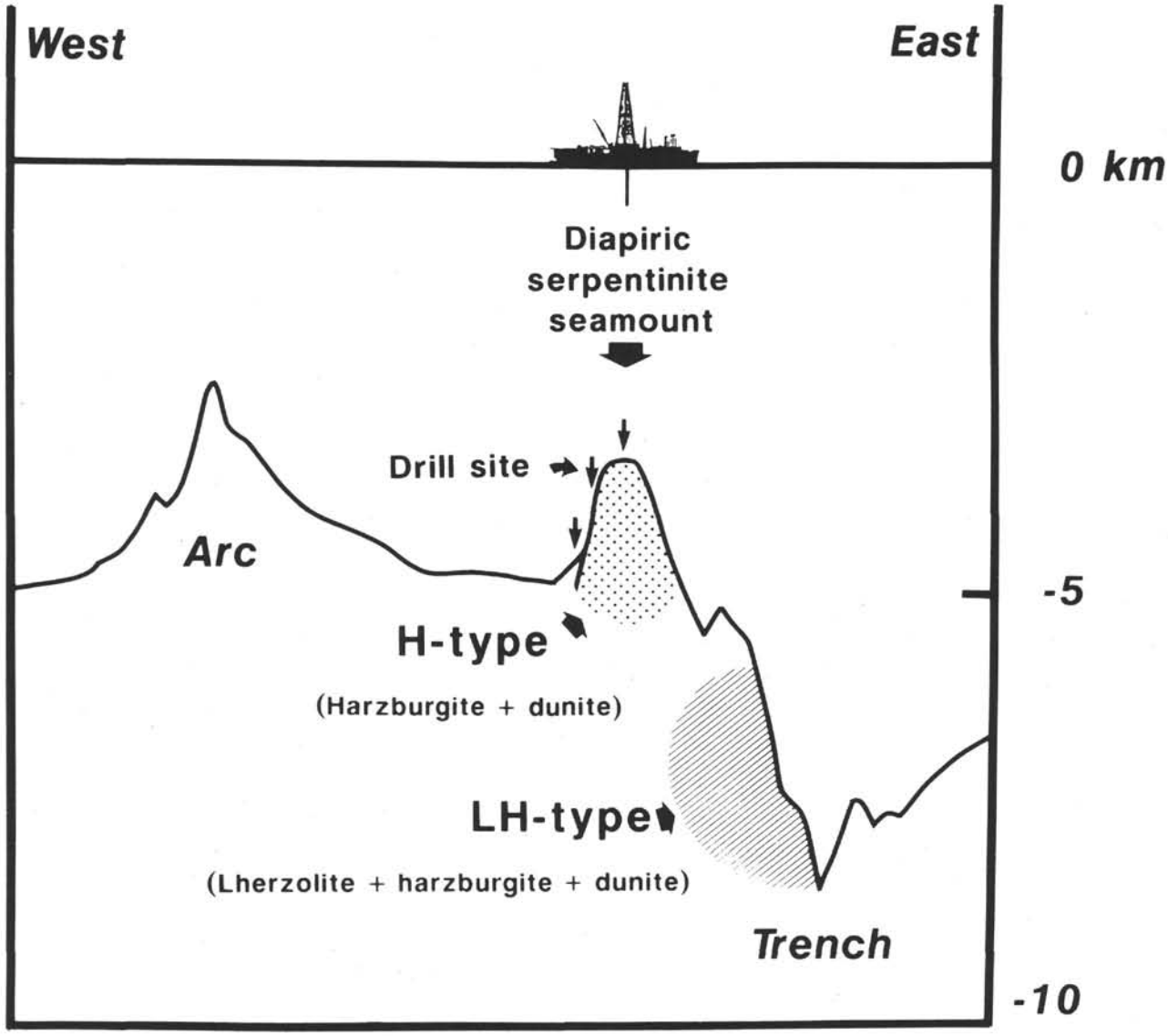

Figure 12. Schematically shown vertical distribution of refractory peridotite types in the Izu-Ogasawara-Mariana trench inner slope (for explanation, see text).

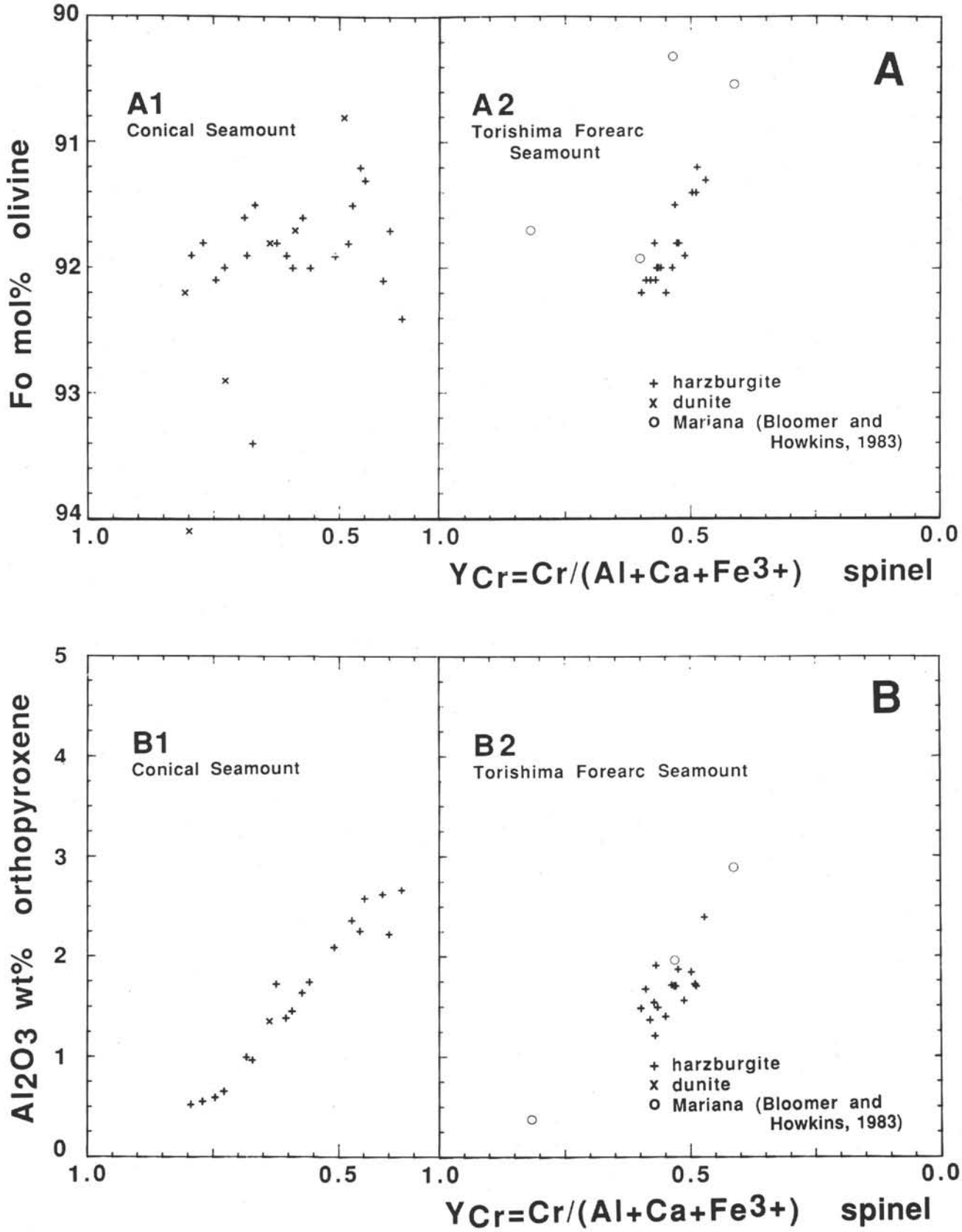

Figure 13. 100 Mg/(Fe + Mg) ratio of olivine and Cr/(Al + Cr + Fe^{3+}) ratio of spinel (**A**), and Al_2O_3 wt% of orthopyroxene and Cr/(Al + Cr + Fe^{3+}) ratio of spinel (**B**) plots of coexisting minerals in the peridotites from Conical and Torishima forearc seamounts and the Mariana Trench (Bloomer and Hawkins, 1983).

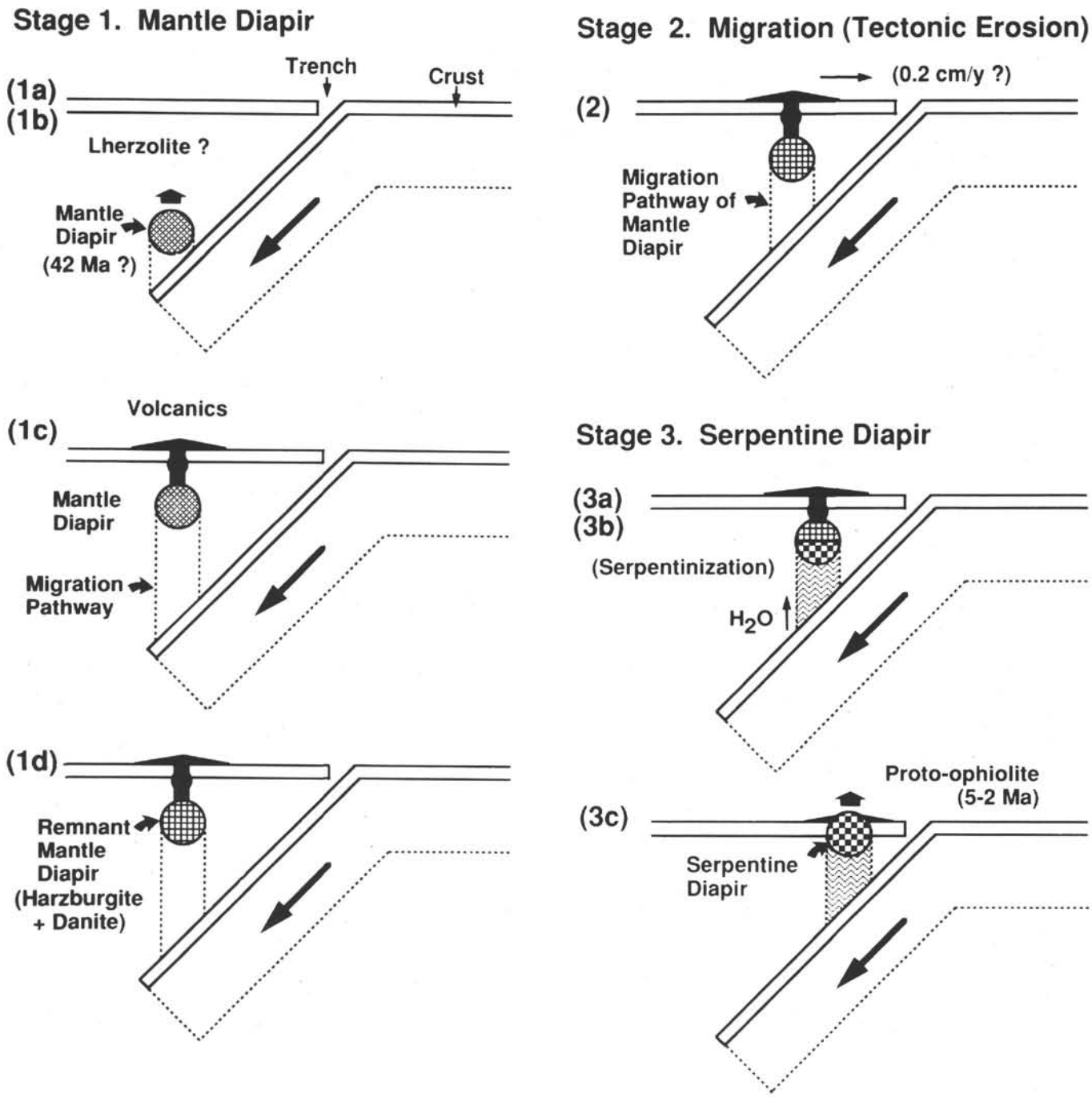

Figure 14. Schematically shown petrogenetic model (Ishii et al., 1989b) of the serpentine diapiric seamount. The remnant mantle diapir is assumed to be the source peridotite for the serpentinite seamount in this model (for explanation, see text).

APPENDIX A

Shipboard XRF Analyses of Peridotites from Conical and Torishima Forearc Seamounts

Core, section, interval (cm)	Rock name	SiO_2	TiO_2	Al_2O_3	Fe_2O_3	MnO	MgO	CaO	Na_2O	K_2O	P_2O_5	NiO	Cr_2O_3	LOI	Total	Mg#	Rock number[a]
125-778A-																	
2R-1, 53–56	Harzburgite	38.17	0.00	0.74	6.73	0.10	36.59	0.07	0.09	0.01	0.00	0.29	0.36	15.06	98.21	91.50	H805
2R-1, 89–92	Harzburgite	35.69	0.00	0.00	6.77	0.10	35.88	3.52 ?	0.09	0.00	0.01	0.39	0.07	15.55	98.07	91.30	
3R-CC, 1–7	Harzburgite	40.93	0.00	1.09	7.21	0.10	36.85	0.74	0.00	0.01	0.00	0.28	0.37	11.49	99.07	91.01	H815
7R-2, 73–78	Harzburgite	34.14	0.00	0.85	8.66	0.14	39.32	0.02	0.09	0.01	0.00	0.39	0.41	14.76	98.79	89.99	
7R-CC, 7–13	Harzburgite	37.46	0.00	0.76	7.86	0.13	39.15	0.03	0.00	0.05	0.00	0.36	0.33	13.66	99.79	90.80	
8R-1, 36–44	Harzburgite	34.61	0.00	0.68	8.00	0.16	39.21	0.08	0.00	0.00	0.00	0.33	0.37	16.06	99.50	90.66	
12R-2, 43–45	Dunite	41.52	0.00	0.71	8.95	0.08	39.61	0.06	0.00	0.00	0.00	0.36	0.42	6.01	97.72	89.76	
12R-2, 73–75	Dunite	39.29	0.00	1.01	7.64	0.06	37.04	0.07	0.00	0.00	0.00	0.37	0.53	11.99	98.00	90.57	
125-779A-																	
4R-1, 27–30	Harzburgite	33.64	0.00	0.20	7.04	0.14	40.13	0.07	0.00	0.00	0.00	0.31	0.24	16.66	98.43	91.86	
5R-2, 34–37	Harzburgite	36.46	0.00	0.21	7.71	0.09	40.18	0.22	0.00	0.02	0.00	0.29	0.19	14.62	99.99	91.17	H910
5R-2, 40–43	Harzburgite	35.12	0.00	0.21	7.23	0.10	39.87	0.08	0.00	0.00	0.00	0.28	0.24	16.35	99.48	91.61	
6R-1, 18–20	Harzburgite	37.57	0.00	0.77	7.72	0.11	39.61	0.55	0.00	0.01	0.00	0.28	0.26	12.42	99.30	91.04	
8R-1, 45–48	Harzburgite	38.35	0.00	0.49	7.69	0.11	40.00	0.53	0.00	0.01	0.00	0.29	0.37	11.01	98.85	91.15	H916
8R-1, 57–60	Harzburgite	29.39	0.00	0.57	9.04	0.17	41.22	0.14	0.00	0.00	0.00	0.32	0.41	17.41	98.67	90.03	
9R-2, 52–54	Harzburgite	35.45	0.00	0.28	7.47	0.10	41.32	0.36	0.00	0.01	0.00	0.31	0.22	14.03	99.55	91.64	
11R-1, 14–18	Harzburgite	36.49	0.00	0.41	7.00	0.10	39.14	0.50	0.00	0.01	0.00	0.28	0.24	14.83	99.00	91.72	H924
12R-1, 38–42	Harzburgite	36.81	0.00	0.19	7.50	0.10	41.50	0.33	0.00	0.01	0.00	0.29	0.21	12.33	99.27	91.64	H928
13R-1, 2–5	Harzburgite	32.18	0.00	0.25	8.15	0.12	40.35	0.32	0.00	0.00	0.00	0.30	0.33	16.87	98.87	90.75	
13R-2, 52–54	Harzburgite	38.62	0.00	0.66	7.77	0.11	40.03	0.79	0.00	0.00	0.00	0.29	0.27	11.28	99.82	91.07	H930
14R-2, 139–141	Harzburgite	38.08	0.00	0.88	7.35	0.11	37.34	0.81	0.00	0.02	0.00	0.28	0.43	13.82	99.12	90.96	H936
16R-2, 74–77	Harzburgite	38.70	0.00	0.64	7.38	0.11	39.33	0.62	0.00	0.03	0.00	0.28	0.32	11.46	98.87	91.35	
17R-2, 14–17	Harzburgite	40.20	0.00	0.37	7.36	0.10	42.69	0.35	0.00	0.01	0.00	0.32	0.28	6.81	98.49	91.99	
17R-3, 77–80	Harzburgite	36.37	0.00	0.30	6.98	0.09	39.47	0.29	0.00	0.01	0.00	0.30	0.26	15.40	99.47	91.80	H942
22R-1, 58–60	Harzburgite	29.13	0.00	0.29	9.25	0.17	41.26	0.16	0.00	0.00	0.00	0.33	0.57	16.93	98.09	89.83	H948
22R-1, 63–65	Harzburgite	38.61	0.00	0.17	7.47	0.11	41.84	0.23	0.00	0.01	0.00	0.30	0.42	10.01	99.17	91.73	
22R-3, 55–57	Harzburgite	38.09	0.00	0.10	7.76	0.11	42.96	0.13	0.00	0.00	0.00	0.30	0.18	9.17	98.80	91.64	H952
26R-3, 50–52	Harzburgite	39.61	0.00	0.69	8.11	0.11	40.95	0.80	0.00	0.00	0.00	0.29	0.29	8.57	99.42	90.91	H956
26R-2, 101–103	Harzburgite	37.09	0.00	0.63	7.08	0.10	39.50	0.58	0.00	0.00	0.00	0.28	0.24	13.32	98.82	91.70	H958
28R-3, 26–28	Harzburgite	35.53	0.00	0.19	7.07	0.10	39.32	0.35	0.00	0.00	0.00	0.29	0.25	15.63	98.73	91.68	H960
3R-CC, 13–15	Dunite	36.74	0.00	0.39	7.38	0.10	40.31	0.14	0.00	0.02	0.00	0.28	0.42	14.18	99.96	91.54	D908
8R-1, 90–93	Dunite	39.47	0.00	0.28	7.63	0.11	41.21	0.15	0.00	0.00	0.00	0.28	0.39	9.55	99.07	91.45	
10R-1, 40–43	Dunite	38.14	0.00	0.63	8.08	0.12	41.19	0.60	0.00	0.00	0.00	0.30	0.41	9.28	98.75	90.99	D922
14R-1, 74–77	Dunite	38.30	0.00	0.38	7.33	0.10	41.71	0.44	0.00	0.01	0.00	0.31	0.35	9.00	97.93	91.85	
14R-2, 21–24	Dunite	35.25	0.00	0.07	7.14	0.09	41.35	0.10	0.00	0.00	0.00	0.30	0.21	14.64	99.15	91.98	D934
15R-2, 24–27	Dunite	33.54	0.00	0.07	5.66	0.08	42.14	0.21	0.00	0.02	0.00	0.45	0.19	16.71	99.07	93.65	D938
16R-1, 19–23	Dunite	40.80	0.00	0.60	8.05	0.10	43.43	0.54	0.00	0.01	0.00	0.32	0.33	4.77	98.95	91.44	
19R-2, 97–99	Dunite	39.21	0.00	0.19	8.15	0.12	44.36	0.25	0.00	0.00	0.00	0.32	0.22	6.22	99.04	91.51	
22R-2, 18–20	Dunite	39.47	0.00	0.40	7.36	0.10	40.95	0.15	0.00	0.00	0.00	0.27	0.30	9.26	98.26	91.68	D950
24R-1, 36–38	Dunite	34.50	0.00	0.46	7.31	0.11	38.94	0.37	0.00	4.00 ?	0.00	0.29	0.25	16.27	102.50	91.34	
25R-1, 85–87	Dunite	34.44	0.00	0.12	7.02	0.09	43.40	0.20	0.00	0.00	0.00	0.34	0.32	12.77	98.70	92.45	D954
125-780C-																	
6R-1, 61–62	Harzburgite	40.70	0.00	0.47	7.91	0.11	42.94	0.60	0.00	0.00	0.00	0.29	0.24	5.28	98.54	91.49	H010
10R-1, 13–16	Harzburgite	38.42	0.00	0.60	7.45	0.11	39.04	0.79	0.00	0.02	0.00	0.28	0.31	12.31	99.33	91.21	H020
16R-1, 53–59	Harzburgite	37.76	0.00	0.54	7.44	0.11	39.97	0.69	0.00	0.01	0.03	0.29	0.31	12.06	99.21	91.41	H025
18R-1, 54–57	Harzburgite	38.56	0.00	0.63	7.80	0.11	39.13	0.86	0.00	0.00	0.00	0.29	0.28	11.13	98.79	90.86	H035
18R-1, 58–61	Harzburgite	38.85	0.00	0.66	7.81	0.11	38.87	0.89	0.00	0.00	0.00	0.28	0.34	11.12	98.93	90.79	H035
8R-1, 98–101	Dunite	38.43	0.00	0.65	7.84	0.11	39.78	0.50	0.00	0.01	0.00	0.29	0.34	11.90	99.85	90.95	D015
125-783A-																	
16R-CC, 14–17	Harzburgite	36.41	0.00	0.41	7.28	0.09	40.18	0.43	0.00	0.00	0.00	0.28	0.16	14.83	100.07	91.62	H325
16R-CC, 19–22	Harzburgite	39.21	0.00	0.59	7.37	0.11	38.19	1.66 ?	0.00	0.00	0.00	0.25	0.21	12.62	100.21	91.12	H330
17R-1, 9–12	Harzburgite	35.90	0.00	0.35	7.42	0.11	39.39	0.31	0.00	0.00	0.00	0.29	0.18	15.75	99.70	91.31	H335
18R-1, 49–51	Harzburgite	36.01	0.00	0.47	7.64	0.12	39.35	0.66	0.00	0.00	0.00	0.30	0.21	14.99	99.75	91.07	H340
18R-1, 96–97	Harzburgite	36.84	0.00	0.45	7.87	0.11	39.91	0.63	0.00	0.00	0.00	0.29	0.25	13.55	99.90	90.94	H355
125-784A-																	
36R-1, 107–109	Harzburgite	36.23	0.00	0.27	7.44	0.12	38.85	0.06	0.00	0.00	0.00	0.28	0.16	16.29	99.70	91.18	
37R-1, 6–9	Harzburgite	36.97	0.00	0.51	7.54	0.16	38.30	0.41	0.00	0.00	0.00	0.29	0.29	15.29	99.76	90.96	H410
38R-1, 66–68	Harzburgite	35.35	0.00	0.29	7.21	0.13	39.15	0.07	0.00	0.00	0.00	0.27	0.21	17.01	99.69	91.49	H415
38R-2, 92–95	Harzburgite	38.92	0.00	0.62	7.13	0.13	37.93	0.58	0.00	0.00	0.00	0.25	0.38	13.66	99.60	91.33	H420
42R-1, 5–8	Harzburgite	37.57	0.00	0.52	7.49	0.11	39.28	0.55	0.00	0.00	0.00	0.30	0.30	13.97	100.09	91.22	H440
45R-1, 98–100	Harzburgite	37.58	0.00	0.34	7.24	0.11	39.63	0.46	0.00	0.00	0.00	0.29	0.19	13.63	99.47	91.55	H460
45R-2, 41–44	Harzburgite	37.78	0.00	0.35	7.14	0.11	39.67	0.54	0.00	0.00	0.00	0.29	0.20	13.46	99.54	91.67	H480
40R-2, 41–43	Dunite	33.32	0.00	0.01	7.92	0.11	41.33	0.14	0.00	0.00	0.00	0.33	0.06	16.38	99.60	91.18	D425
41R-2, 98–100	Dunite	34.17	0.00	0.15	8.94	0.12	39.36	0.14	0.00	0.00	0.00	0.34	0.26	15.46	98.94	89.71	
42R-1, 39–41	Dunite	33.01	0.00	0.20	8.90	0.13	40.31	0.14	0.00	0.00	0.00	0.36	0.27	16.34	99.66	89.97	D445
38R-2, 29–31	Matrix	36.98	0.00	0.34	6.62	0.08	39.86	0.08	0.00	0.00	0.00	0.24	0.22	15.40	99.82	92.26	
40R-1, 84–87	Matrix	36.18	0.00	0.17	7.17	0.09	40.55	0.11	0.00	0.00	0.00	0.30	0.17	14.95	99.69	91.80	

[a] In this paper (see Table 3).

APPENDIX B

Analyses of Chromian-Spinels in Peridotites from Conical and Torishima Forearc Seamounts

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	Cr_2O_3	Fe_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
778A-2R-1, 53–56	H805	33	1	.01	.17	26.93	42.97	0.48	15.30	13.62	.02	.01	.23	99.69	.607	.517	51.40	48.00	0.50	Harzburgite
		35	3	.00	.14	27.15	42.28	0.63	15.68	13.31	.01	.01	.24	99.39	.593	.511	50.70	48.60	0.70	
		36	4	.00	.16	27.32	42.51	0.60	15.57	13.51	.01	.02	.23	99.87	.599	.511	50.70	48.60	0.70	
		37	5	.01	.15	27.55	42.97	0.25	15.36	13.77	.02	.01	.20	100.27	.612	.511	51.00	48.70	0.30	
778A-2R-1, 82–84	H810	1	6	.00	.10	16.83	54.24	0.05	16.74	11.60	.02	.01	.26	99.85	.552	.684	68.30	31.60	0.10	Harzburgite
		2	7	.00	.11	18.00	51.94	0.91	16.25	11.97	.02	.02	.23	99.36	.556	.659	65.20	33.70	1.10	
		3	8	.00	.13	16.60	54.30	0.96	16.48	11.94	.02	.00	.25	100.59	.551	.687	67.90	30.90	1.10	
		4	9	.00	.11	16.22	54.20	0.99	15.78	12.13	.01	.02	.27	99.63	.565	.692	66.40	30.20	3.30	
		5	10	.02	.11	16.00	52.44	2.77	16.91	11.41	.07	.01	.22	99.68	.512	.687	66.40	30.20	3.30	
778A-3R-CC, 4–7	H815	12	28	.02	.12	35.30	32.97	0.88	14.47	14.81	.01	.02	.23	96.74	.634	.385	38.10	60.90	1.00	Harzburgite
		13	29	.00	.09	35.46	31.73	1.87	15.12	14.36	.02	.01	.25	98.73	.604	.375	36.70	61.20	2.10	
		14	30	.02	.10	35.33	33.04	0.66	14.71	14.63	.02	.01	.23	98.68	.630	.386	38.30	61.00	0.70	
		15	31	.04	.11	34.70	33.37	0.91	14.58	14.64	.02	.02	.22	98.52	.629	.392	38.80	60.20	1.00	
		16	32	.00	.09	35.25	33.00	0.65	14.22	14.82	.02	.00	.24	98.23	.641	.386	38.30	61.00	0.70	
		18	34	.04	.09	35.86	32.64	0.57	14.30	14.95	.02	.01	.24	98.67	.643	.349	34.60	64.50	0.90	
		19	35	.16	.09	37.78	30.24	0.78	14.39	15.23	.03	.02	.23	96.88	.643	.349	34.60	64.50	0.90	
		22	36	.03	.06	40.60	26.61	1.46	13.22	16.00	.03	.01	.25	98.12	.662	.305	30.10	68.40	1.60	
779A-3R-CC, 19–20	D908	27	1	0.00	0.20	17.20	50.61	1.77	18.99	9.99	.04	.01	.29	98.88	.464	.664	64.90	32.90	2.20	Dunite
		28	2	.00	0.20	16.93	51.13	2.07	18.74	10.24	.03	.02	.30	99.42	.470	.670	65.30	32.20	2.50	
		124	11	.00	.10	12.84	55.76	1.39	17.84	10.17	.03	.01	.26	98.29	.487	.744	73.20	25.10	1.70	
779A-5R-2, 43–45	H910	120	7	.00	.10	12.84	56.30	1.19	17.68	10.34	.02	.02	.29	98.69	.496	.746	73.50	25.00	1.50	Harzburgite
		121	8	.00	.10	13.10	55.76	1.57	17.76	10.38	.02	.02	.26	98.85	.491	.741	72.60	25.40	1.90	
		122	9	.00	.20	13.26	55.49	1.20	18.09	10.11	.01	.02	.25	98.46	.485	.737	72.60	25.90	1.50	
		123	10	.00	.10	13.35	55.72	1.23	17.71	10.38	.02	.02	.29	98.73	.496	.737	72.60	25.90	1.50	
		124	11	.00	.10	12.84	55.76	1.39	17.84	10.17	.03	.01	.26	98.29	.487	.744	73.20	25.10	1.70	
779A-8R-1, 41–45	H916	8	14	.00	.10	20.20	49.43	0.55	16.51	12.02	.02	.03	.16	99.02	.557	.621	61.70	37.60	0.70	
		11	17	.00	.10	20.19	48.81	0.85	16.02	12.16	.03	.05	.17	98.32	.564	.619	61.20	37.80	1.00	
		12	18	.00	.10	21.55	46.77	0.76	17.59	11.26	.03	.03	.18	98.23	.523	.593	58.70	40.30	0.90	
		13	19	.10	.10	20.59	48.66	0.41	16.62	11.90	.03	.03	.16	98.53	.555	.613	61.00	38.50	0.50	
		29	33	.00	.10	20.99	48.07	0.26	16.73	11.73	.03	.04	.20	98.16	.552	.606	60.40	39.30	0.30	
		30	34	.00	.10	21.23	48.31	0.18	17.04	11.71	.03	.05	.18	98.86	.548	.604	60.30	39.50	0.20	
779A-10R-1, 39–43	H922	46	36	.09	.10	28.60	41.28	1.10	16.86	13.13	.05	.03	.21	101.34	.567	.492	48.60	50.20	1.20	Harzburgite
		47	37	.01	.11	28.42	40.35	1.56	15.83	13.39	.04	.03	.26	99.85	.581	.488	47.90	50.30	1.80	
		49	39	.03	.09	29.65	39.34	1.82	17.19	12.95	.04	.04	.19	101.16	.551	.471	46.10	51.80	2.00	
		50	40	.03	.09	29.57	38.17	2.44	16.91	12.91	.05	.01	.23	100.16	.546	.464	45.10	52.10	2.70	
		53	43	.00	.12	27.58	41.85	1.05	15.50	13.51	.06	.03	.24	99.83	.594	.504	49.80	49.00	1.20	
		54	44	.00	.12	27.33	42.52	0.71	15.76	13.36	.05	.03	.24	100.05	.592	.511	50.70	48.50	0.80	
		56	46	.01	.11	27.60	41.49	1.04	15.50	13.43	.03	.02	.27	99.39	.593	.502	49.60	49.20	1.20	
779A-11R-1, 20–22	H924	106	47	.05	.08	17.38	51.62	1.19	16.87	11.39	.03	.03	.22	98.75	.531	.666	65.60	32.90	1.40	Harzburgite
		107	48	.01	.07	16.86	51.83	1.61	16.51	11.46	.03	.04	.26	98.52	.532	.673	66.00	32.00	2.00	
		108	49	.02	.08	16.87	52.51	1.06	16.51	11.55	.03	.03	.23	98.78	.541	.676	66.80	32.00	1.30	
		109	50	.02	.07	17.20	51.99	1.21	16.33	11.65	.03	.02	.27	98.67	.544	.670	66.00	32.50	1.50	
		113	51	.02	.07	17.81	51.57	0.96	17.19	11.26	.02	.01	.25	99.07	.526	.660	65.20	33.60	1.20	
		114	52	.02	.07	17.03	52.23	1.00	16.90	11.27	.02	.03	.29	98.76	.530	.673	66.50	32.30	1.20	

APPENDIX B (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	$Cr2O_3$	Fe_2O_3	FeO	MgO	CaO	K2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
779A-11R-1, 90–92	H926	115	53	.04	.10	9.29	59.16	1.51	18.84	9.14	.03	.03	.29	98.28	.446	.810	79.50	18.60	1.90	Harzburgite
		116	54	.08	.10	9.17	59.29	1.63	18.95	9.19	.03	.02	.22	98.52	.445	.813	79.60	18.30	2.10	
		120	58	.06	.08	9.11	59.16	1.73	18.73	9.22	.02	.02	.25	98.21	.447	.813	79.50	18.30	2.20	
		121	59	.03	.09	9.29	59.12	1.77	19.11	9.03	.02	.03	.28	98.59	.437	.810	79.20	18.60	2.30	
779A-12R-1, 38–42	H928	316	60	.01	.09	16.16	53.66	1.06	18.10	10.68	.03	.03	.23	99.94	.500	.690	68.10	30.60	1.30	Harzburgite
		317	61	.03	.09	16.26	53.43	0.71	18.39	10.45	.03	.02	.21	99.55	.495	.688	68.20	30.90	0.90	
		318	62	.10	.10	15.68	53.96	0.33	19.96	9.49	.03	.03	.19	99.84	.455	.698	69.50	30.10	0.40	
		319	63	.07	.10	16.07	53.18	1.16	19.41	9.89	.03	.02	.25	100.06	.463	.689	68.00	30.60	1.40	
779A-13R-2, 50–54	H930	38	64	.07	.10	31.77	34.18	2.98	16.83	12.93	.04	.03	.29	98.93	.541	.419	40.50	56.10	3.40	Harzburgite
		39	65	.00	.09	31.96	34.92	2.55	16.38	13.28	.01	.03	.26	99.22	.559	.423	41.10	56.10	2.90	
		40	66	.06	.07	32.61	33.10	2.86	16.89	12.90	.01	.01	.29	98.52	.541	.405	39.20	57.60	3.20	
		43	69	.06	.10	32.97	33.14	2.65	16.38	13.33	.01	.02	.26	98.65	.559	.403	39.10	58.00	3.00	
779A-14R-2, 18–21	D934	2	71	.04	.11	8.09	59.03	1.87	22.86	6.48	.03	.04	.27	98.64	.320	.830	81.00	16.50	2.40	Dunite
		3	72	.02	.10	8.26	58.80	1.75	22.67	6.53	.03	.03	.27	98.28	.324	.827	80.80	16.90	2.30	
		4	73	.11	.10	7.18	56.63	4.40	24.26	5.40	.06	.04	.27	98.01	.254	.841	79.20	15.00	5.90	
		6	75	.01	.09	7.98	59.40	1.65	23.15	6.23	.03	.04	.32	98.73	.311	.833	81.50	16.30	2.20	
		7	76	.02	.11	8.19	54.70	5.60	24.43	5.40	.03	.04	.28	98.24	.246	.818	75.70	16.90	7.40	
		9	78	.07	.09	8.03	58.73	1.84	23.66	5.93	.04	.05	.27	98.53	.294	.831	81.10	16.50	2.40	
		10	79	.01	.12	8.15	60.55	0.87	22.56	6.80	.03	.02	.27	99.29	.342	.833	82.40	16.50	1.10	
		11	80	.09	.09	8.12	59.17	1.37	23.38	6.18	.02	.03	.25	98.56	.309	.830	81.50	16.70	1.80	
		13	82	.02	.11	8.17	59.83	1.42	23.38	6.32	.03	.02	.23	99.39	.314	.831	81.60	16.60	1.80	
		14	83	.01	.10	7.98	60.21	1.23	22.14	6.93	.02	.04	.30	98.84	.347	.835	82.20	16.20	1.60	
		16	85	.06	.10	7.80	59.38	1.97	23.46	6.17	.03	.05	.25	99.07	.304	.836	81.50	16.00	2.60	
		17	86	.04	.09	5.93	57.22	5.38	24.64	5.01	.04	.02	.28	98.11	.232	.866	80.40	12.40	7.20	
779A-14R-2, 139–141	H936	22	1	.01	.09	26.79	39.75	0.72	21.55	9.17	.03	.02	.24	98.30	.424	.499	49.50	49.70	0.90	Harzburgite
		23	2	.05	.09	31.66	37.08	0.68	16.37	13.36	.02	.01	.22	99.47	.584	.440	43.70	55.60	0.80	
		24	3	.01	.09	30.98	37.92	0.07	16.87	12.82	.01	.02	.23	99.02	.574	.451	45.10	54.90	0.10	
		36	4	.03	.06	32.80	35.89	0.56	16.88	13.11	.02	.01	.24	99.54	.573	.423	42.10	57.30	0.60	
		37	5	.04	.10	27.22	39.39	0.98	21.44	9.42	.03	.03	.23	98.78	.429	.493	48.70	50.20	1.10	
779A-15R-2, 24–27	D938	143	6	.00	.11	8.87	59.47	1.94	19.65	8.67	.01	.03	.31	98.86	.419	.818	79.80	17.70	2.50	Dunite
		144	7	.00	.12	8.76	59.35	2.10	19.27	8.86	.02	.04	.28	98.59	.427	.820	79.80	17.50	2.70	
		145	8	.01	.13	8.69	59.57	1.94	19.53	8.76	.01	.02	.25	98.72	.423	.821	80.10	17.40	2.50	
		146	9	.00	.13	8.88	59.70	1.85	19.79	8.67	.02	.01	.28	99.14	.419	.819	79.90	17.70	2.40	
779A-17R-3, 80–83	H942	9	13	.11	.11	19.68	48.59	1.06	17.54	11.20	.02	.02	.24	98.46	.519	.624	61.60	37.20	1.30	Harzburgite
		11	15	.11	.10	22.64	43.85	2.50	18.02	11.12	.08	.04	.29	98.50	.494	.565	54.80	42.20	3.00	
		12	16	.06	.11	19.65	48.44	0.97	17.62	11.01	.02	.03	.24	98.05	.515	.623	61.60	37.20	1.20	
779A-19R-2, 57–60	H944	39	18	.00	.17	16.10	52.03	2.36	17.85	10.78	.02	.02	.21	99.30	.490	.684	66.50	30.70	2.90	Harzburgite
		40	19	.00	.16	15.98	52.33	2.25	18.57	10.47	.00	.02	.05	99.61	.475	.687	66.80	30.40	2.70	
		44	20	.00	.14	15.71	52.54	2.55	18.21	10.69	.02	.02	.00	99.62	.482	.692	67.00	29.90	3.10	
779A-19R-3, 53–56	H946	54	21	.00	.08	14.89	53.05	1.04	21.58	8.04	.02	.01	.25	98.85	.389	.705	69.60	29.10	1.30	Harzburgite
		55	22	.00	.07	15.64	54.32	1.04	18.19	10.56	.01	.02	.26	100.01	.496	.700	69.10	29.70	1.30	
		56	23	.00	.09	15.90	53.66	1.15	17.57	10.89	.01	.02	.25	99.42	.511	.694	68.40	30.20	1.40	
		57	24	.00	.09	15.89	53.84	1.27	18.05	10.67	.02	.02	.28	100.01	.498	.694	68.40	30.10	1.50	
		58	25	.00	.06	15.49	53.97	1.47	17.64	10.82	.02	.01	.25	99.58	.504	.700	68.80	29.40	1.80	

APPENDIX B (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	$Cr2O_3$	Fe_2O_3	FeO	MgO	CaO	K2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
779A-22R-1, 65–69	H948	17	26	.01	.12	10.49	57.93	1.99	18.60	9.53	.04	.04	.26	98.81	.454	.787	76.80	20.70	2.50	Harzburgite
		18	27	.04	.10	12.60	55.86	1.92	19.17	9.47	.04	.05	.30	99.36	.447	.748	73.00	24.60	2.40	
		19	28	.03	.12	12.19	56.22	1.99	19.21	9.43	.03	.04	.27	99.33	.445	.756	73.70	23.80	2.50	
		20	29	.05	.13	10.89	57.91	1.79	18.91	9.52	.04	.04	.26	99.36	.453	.781	76.30	21.40	2.20	
		21	30	.04	.10	10.46	58.06	1.90	18.75	9.46	.04	.03	.27	98.92	.452	.788	76.90	20.70	2.40	
		23	31	.17	.11	11.53	56.32	2.08	19.07	9.46	.07	.03	.25	98.88	.446	.766	74.60	22.80	2.60	
		24	32	.05	.14	13.74	55.22	1.98	18.73	10.08	.05	.03	.28	100.10	.467	.729	71.20	26.40	2.40	
		31	33	.03	.13	10.45	58.07	1.83	18.46	9.64	.03	.03	.25	98.73	.461	.788	77.00	20.70	2.30	
		32	34	.01	.12	12.44	56.03	2.00	18.50	9.85	.04	.04	.27	99.10	.464	.751	73.30	24.20	2.50	
		33	35	.02	.12	12.31	56.31	2.27	18.78	9.82	.04	.03	.23	99.70	.457	.754	73.30	23.90	2.80	
779A-22R-2, 18–20	D950	72	36	.00	.10	20.05	48.99	1.75	16.02	12.32	.01	.03	.25	99.35	.555	.621	60.80	37.10	2.10	Dunite
		73	37	.01	.08	21.48	47.52	1.46	16.29	12.28	.02	.02	.21	99.23	.554	.597	58.70	39.60	1.70	
		74	38	.00	.07	19.62	49.23	1.65	16.11	12.10	.03	.03	.24	98.91	.551	.627	61.50	36.50	2.00	
		75	39	.00	.11	19.93	49.44	1.69	16.22	12.25	.02	.04	.27	99.80	.552	.625	61.20	36.80	2.00	
		76	40	.00	.06	24.99	42.49	2.25	17.11	12.03	.03	.03	.21	98.98	.528	.533	51.90	45.50	2.60	
		77	41	.00	.08	23.30	45.16	2.31	15.52	12.98	.03	.04	.24	99.43	.568	.565	55.00	42.30	2.70	
		78	42	.00	.09	19.76	49.62	1.60	16.39	12.12	.02	.02	.24	99.70	.548	.628	61.60	36.50	1.90	
		84	43	.00	.07	20.61	48.68	1.51	16.68	12.01	.02	.03	.21	99.67	.543	.613	60.20	38.00	1.80	
		85	44	.00	.08	21.10	48.36	1.12	17.08	11.81	.01	.04	.21	99.70	.538	.606	59.80	38.90	1.30	
		86	45	.01	.09	21.83	46.73	1.56	16.96	11.86	.01	.02	.24	99.15	.535	.589	57.90	40.30	1.80	
779A-22R-3, 55–57	H952	77	88	.09	.13	10.56	58.20	0.59	19.16	9.10	.03	.02	.24	98.07	.452	.787	78.10	21.10	0.80	Harzburgite
		78	89	.05	.13	10.45	57.97	1.50	18.63	9.46	.03	.02	.26	98.35	.458	.788	77.30	20.80	1.90	
		79	90	.09	.13	10.66	57.58	1.22	19.44	8.96	.03	.01	.28	98.28	.437	.784	77.20	21.30	1.60	
		80	91	.06	.12	10.89	57.57	1.25	19.24	9.14	.03	.01	.24	98.42	.444	.780	76.80	21.60	1.60	
		81	92	.01	.14	11.08	57.40	1.36	19.61	8.93	.03	.02	.26	98.70	.433	.777	76.30	22.00	1.70	
779A-25R-1, 85–87	D954	139	53	.01	.12	12.95	56.09	1.33	17.97	10.22	.02	.02	.26	98.86	.487	.744	73.20	25.20	1.70	Dunite
		140	54	.00	.11	13.03	55.68	1.67	17.92	10.25	.01	.01	.25	98.77	.485	.741	72.60	25.30	2.10	
		141	55	.00	.13	13.02	55.06	1.77	19.36	9.32	.01	.02	.24	98.76	.442	.739	72.30	25.50	2.20	
		142	56	.00	.13	12.94	55.22	1.70	19.08	9.44	.02	.02	.28	98.66	.449	.741	72.50	25.30	2.10	
779A-26R-2, 47–50	H956	24	69	.37	.09	30.07	37.23	1.44	16.41	13.36	.03	.03	.21	99.09	.574	.454	44.60	53.70	1.60	Harzburgite
		25	70	.05	.08	31.39	37.32	0.53	15.88	13.59	.01	.02	.14	98.95	.597	.444	44.10	55.30	0.60	
		26	71	.02	.11	34.74	33.11	0.94	15.93	13.83	.03	.02	.17	98.81	.595	.390	38.60	60.40	1.00	
		27	72	.05	.09	29.69	39.43	0.46	16.15	13.27	.03	.04	.19	99.35	.588	.471	46.90	52.60	0.50	
		28	73	.05	.10	29.38	38.60	1.35	15.39	13.61	.01	.04	.17	98.56	.594	.468	46.10	52.30	1.50	
		29	74	.09	.08	30.41	36.42	1.29	17.60	12.21	.04	.03	.16	98.20	.537	.445	43.90	54.60	1.50	
		30	75	.03	.09	30.35	39.46	0.13	16.47	13.28	.02	.03	.15	99.99	.588	.466	46.50	53.30	0.10	
		31	76	.05	.10	29.85	39.72	0.32	16.27	13.34	.03	.01	.17	99.82	.590	.472	47.00	52.60	0.40	
		32	77	.03	.10	29.74	39.23	0.50	15.95	13.34	.03	.03	.19	99.09	.592	.469	46.70	52.80	0.60	
		33	78	.03	.09	30.98	37.22	0.64	15.65	13.48	.03	.06	.19	98.31	.597	.446	44.30	55.00	0.70	
779A-26R-3, 102–105	H958	55	81	.02	.20	33.03	36.38	1.03	14.85	14.71	.02	.02	.24	100.40	.624	.425	42.00	56.90	1.10	Harzburgite
		56	82	.02	.18	33.81	35.67	0.53	14.73	14.74	.03	.01	.26	99.93	.633	.414	41.20	58.20	0.60	
		57	83	.05	.19	33.31	36.41	0.41	15.03	14.60	.02	.01	.25	100.24	.628	.423	42.10	57.40	0.50	
		58	84	.03	.16	33.49	34.98	1.14	15.06	14.41	.03	.02	.22	99.42	.615	.412	40.70	58.10	1.30	
		59	85	.01	.17	34.44	34.67	0.60	15.02	14.58	.02	.01	.22	99.68	.625	.403	40.00	59.30	0.70	
		60	86	.01	.17	32.79	35.99	1.00	14.29	14.76	.03	.01	.26	99.21	.634	.424	41.90	57.00	1.10	
779A-28R-3, 26–28	H960	101	1	.02	.09	13.40	55.54	1.77	17.74	10.50	.02	.01	.22	99.13	.492	.735	71.90	25.90	2.20	Harzburgite
		102	2	.05	.09	13.58	54.90	1.86	17.86	10.34	.03	.02	.31	98.85	.485	.731	71.40	26.30	2.30	

APPENDIX B (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	$Cr2O_3$	Fe_2O_3	FeO	MgO	CaO	K2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
		103	3	.02	.10	13.68	54.52	2.18	17.83	10.39	.01	.02	.25	98.79	.483	.728	70.80	26.50	2.70	
		104	4	.04	.11	14.17	54.46	2.22	18.01	10.48	.04	.02	.28	99.61	.483	.721	70.10	27.20	2.70	
		105	5	.05	.09	13.91	53.95	2.40	17.62	10.53	.02	.03	.24	98.60	.487	.722	70.10	26.90	3.00	
780C-6R-1, 67–69	H010	4	2	.07	.08	24.17	44.91	0.70	16.61	12.36	.02	.02	.22	99.09	.561	.555	55.00	44.10	0.80	Harzburgite
		5	3	.07	.08	25.20	42.86	1.54	17.94	11.67	.01	.03	.26	99.50	.518	.533	52.30	45.90	1.80	
		6	4	.06	.10	23.81	45.84	0.32	16.84	12.23	.02	.03	.24	99.46	.560	.564	56.10	43.50	0.40	
		7	5	.07	.09	24.16	45.27	0.32	16.85	12.24	.02	.02	.20	99.20	.560	.557	55.50	44.10	0.40	
		8	6	.10	.10	26.24	42.15	0.94	17.03	12.30	.02	.03	.26	99.08	.551	.519	51.30	47.60	1.10	
		9	7	.08	.12	24.15	44.41	0.72	16.75	12.18	.02	.03	.24	98.63	.555	.552	54.80	44.40	0.80	
		10	8	.09	.10	24.25	44.94	0.51	16.55	12.43	.03	.03	.20	99.07	.566	.554	55.10	44.30	0.60	
		11	9	.05	.12	25.40	43.56	0.19	16.82	12.24	.03	.02	.23	98.64	.562	.535	53.40	46.40	0.20	
		14	10	.09	.10	24.88	42.63	1.98	17.32	12.01	.01	.02	.22	99.06	.528	.535	52.20	45.50	2.30	
		15	11	.11	.11	23.90	44.74	0.50	16.83	12.10	.02	.03	.24	98.53	.555	.557	55.30	44.10	.60	
		16	12	.06	.09	24.61	44.48	0.80	16.07	12.75	.01	.02	.22	99.03	.575	.548	54.30	44.80	0.90	
		17	13	.06	.10	25.15	43.79	1.21	16.66	12.55	.02	.01	.24	99.67	.558	.539	53.10	45.50	1.40	
		18	14	.04	.07	26.22	41.54	1.38	17.55	11.87	.01	.02	.23	98.79	.530	.515	50.70	47.70	1.60	
780C-8R-1, 94–96	D015	54	15	.11	.10	26.56	40.63	2.36	18.94	11.33	.02	.01	.27	100.10	.489	.506	49.30	48.00	2.70	Dunite
		55	16	.09	.10	26.19	39.74	2.04	21.29	9.54	.00	.02	.25	99.06	.424	.504	49.20	48.40	2.40	
		57	18	.05	.12	26.75	39.93	2.33	18.73	11.27	.03	.02	.25	99.25	.491	.500	48.70	48.60	2.70	
780C-10R-1, 11–13	H020	16	24	.00	.10	26.18	41.96	1.20	14.88	13.37	.03	.01	.25	97.86	.599	.518	51.10	47.50	1.40	Harzburgite
		17	25	.03	.10	25.41	42.83	1.60	15.15	13.27	.03	.01	.28	98.55	.588	.531	52.10	46.10	1.80	
		19	27	.02	.10	25.20	42.25	1.63	15.63	12.78	.02	.02	.25	97.74	.571	.529	51.90	46.20	1.90	
		21	29	.00	.09	25.66	42.24	1.46	15.57	12.91	.01	.03	.26	98.09	.577	.525	51.60	46.70	1.70	
		23	31	.02	.09	27.43	39.40	2.02	15.49	13.09	.02	.03	.21	97.60	.574	.491	47.90	49.70	2.30	
780C-16R-1, 53–59	H025	77	34	.00	.07	23.37	45.72	1.20	16.75	12.18	.02	.01	.26	99.46	.549	.568	56.00	42.60	1.40	Harzburgite
		78	35	.00	.09	22.62	46.59	1.12	16.60	12.20	.02	.02	.25	99.40	.553	.580	57.30	41.40	1.30	
		79	36	.00	.07	23.19	46.37	0.99	17.29	11.95	.02	.01	.22	100.01	.539	.573	56.60	42.20	1.20	
		80	37	.00	.10	22.08	47.46	1.01	16.48	12.25	.02	.02	.28	99.60	.557	.590	58.40	40.50	1.20	
		81	38	.00	.09	22.02	47.19	1.07	16.32	12.29	.01	.02	.22	99.13	.559	.590	58.20	40.50	1.30	
780C-18R-1, 65–67	H035	23	39	.03	.06	27.97	41.30	0.31	16.24	12.94	.02	.02	.22	99.08	.583	.498	49.60	50.10	0.40	Harzburgite
		24	40	.06	.07	30.89	37.97	0.08	16.44	13.11	.02	.01	.19	98.83	.586	.452	45.20	54.80	0.10	
		25	41	.02	.07	30.33	38.33	0.11	16.68	12.80	.01	.00	.22	98.56	.576	.459	45.80	54.00	0.10	
		26	42	.06	.06	27.74	41.32	0.16	16.64	12.63	.01	.01	.24	98.85	.573	.500	49.90	49.90	0.20	
		27	43	.04	.07	27.55	41.64	0.21	16.20	12.89	.02	.02	.21	98.83	.584	.503	50.20	49.50	0.20	
		28	44	.01	.07	30.14	39.26	0.22	15.66	13.54	.02	.02	.22	99.14	.603	.466	46.50	53.20	0.20	
		29	45	.02	.09	30.63	37.47	0.47	17.25	12.48	.02	.01	.20	98.59	.557	.451	44.80	54.60	0.50	
780D-5X-1, 0–4	H040	1	47	.01	.07	22.44	46.01	1.93	15.95	12.56	.00	.02	.24	99.03	.559	.579	56.60	41.10	2.30	Harzburgite
		2	48	.00	.09	22.93	46.07	1.52	15.97	12.63	.01	.02	.28	99.37	.565	.574	56.40	41.80	1.80	
		3	49	.00	.08	23.12	44.82	1.84	16.12	12.37	.01	.03	.26	98.46	.554	.565	55.30	42.50	2.20	
		16	51	.00	.09	22.50	45.07	1.83	16.71	11.88	.01	.01	.25	98.17	.536	.573	56.10	41.70	2.20	
		18	53	.00	.07	23.16	43.77	2.62	16.06	12.37	.00	.01	.21	98.00	.545	.559	54.20	42.70	3.10	
		19	54	.00	.08	22.58	45.94	1.60	15.86	12.55	.02	.01	.24	98.72	.564	.577	56.60	41.50	1.90	
783A-16R-CC, 14–17	H325	59	1	.00	.09	27.83	38.17	3.80	15.74	13.18	.01	.02	.28	98.74	.551	.479	45.80	49.80	4.30	Harzburgite
		60	2	.00	.08	27.96	38.42	3.64	16.27	12.95	.01	.01	.28	99.26	.541	.480	46.00	49.90	4.10	
		61	3	.00	.09	26.08	40.19	3.83	16.39	12.69	.01	.01	.24	99.15	.533	.508	48.60	47.00	4.40	
		62	4	.00	.10	27.58	39.32	3.59	15.62	13.40	.01	.01	.31	99.58	.559	.489	46.90	49.00	4.10	
		63	5	.00	.12	27.23	39.46	3.87	15.40	13.53	.01	.01	.27	99.52	.561	.493	47.10	48.50	4.40	

APPENDIX B (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	$Cr2O_3$	Fe_2O_3	FeO	MgO	CaO	K2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
783A-16R-CC, 19–22	H330	133	6	.00	.14	26.59	39.16	3.61	17.60	11.91	.01	.02	.28	98.96	.504	.497	47.60	48.20	4.20	Harzburgite
		136	9	.03	.11	24.94	40.88	3.56	17.10	12.01	.03	.02	.22	98.54	.513	.524	50.20	45.60	4.20	
783A-17R-1, 7–10	H335	347	11	.04	.09	21.73	45.32	3.20	17.51	11.60	.02	.02	.22	99.43	.503	.583	56.10	40.10	3.80	Harzburgite
		348	12	.24	.09	21.27	45.58	3.18	17.56	11.69	.05	.03	.23	99.60	.505	.590	56.80	39.50	3.80	
		349	13	.02	.09	22.14	45.30	3.16	16.82	12.08	.02	.02	.27	99.60	.523	.579	55.70	40.60	3.70	
		350	14	.04	.10	22.15	44.98	3.26	17.00	11.96	.03	.02	.25	99.47	.517	.577	55.50	40.70	3.80	
		354	15	.01	.06	24.82	42.07	3.36	17.10	12.16	.01	.03	.22	99.51	.518	.532	51.10	45.00	3.90	
783A-18R-1, 45–51	H340	8	4	.00	.09	25.81	39.82	4.48	16.85	12.37	.01	.03	.27	99.28	.514	.509	48.20	46.60	5.20	Harzburgite
		9	5	.00	.09	27.55	37.98	4.59	17.23	12.39	.03	.03	.23	99.66	.508	.480	45.50	49.20	5.20	
		10	6	.00	.06	28.33	37.77	4.58	16.58	12.94	.03	.04	.28	100.15	.527	.472	44.80	50.10	5.20	
		11	7	.00	.08	26.66	39.40	4.32	17.32	12.26	.01	.04	.29	99.95	.507	.498	47.30	47.70	4.90	
		12	8	.01	.10	25.95	39.36	4.67	16.79	12.42	.02	.01	.25	99.11	.513	.504	47.70	46.90	5.40	
		13	9	.00	.09	26.75	39.65	3.81	17.66	12.07	.02	.03	.25	99.95	.505	.499	47.70	48.00	4.40	
		14	10	.00	.11	24.72	41.40	4.52	16.43	12.60	.03	.01	.30	99.66	.523	.529	50.20	44.60	5.20	
		15	11	.00	.10	26.27	39.51	4.29	16.27	12.67	.09	.03	.32	99.12	.529	.502	47.70	47.30	4.90	
		16	12	.00	.11	27.20	38.24	5.11	17.09	12.52	.04	.03	.27	100.10	.507	.485	45.70	48.50	5.80	
		17	13	.00	.11	26.75	38.42	4.58	17.43	12.08	.02	.01	.29	99.23	.500	.491	46.50	48.20	5.30	
783A-18R-1, 75–78	H345	2	59	.07	.14	23.97	41.16	4.51	17.21	11.93	.03	.01	.29	98.86	.500	.535	50.70	44.00	5.30	Harzburgite
		3	60	.04	.14	23.84	41.75	4.46	17.08	12.05	.03	.03	.28	99.25	.505	.540	51.20	43.60	5.20	
		4	61	.05	.12	23.99	41.66	4.31	16.96	12.12	.05	.02	.24	99.09	.509	.538	51.10	43.90	5.00	
		5	62	.04	.12	24.26	41.42	4.14	17.23	11.94	.04	.02	.28	99.08	.504	.534	50.80	44.40	4.80	
		6	63	.09	.14	24.85	38.15	6.12	18.41	11.22	.05	.03	.28	98.73	.455	.507	47.10	45.70	7.20	
		7	64	.02	.12	25.28	39.92	4.50	17.18	12.05	.04	.02	.26	98.94	.503	.514	48.70	46.00	5.20	
		8	65	.06	.13	24.75	40.53	4.23	17.54	11.81	.02	.02	.26	98.93	.496	.523	49.80	45.30	4.90	
		9	66	.05	.12	24.88	41.06	3.69	16.94	12.15	.06	.02	.26	98.86	.517	.525	50.30	45.40	4.30	
		10	67	.04	.13	26.17	39.71	3.76	16.81	12.39	.05	.02	.27	98.98	.522	.504	48.20	47.40	4.40	
		11	68	.01	.13	23.96	40.93	4.77	16.95	11.99	.04	.02	.26	98.58	.502	.534	50.40	44.00	5.60	
783A-18R-1, 79–82	H350	201	69	.09	.08	25.39	40.26	3.79	16.21	12.61	.03	.01	.26	98.35	.534	.515	49.30	46.30	4.40	Harzburgite
		202	70	.05	.07	28.88	37.21	3.61	15.05	13.73	.02	.02	.26	98.53	.572	.464	44.50	51.40	4.10	
		206	71	.04	.09	24.05	41.14	4.45	16.54	12.23	.04	.02	.26	98.42	.515	.534	50.60	44.10	5.20	
		207	72	.04	.09	24.08	41.20	4.26	16.93	11.99	.03	.02	.28	98.49	.507	.534	50.80	44.20	5.00	
783A-18R-1, 100–103	H355	808	5	.00	.10	22.15	42.67	5.19	16.59	12.01	.02	.02	.27	98.50	.502	.564	52.90	41.00	6.10	Harzburgite
		809	6	.00	.09	21.67	43.35	4.74	16.95	11.67	.03	.01	.27	98.30	.495	.573	54.10	40.30	5.60	
		811	8	.01	.10	21.82	43.43	4.69	16.14	12.24	.02	.01	.24	98.23	.517	.572	54.00	40.40	5.60	
		812	9	.00	.10	22.04	43.22	4.83	16.13	12.28	.02	.02	.27	98.43	.517	.568	53.60	40.70	5.70	
		813	10	.00	.09	22.35	42.84	4.50	16.99	11.73	.02	.00	.27	98.34	.498	.563	53.30	41.40	5.30	
		815	12	.00	.09	23.01	41.91	4.86	16.75	11.96	.02	.03	.27	98.41	.502	.550	51.80	42.40	5.70	
784A-37R-1, 6–9	H410	300	1	.07	.07	24.89	43.73	2.30	16.32	12.88	.03	.02	.22	100.30	.555	.541	52.70	44.70	2.60	Harzburgite
		331	2	.05	.07	24.95	43.72	2.41	16.21	12.97	.02	.02	.22	100.40	.557	.540	52.50	44.70	2.80	
		332	3	.03	.09	25.39	43.01	2.02	16.46	12.70	.01	.03	.24	99.78	.553	.532	52.00	45.70	2.30	
		333	4	.00	.09	24.80	43.78	2.47	15.85	13.09	.03	.04	.20	100.10	.564	.542	52.70	44.50	2.80	
784A-38R-1, 68–71	H415	149	5	.06	.20	20.52	46.05	3.11	17.92	11.13	.05	.02	.30	99.05	.489	.601	57.90	38.40	3.70	Harzburgite
		152	6	.03	.21	20.06	45.88	4.14	17.66	11.31	.05	.02	.25	99.20	.485	.605	57.50	37.50	4.90	
		151	7	.04	.22	19.78	46.89	3.32	17.68	11.28	.06	.01	.23	99.18	.493	.614	59.00	37.10	4.00	
		152	8	.05	.20	21.09	45.79	2.78	17.66	11.37	.04	.02	.26	98.98	.501	.593	57.30	39.40	3.30	
		153	9	.08	.20	19.76	47.21	3.00	17.35	11.51	.03	.02	.23	99.09	.506	.616	59.40	37.00	3.60	

APPENDIX B (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	$Cr2O_3$	Fe_2O_3	FeO	MgO	CaO	K2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
		154	10	.08	.25	18.87	47.53	3.49	17.23	11.47	.04	.01	.25	98.87	.501	.628	60.20	35.60	4.20	
		155	11	.02	.21	20.28	46.37	3.18	17.82	11.18	.03	.03	.27	99.07	.491	.605	58.20	38.00	3.80	
784A-38R-2, 87–89	H420	224	12	.02	.12	19.83	46.78	3.50	16.70	11.74	.03	.02	.26	98.65	.513	.613	58.70	37.10	4.20	Harzburgite
		225	13	.03	.12	19.87	46.68	3.53	16.64	11.79	.03	.02	.24	98.60	.515	.612	58.60	37.20	4.20	
		226	14	.03	.12	21.59	44.79	3.31	17.07	11.69	.02	.02	.22	98.53	.510	.582	55.90	40.20	3.90	
		227	15	.04	.10	20.81	45.73	3.37	16.88	11.76	.02	.01	.21	98.59	.513	.596	57.20	38.80	4.00	
		239	16	.04	.10	21.61	44.81	3.26	17.05	11.71	.01	.02	.21	98.49	.511	.582	55.90	40.20	3.90	
784A-40R-2, 33–36	D425	1	17	.03	.17	18.61	46.03	6.07	18.15	10.91	.06	.02	.31	99.75	.452	.624	57.90	34.90	7.30	Dunite
		2	18	.03	.16	18.87	45.35	6.00	18.80	10.46	.04	.02	.30	99.43	.435	.617	57.30	35.50	7.20	
		3	19	.15	.16	19.58	42.87	7.85	18.72	10.73	.04	.02	.34	99.68	.426	.595	53.90	36.70	9.40	
		4	20	.01	.17	18.92	46.13	5.09	19.46	10.07	.05	.03	.28	99.70	.427	.621	58.30	35.60	6.10	
		5	21	.14	.18	17.72	46.30	5.31	20.20	9.46	.04	.03	.30	99.15	.403	.637	59.50	34.00	6.50	
		6	22	.09	.19	17.30	45.49	6.77	20.28	9.34	.04	.03	.31	99.16	.387	.638	58.50	33.20	8.30	
		7	23	.05	.17	17.61	47.83	4.80	19.37	10.03	.03	.03	.31	99.75	.430	.646	60.80	33.40	5.80	
		8	24	.04	.16	17.29	47.77	5.36	19.35	10.02	.04	.04	.28	99.81	.425	.650	60.70	32.80	6.50	
		9	25	.04	.17	18.63	47.52	4.26	18.55	10.68	.05	.01	.26	99.75	.460	.631	59.90	35.00	5.10	
		10	26	.00	.17	18.42	47.58	4.46	18.64	10.56	.03	.04	.26	99.72	.454	.634	60.00	34.60	5.40	
784A-41R-CC, 8–11	H435	256	27	.02	.09	23.67	42.44	3.69	16.08	12.50	.01	.03	.23	98.39	.535	.546	52.20	43.40	4.30	Harzburgite
		257	28	.07	.10	23.50	42.97	3.40	16.28	12.46	.02	.03	.22	98.71	.535	.551	52.90	43.10	4.00	
		269	30	.04	.11	25.03	41.76	2.83	16.40	12.51	.01	.01	.24	98.65	.541	.528	51.10	45.60	3.30	
		270	31	.02	.09	24.55	40.80	3.87	16.75	12.09	.02	.01	.21	98.03	.516	.527	50.30	45.10	4.50	
		271	32	.08	.09	25.40	40.92	3.35	15.48	13.12	.02	.02	.20	98.35	.558	.519	49.90	46.20	3.90	
784A-42R-1, 12–15	H440	46	33	.05	.09	22.11	44.00	3.96	16.24	12.27	.03	.02	.29	98.66	.525	.572	54.50	40.80	4.70	Harzburgite
		47	34	.02	.10	22.43	43.74	4.04	16.31	12.33	.01	.02	.22	98.82	.524	.567	54.00	41.30	4.70	
		48	35	.08	.10	21.72	44.78	3.66	16.25	12.41	.02	.03	.08	98.76	.531	.580	55.50	40.10	4.30	
		49	36	.03	.12	23.16	43.39	3.88	15.26	13.10	.01	.05	.21	98.83	.554	.557	53.20	42.30	4.50	
		50	37	.01	.09	21.03	45.47	4.01	15.66	12.56	.02	.02	.23	98.70	.537	.592	56.40	38.90	4.70	
		51	38	.02	.08	22.49	43.07	4.69	15.88	12.53	.02	.04	.25	98.60	.526	.562	53.10	41.40	5.50	
		52	39	.01	.09	23.23	42.54	4.21	16.22	12.36	.03	.03	.26	98.56	.524	.551	52.40	42.70	4.90	
		53	40	.05	.09	23.25	42.31	4.63	16.50	12.31	.02	.03	.27	98.99	.515	.550	52.00	42.60	5.40	
		54	41	.07	.09	22.73	42.64	4.49	16.59	12.11	.04	.02	.29	98.62	.511	.557	52.80	41.90	5.30	
		55	42	.02	.10	21.89	43.40	4.86	16.52	12.08	.02	.05	.25	98.71	.507	.571	53.80	40.50	5.70	
784A-42R-1, 43–46	H445	156	1	.01	.18	16.47	49.10	5.18	17.38	11.10	.03	.03	.28	99.24	.473	.667	62.50	31.20	6.30	Harzburgite
		157	2	.01	.20	16.41	49.46	4.88	17.48	11.06	.03	.04	.27	99.36	.474	.669	62.90	31.10	5.90	
		158	3	.03	.20	15.72	48.94	5.09	17.53	10.70	.04	.03	.27	98.04	.463	.676	63.40	30.30	6.30	
		159	4	.05	.19	15.66	49.53	4.79	17.43	10.83	.02	.02	.30	98.34	.470	.680	64.00	30.10	5.90	
		160	5	.02	.21	16.02	49.24	5.13	17.26	11.07	.02	.02	.28	98.75	.474	.673	63.10	30.60	6.30	
784A-43R-2, 131–135	H450	342	6	.05	.17	21.23	46.67	2.56	17.84	11.49	.02	.03	.24	100.05	.504	.596	57.80	39.20	3.00	Harzburgite
		343	7	.04	.17	21.47	46.26	2.76	17.68	11.61	.02	.02	.24	99.99	.507	.591	57.20	39.60	3.20	
		344	8	.02	.18	21.75	45.72	3.10	17.46	11.78	.03	.03	.19	99.95	.509	.585	56.40	40.00	3.60	
		345	9	.05	.19	20.35	46.54	2.95	18.47	10.89	.01	.03	.22	99.40	.479	.605	58.40	38.10	3.50	
		346	10	.01	.21	20.47	46.41	3.11	18.19	11.06	.00	.03	.25	99.43	.484	.603	58.10	38.20	3.70	
784A-45R-1, 76–80	H455	240	11	.03	.10	20.52	47.05	2.84	16.15	12.24	.02	.02	.23	98.92	.538	.606	58.60	38.10	3.40	Harzburgite
		252	12	.06	.10	20.01	47.33	2.73	16.70	11.80	.03	.03	.24	98.76	.523	.613	59.30	37.40	3.30	
		253	13	.06	.11	21.27	46.03	2.37	17.45	11.47	.02	.01	.24	98.79	.511	.592	57.50	39.60	2.80	
		254	14	.05	.10	20.77	46.21	2.75	16.98	11.66	.01	.02	.24	98.51	.517	.599	57.90	38.80	3.30	
		255	15	.03	.09	20.99	45.42	3.10	17.14	11.52	.01	.02	.20	98.21	.507	.592	57.00	39.30	3.70	

APPENDIX B (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	TiO2	Al_2O_3	$Cr2O_3$	Fe_2O_3	FeO	MgO	CaO	K2O	NiO	Total	Mg#	Cr#	Cr (%)	Al (%)	Fe^{3+} (%)	Rock name
784A-45R-1, 95–98	H460	36	21	.04	.12	19.68	46.74	4.03	15.79	12.35	.02	.02	.25	98.64	.531	.614	58.50	36.70	4.80	Harzburgite
		37	22	.01	.12	19.64	47.12	3.55	16.15	12.09	.01	.01	.24	98.58	.527	.617	59.10	36.70	4.20	
		38	23	.04	.12	19.07	48.08	3.41	15.41	12.53	.02	.01	.24	98.59	.547	.628	60.30	35.60	4.10	
		39	24	.03	.10	19.34	48.17	3.69	15.25	12.77	.01	.02	.28	99.29	.551	.626	59.80	35.80	4.40	
		41	25	.04	.12	19.79	47.57	3.49	15.50	12.62	.02	.03	.28	99.11	.547	.617	59.20	36.70	4.10	
		42	26	.02	.10	19.40	48.11	3.13	15.58	12.45	.01	.03	.25	98.77	.547	.625	60.10	36.10	3.70	
		43	27	.03	.11	19.19	47.58	3.66	15.56	12.40	.01	.02	.25	98.44	.540	.625	59.70	35.90	4.40	
		44	28	.01	.11	19.10	48.56	2.96	15.36	12.54	.02	.02	.22	98.61	.553	.630	60.80	35.70	3.50	
		45	29	.05	.12	18.76	49.09	2.95	16.43	12.00	.02	.02	.24	99.38	.529	.637	61.50	35.00	3.50	
784A-45R-1, 128–133	H470	359	30	.03	.10	21.39	47.19	2.20	16.78	12.11	.03	.03	.20	99.84	.535	.597	58.10	39.30	2.60	Harzburgite
		360	31	.05	.08	23.59	44.49	1.98	17.71	11.69	.03	.03	.21	99.66	.517	.559	54.60	43.10	2.30	
		361	32	.01	.08	22.11	46.34	2.49	16.85	12.13	.03	.03	.25	100.07	.531	.584	56.70	40.40	2.90	
		368	33	.03	.10	21.02	47.16	2.22	16.62	12.03	.04	.03	.23	99.25	.535	.601	58.50	38.90	2.60	
		369	34	.04	.10	21.79	46.66	2.12	17.64	11.63	.03	.02	.22	100.04	.515	.590	57.50	40.00	2.50	
784A-45R-2, 1–5	H475	408	35	.00	.11	19.92	46.96	2.55	17.30	11.22	.05	.01	.22	98.08	.505	.613	59.40	37.50	3.10	Harzburgite
		409	36	.03	.11	19.61	47.44	2.92	16.95	11.54	.05	.02	.24	98.62	.512	.619	59.70	36.80	3.50	
		417	37	.02	.11	20.73	47.69	1.71	17.17	11.60	.06	.02	.24	99.18	.525	.607	59.40	38.50	2.00	
		418	38	.00	.09	21.67	46.07	2.06	17.04	11.66	.05	.02	.24	98.70	.524	.588	57.30	40.20	2.40	
784A-45R-2, 40–42	H480	1	41	.04	.11	20.47	46.61	2.62	16.51	11.89	.01	.01	.22	98.23	.529	.604	58.50	38.30	3.10	Harzburgite
		2	42	.04	.09	20.70	46.47	2.68	16.65	11.82	.01	.03	.28	98.50	.525	.601	58.20	38.60	3.20	
		3	43	.01	.09	23.09	43.76	2.88	16.49	12.18	.01	.02	.22	98.46	.532	.560	54.10	42.50	3.40	
		4	44	.02	.12	20.89	46.10	2.94	16.59	11.93	.01	.03	.22	98.55	.525	.597	57.60	38.90	3.50	
		5	45	.01	.11	21.00	46.30	2.82	16.55	11.98	.02	.01	.25	98.76	.528	.597	57.70	39.00	3.30	
		6	46	.05	.09	22.61	43.84	3.36	16.75	11.99	.03	.03	.28	98.69	.519	.565	54.30	41.70	4.00	
		7	47	.07	.08	23.86	42.63	2.14	18.22	11.09	.02	.02	.22	98.13	.495	.545	53.10	44.30	2.50	
		8	48	.04	.11	21.00	46.18	2.63	16.62	11.88	.02	.03	.27	98.52	.527	.596	57.70	39.10	3.10	
		9	49	.01	.11	20.97	46.08	3.05	16.48	11.99	.01	.04	.27	98.70	.526	.596	57.40	39.00	3.60	
		10	50	.08	.11	21.72	45.51	2.49	16.46	12.07	.05	.03	.28	98.55	.535	.584	56.70	40.30	3.00	
784A-45R-CC, 11–14	H485	302	51	.03	.08	22.90	44.02	2.87	16.98	11.90	.03	.01	.23	98.76	.520	.563	54.40	42.20	3.40	Harzburgite
		303	52	.01	.07	23.14	43.75	3.19	16.53	12.22	.02	.04	.22	98.87	.529	.559	53.80	42.40	3.70	
		304	53	.07	.09	23.94	42.61	2.88	17.25	11.85	.01	.03	.24	98.68	.516	.544	52.60	44.00	3.40	
		315	54	.02	.08	25.87	41.97	2.04	17.39	12.09	.02	.03	.20	99.51	.528	.521	50.90	46.80	2.40	
784A-45R-CC, 23–27	H490	375	55	.04	.10	23.29	45.72	2.43	16.15	12.90	.02	.02	.22	100.65	.556	.568	55.20	42.00	2.80	Harzburgite
		376	56	.03	.08	23.30	45.05	2.28	16.76	12.29	.01	.02	.27	99.87	.538	.565	55.00	42.40	2.70	
		377	57	.05	.09	22.65	45.76	2.46	16.34	12.55	.02	.03	.23	99.94	.547	.575	55.90	41.20	2.90	
		379	58	.02	.08	22.47	45.66	2.65	16.39	12.41	.03	.03	.24	99.72	.541	.577	55.90	41.00	3.10	
		390	59	.01	.09	24.93	43.82	2.16	16.98	12.45	.02	.01	.25	100.50	.540	.541	52.80	44.80	2.50	

[a] In this paper (see Table 3).

APPENDIX C

Analyses of Olivines in Peridotites from Conical and Torishima Forearc Seamounts

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Rock name
778A-2R-1, 82–84	H810	6	1	41.43	.00	.01	.01	6.49	51.87	.00	.00	.40	100.21	.934	Harzburgite
		7	2	41.27	.00	.00	.02	6.34	51.85	.00	.00	.41	99.89	.936	
		8	3	41.56	.00	.01	.02	6.54	51.44	.03	.01	.42	100.03	.933	
		9	4	41.82	.00	.01	.02	6.62	51.39	.00	.02	.43	100.31	.933	
		10	5	42.36	.00	.00	.02	6.56	51.27	.01	.00	.42	100.64	.933	
778A-3R-CC, 4–7	H815	62	15	41.80	.00	.02	.01	7.46	50.14	.01	.02	.26	99.72	.923	Harzburgite
		63	16	40.90	.00	.01	.03	7.49	50.01	.02	.02	.29	98.77	.922	
		64	17	41.35	.00	.01	.03	7.38	49.89	.01	.01	.31	98.99	.923	
		65	18	41.71	.00	.02	.03	7.19	50.08	.04	.02	.31	99.40	.925	
		66	19	41.97	.00	.03	.06	7.56	50.04	.01	.02	.28	99.97	.922	
		67	20	41.60	.00	.01	.10	7.06	50.55	.02	.02	.28	99.64	.927	
		81	21	41.68	.00	.02	.03	7.31	49.79	.03	.02	.31	99.19	.924	
779A-3R-CC, 19–20	D908	18	1	41.14	.00	.03	.03	7.76	49.95	.01	.00	.41	99.33	.920	Dunite
		19	2	41.53	.00	.02	.01	8.01	50.11	.00	.02	.35	100.05	.918	
		20	3	41.46	.00	.01	.03	8.30	49.54	.00	.01	.41	99.76	.914	
		21	4	40.92	.00	.02	.02	7.78	50.36	.00	.00	.40	99.50	.920	
		22	5	41.55	.00	.01	.00	7.93	50.76	.01	.00	.41	100.67	.919	
779A-5R-2, 43–45	H910	28	6	42.10	.00	.00	.01	7.92	49.08	.01	.00	.28	99.40	.917	Harzburgite
		29	7	41.76	.00	.01	.01	7.62	50.09	.01	.00	.38	99.88	.921	
		30	8	41.82	.00	.01	.02	7.62	49.69	.01	.00	.33	99.50	.921	
		31	9	41.43	.00	.00	.01	7.55	49.72	.00	.00	.39	99.10	.921	
		32	10	41.57	.00	.02	.02	7.70	49.48	.00	.01	.33	99.13	.920	
779A-8R-1, 41–45	H916	32	12	41.38	.02	.01	.06	7.84	50.93	.02	.02	.33	100.61	.920	Harzburgite
		33	13	40.79	.34	.01	.04	7.84	51.10	.01	.01	.30	100.44	.921	
		34	14	41.83	.03	.03	.01	8.17	50.29	.03	.01	.29	100.69	.916	
		53	15	41.88	.00	.01	.05	7.98	50.19	.01	.01	.30	100.43	.918	
		55	16	41.34	.00	.00	.03	8.02	50.62	.02	.03	.30	100.36	.918	
		56	17	41.56	.00	.01	.06	7.41	50.88	.02	.02	.32	100.28	.924	
		57	18	41.57	.00	.02	.03	7.95	50.88	.01	.01	.32	100.79	.919	
		58	19	41.55	.00	.01	.03	8.26	50.56	.01	.04	.30	100.76	.916	
		59	20	41.42	.00	.01	.01	8.06	50.49	.00	.02	.30	100.31	.918	
		60	21	41.68	.00	.00	.03	7.97	50.50	.01	.02	.27	100.48	.919	
779A-10R-1, 39–43	H922	74	25	40.87	.00	.01	.03	7.79	50.90	.01	.02	.44	100.07	.921	Harzburgite
		75	26	40.74	.00	.01	.01	8.24	50.96	.03	.01	.40	100.40	.917	
		76	27	40.59	.00	.01	.02	8.38	50.47	.03	.01	.44	99.95	.915	
		77	28	40.53	.00	.01	.03	8.09	50.46	.02	.00	.37	99.51	.917	
		78	29	41.20	.00	.01	.00	8.36	50.19	.03	.02	.43	100.24	.915	
		79	30	41.18	.00	.02	.04	7.88	50.85	.05	.01	.39	100.42	.920	
		80	31	40.41	.00	.01	.03	8.12	50.93	.11	.01	.34	99.96	.918	
779A-11R-1, 90–92	H926	122	33	41.24	.00	.01	.02	7.82	49.75	.00	.01	.35	99.20	.919	Harzburgite
		123	34	41.34	.00	.00	.01	7.76	49.86	.01	.02	.44	99.44	.920	
		124	35	41.14	.00	.01	.01	7.81	49.73	.01	.01	.39	99.11	.919	
		125	36	41.78	.00	.02	.01	7.82	49.42	.02	.01	.38	99.46	.918	
779A-12R-1, 38–42	H928	320	37	41.62	.05	.01	.37	7.91	49.62	.02	.01	.37	99.98	.918	Harzburgite
		324	38	41.87	.00	.00	.01	7.73	49.64	.01	.01	.35	99.62	.920	
		325	39	41.92	.00	.00	.00	7.70	49.63	.00	.00	.31	99.56	.920	
		326	40	42.01	.00	.01	.00	7.83	49.62	.00	.01	.33	99.81	.919	
779A-13R-2, 50–54	H930	44	41	41.02	.00	.01	.00	7.82	50.40	.00	.01	.36	99.62	.920	Harzburgite
		45	42	40.94	.00	.00	.01	7.88	50.30	.00	.01	.37	99.51	.919	
		46	43	40.68	.00	.02	.01	8.39	49.76	.02	.00	.40	99.28	.914	
		47	44	40.87	.00	.02	.01	8.10	49.78	.00	.03	.41	99.22	.916	
		48	45	41.12	.00	.02	.03	8.27	49.57	.00	.00	.41	99.42	.914	
779A-14R-2, 18–21	D934	18	46	41.75	.00	.01	.01	7.66	51.25	.00	.00	.42	101.10	.923	Dunite
		19	47	41.28	.00	.00	.00	7.70	51.49	.01	.00	.44	100.92	.923	
		22	50	40.58	.00	.01	.01	7.76	50.94	.00	.01	.41	99.72	.921	
		24	51	40.23	.00	.01	.02	7.70	51.45	.00	.00	.40	99.81	.923	
		25	52	40.43	.00	.01	.01	7.58	51.16	.01	.00	.45	99.65	.923	
		26	53	40.43	.00	.02	.02	7.74	50.81	.01	.00	.41	99.44	.921	
		27	54	40.56	.00	.02	.02	7.76	51.23	.00	.00	.43	100.02	.922	
		28	55	40.12	.00	.01	.01	7.70	51.46	.01	.00	.43	99.74	.923	
		29	56	40.42	.00	.01	.01	7.91	50.85	.01	.00	.41	99.62	.920	
		31	57	39.90	.00	.02	.02	7.74	51.34	.01	.01	.44	99.48	.922	

APPENDIX C (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Rock name
779A-14R-2, 139–141	H936	25	58	40.99	.00	.01	.00	8.58	49.43	.01	.01	.37	99.40	.911	Harzburgite
		26	59	41.14	.00	.00	.01	8.41	49.59	.01	.01	.40	99.57	.913	
		27	60	40.87	.00	.01	.01	8.31	49.19	.00	.01	.42	98.82	.913	
		28	61	40.72	.00	.01	.01	8.53	49.50	.01	.01	.38	99.17	.912	
		29	62	40.85	.00	.03	.01	8.48	49.18	.00	.01	.38	98.94	.912	
779A-15R-2, 24–27	D938	147	63	42.51	.00	.00	.01	5.77	51.65	.01	.01	.45	100.41	.941	Dunite
		148	64	41.83	.00	.01	.02	5.81	51.87	.00	.01	.48	100.03	.941	
		149	65	41.33	.00	.00	.01	5.80	52.30	.00	.01	.58	100.03	.941	
		150	66	42.33	.00	.01	.02	5.98	52.03	.00	.00	.51	100.88	.939	
		151	67	41.78	.00	.02	.02	5.78	51.77	.00	.01	.49	99.87	.941	
		152	68	42.26	.00	.00	.00	5.91	52.10	.00	.00	.51	100.78	.940	
779A-17R-3, 80–83	H942	4	1	40.82	.00	.02	.01	7.74	50.59	.00	.01	.40	99.59	.921	Harzburgite
		5	2	41.16	.00	.02	.02	8.06	49.87	.01	.01	.35	99.50	.917	
		6	3	41.45	.00	.02	.00	7.89	50.35	.01	.00	.42	100.14	.919	
		7	4	41.18	.00	.01	.01	7.90	50.57	.01	.01	.43	100.12	.919	
		8	5	41.60	.00	.02	.02	7.52	50.59	.01	.01	.36	100.13	.923	
779A-19R-2, 57–60	H944	45	6	41.85	.03	.01	.02	8.36	49.71	.00	.01	.37	100.36	.914	Harzburgite
		46	7	41.42	.54	.02	.01	7.83	49.55	.00	.00	.35	99.72	.919	
		47	8	41.39	.00	.03	.01	8.23	50.17	.00	.00	.37	100.20	.916	
		49	10	41.26	.00	.03	.04	8.73	49.63	.00	.00	.25	99.94	.910	
779A-19R-3, 53–56	H946	50	11	40.93	.00	.01	.01	8.09	50.24	.00	.00	.44	99.72	.917	Harzburgite
		51	12	41.35	.00	.02	.00	8.05	49.78	.00	.00	.38	99.58	.917	
		52	13	41.13	.00	.01	.01	8.07	49.96	.00	.01	.42	99.61	.917	
		53	14	41.36	.00	.02	.00	8.62	49.86	.00	.00	.43	100.29	.912	
779A-22R-1, 65–69	H948	11	15	41.11	.00	.01	.01	7.78	50.39	.03	.02	.44	99.79	.920	Harzburgite
		12	16	40.73	.00	.00	.00	7.82	50.68	.03	.02	.45	99.73	.920	
		13	17	41.10	.00	.01	.00	7.99	50.46	.01	.02	.41	100.00	.918	
		15	18	41.07	.00	.01	.03	7.86	50.76	.02	.02	.46	100.23	.920	
		16	19	41.04	.00	.00	.02	7.68	51.14	.03	.02	.36	100.29	.922	
		25	20	40.93	.00	.01	.01	7.61	51.80	.03	.01	.41	100.81	.924	
		26	21	41.14	.00	.03	.00	7.76	51.11	.02	.02	.45	100.53	.921	
		27	22	41.25	.00	.00	.04	7.25	51.57	.02	.03	.40	100.56	.927	
		34	23	41.45	.00	.01	.03	7.95	51.00	.03	.02	.44	100.93	.920	
		35	24	40.90	.00	.02	.00	7.97	50.75	.03	.01	.43	100.11	.919	
779A-22R-2, 18–20	D950	87	25	41.12	.00	.02	.02	8.51	50.06	.01	.01	.40	100.15	.913	Dunite
		88	26	40.80	.00	.02	.02	7.98	50.19	.01	.00	.43	99.45	.918	
		89	27	41.23	.00	.01	.01	8.17	49.89	.01	.01	.37	99.70	.916	
		90	28	40.76	.00	.02	.03	8.11	50.20	.00	.01	.36	99.49	.917	
		91	29	41.33	.00	.02	.02	7.91	50.48	.00	.01	.38	100.15	.919	
		92	30	40.84	.00	.00	.04	8.01	50.20	.00	.00	.40	99.49	.918	
779A-22R-3, 55–57	H952	82	34	41.08	.00	.01	.01	8.13	49.44	.01	.01	.34	99.03	.916	Harzburgite
		83	35	41.08	.00	.01	.03	7.82	49.88	.00	.00	.40	99.22	.919	
		84	36	41.28	.00	.02	.01	7.82	49.87	.01	.01	.33	99.35	.919	
		85	37	40.92	.00	.02	.02	7.74	50.01	.00	.00	.35	99.06	.920	
		86	38	41.62	.00	.00	.01	7.95	49.35	.00	.01	.34	99.28	.917	
		88	39	41.69	.00	.00	.01	7.80	49.85	.01	.00	.37	99.73	.919	
		91	40	41.17	.00	.04	.00	7.77	49.07	.01	.02	.42	98.50	.918	
779A-25R-1, 85–87	D954	33	41	41.27	.00	.02	.03	6.78	50.84	.00	.00	.35	99.29	.930	Dunite
		34	42	41.34	.00	.00	.01	6.72	50.25	.00	.00	.40	98.72	.930	
		35	43	41.37	.00	.02	.02	7.01	50.26	.00	.00	.35	99.03	.927	
		36	44	41.54	.00	.01	.01	6.80	50.74	.00	.00	.35	99.45	.930	
		37	45	41.66	.00	.02	.01	6.74	50.39	.00	.00	.41	99.23	.930	
779A-26R-2, 47–50	H956	47	53	41.71	.00	.01	.01	8.61	50.20	.01	.02	.26	100.83	.912	Harzburgite
		48	54	41.46	.00	.02	.02	8.41	49.97	.01	.02	.23	100.14	.914	
		49	55	41.01	.00	.00	.04	8.33	49.79	.01	.00	.27	99.45	.914	
		50	56	41.43	.00	.01	.03	8.39	49.78	.01	.02	.28	99.95	.914	
		51	57	41.40	.00	.01	.01	8.59	50.10	.01	.01	.27	100.40	.912	
779A-26R-3, 102–105	H958	62	58	40.62	.32	.01	.01	7.73	49.93	.00	.02	.33	98.97	.920	Harzburgite
		63	59	41.41	.06	.02	.01	7.53	50.04	.01	.02	.39	99.49	.922	
		64	60	41.24	.00	.03	.01	7.81	50.15	.02	.01	.40	99.67	.920	
		65	61	41.18	.00	.02	.00	7.61	50.06	.01	.00	.38	99.26	.921	
		74	62	40.97	.00	.00	.00	7.75	50.07	.04	.01	.40	99.24	.920	

APPENDIX C (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Rock name
780C-6R-1, 67–69	H010	33	2	40.99	.00	.02	.01	8.02	51.05	.01	.02	.41	100.53	.919	Harzburgite
		34	3	41.25	.00	.02	.03	8.06	50.58	.01	.01	.39	100.35	.918	
		35	4	40.68	.00	.01	.03	7.82	50.65	.01	.01	.39	99.60	.920	
		36	5	40.99	.00	.03	.02	8.15	50.49	.00	.01	.37	100.06	.917	
		37	6	41.06	.00	.02	.02	8.39	50.15	.02	.01	.40	100.07	.914	
		38	7	40.90	.00	.01	.05	7.90	50.78	.02	.00	.40	100.06	.920	
		39	8	40.92	.00	.02	.02	8.13	50.53	.01	.01	.41	100.05	.917	
780C-8R-1, 94–96	D015	41	10	41.37	.01	.04	.04	9.31	50.18	.02	.00	.31	101.28	.906	Dunite
		42	11	41.00	.00	.02	.03	8.90	49.94	.01	.00	.36	100.26	.909	
		43	12	40.90	.01	.02	.04	9.42	50.53	.01	.01	.36	101.30	.905	
		44	13	40.90	.00	.03	.04	8.80	50.96	.01	.00	.39	101.13	.912	
		46	15	41.01	.00	.03	.03	8.82	50.83	.02	.01	.41	101.16	.911	
		47	16	41.24	.00	.03	.02	9.19	50.46	.02	.01	.38	101.35	.907	
780C-10R-1, 11–13	H020	25	19	40.81	.00	.02	.03	7.82	50.33	.02	.00	.45	99.48	.920	Harzburgite
		26	20	41.20	.00	.02	.05	7.83	50.13	.03	.00	.35	99.61	.919	
		27	21	41.25	.00	.01	.05	7.92	50.29	.02	.00	.44	99.98	.919	
		28	22	41.03	.00	.01	.02	7.94	50.43	.02	.01	.43	99.89	.919	
		29	23	41.35	.00	.03	.02	7.92	50.30	.01	.00	.45	100.08	.919	
		30	24	41.13	.00	.04	.04	8.04	50.39	.03	.01	.44	100.12	.918	
780C-16R-1, 53–59	H025	82	26	41.85	.00	.01	.02	8.31	49.66	.01	.00	.32	100.18	.914	Harzburgite
		83	27	41.66	.00	.00	.01	7.96	49.43	.00	.01	.37	99.44	.917	
		90	28	41.40	.00	.01	.03	8.09	49.92	.00	.00	.41	99.86	.917	
		91	29	41.65	.00	.02	.00	8.09	49.54	.00	.00	.37	99.67	.916	
		92	30	42.02	.00	.01	.02	8.10	49.93	.00	.01	.36	100.45	.917	
780C-18R-1, 65–67	H035	30	32	41.41	.00	.00	.01	8.35	49.77	.01	.00	.37	99.92	.914	Harzburgite
		31	33	41.10	.00	.02	.00	8.26	49.89	.01	.00	.33	99.61	.915	
		32	34	41.17	.00	.01	.01	8.30	49.69	.01	.02	.37	99.58	.914	
		33	35	41.52	.00	.01	.02	7.85	50.20	.00	.00	.37	99.97	.919	
		34	36	41.20	.00	.00	.02	8.28	49.50	.00	.00	.36	99.36	.914	
		35	37	40.70	.00	.01	.03	8.41	49.94	.01	.01	.39	99.50	.914	
780D-5X-1, 0–4	H040	106	38	41.94	.00	.01	.01	7.59	50.09	.00	.00	.36	100.00	.922	Harzburgite
		107	39	41.37	.00	.01	.03	7.85	50.14	.00	.00	.37	99.77	.919	
		108	40	41.37	.00	.00	.00	7.66	49.73	.00	.00	.41	99.17	.920	
		109	41	41.83	.00	.02	.01	7.76	49.67	.00	.00	.43	99.72	.919	
		110	42	41.79	.00	.00	.03	7.76	49.66	.00	.01	.32	99.57	.919	
783A-16R-CC, 14–17	H325	64	1	41.60	.39	.00	.01	7.85	49.56	.01	.00	.37	99.79	.918	Harzburgite
		65	2	41.57	.00	.01	.01	7.78	50.54	.00	.00	.41	100.32	.920	
		74	3	40.67	.00	.01	.02	7.73	49.79	.00	.01	.37	98.60	.920	
		75	4	41.49	.00	.01	.02	7.62	49.94	.00	.00	.35	99.43	.921	
		76	5	41.49	.00	.02	.03	7.81	49.65	.01	.01	.34	99.36	.919	
783A-16R-CC, 19–22	H330	138	6	40.77	.00	.01	.00	8.25	49.52	.02	.01	.33	98.91	.915	Harzburgite
		139	7	41.24	.00	.02	.00	8.16	49.61	.02	.01	.34	99.40	.916	
		140	8	41.29	.00	.02	.03	8.29	49.78	.02	.02	.31	99.76	.915	
		141	9	41.15	.00	.03	.00	8.47	49.25	.02	.01	.34	99.27	.912	
		142	10	41.38	.00	.02	.00	8.47	48.87	.01	.01	.35	99.11	.911	
783A-17R-1, 7–10	H335	355	11	41.50	.00	.01	.00	7.86	49.90	.02	.03	.37	99.69	.919	Harzburgite
		356	12	42.24	.00	.00	.01	7.62	49.71	.03	.01	.30	99.92	.921	
		357	13	41.46	.00	.00	.00	7.76	50.04	.02	.01	.36	99.65	.920	
		358	14	41.67	.00	.01	.00	7.76	50.10	.02	.01	.34	99.91	.920	
783A-18R-1, 48–51	H340	39	16	41.39	.00	.03	.03	8.53	50.72	.02	.02	.38	101.12	.914	Harzburgite
		40	17	40.49	.00	.02	.03	8.75	50.76	.02	.01	.39	100.47	.912	
		42	18	40.29	.00	.01	.06	8.56	50.82	.01	.01	.39	100.15	.914	
		43	19	41.63	.00	.02	.04	8.50	50.87	.01	.01	.38	101.46	.914	
		44	20	40.79	.00	.03	.04	8.71	50.74	.00	.01	.44	100.76	.912	
		45	21	41.01	.00	.02	.03	8.72	50.03	.00	.01	.34	100.16	.911	
		46	22	41.07	.00	.01	.05	8.73	50.23	.01	.00	.33	100.43	.911	
783A-18R-1, 75–78	H345	15	24	40.77	.00	.02	.02	8.32	49.22	.04	.00	.38	98.77	.913	Harzburgite
		33	26	41.64	.00	.02	.04	8.05	49.61	.02	.00	.38	99.76	.917	
		36	27	41.85	.00	.02	.03	8.23	49.20	.02	.00	.38	99.73	.914	
		40	28	41.72	.00	.02	.04	8.27	48.92	.01	.00	.42	99.40	.913	
		41	29	41.09	.01	.02	.00	8.38	48.64	.01	.00	.42	98.57	.912	
		43	31	41.21	.00	.02	.11	8.34	48.53	.03	.00	.38	98.62	.912	

APPENDIX C (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Rock name
783A-18R-1, 79–82	H350	211	1	41.42	.00	.01	.01	9.54	48.91	.08	.02	.33	100.32	.901	Harzburgite
		212	2	41.28	.00	.01	.01	8.42	49.49	.02	.01	.35	99.59	.913	
		213	3	40.92	.00	.01	.01	8.06	50.00	.01	.01	.40	99.42	.917	
		214	4	40.91	.00	.02	.00	8.28	49.76	.02	.01	.40	99.40	.915	
		215	5	41.04	.00	.02	.00	8.46	50.48	.02	.02	.34	100.38	.914	
783A-18R-1, 100–103	H355	55	1	41.83	.00	.02	.05	7.88	49.62	.01	.01	.38	99.80	.918	Harzburgite
		56	2	41.45	.00	.02	.02	8.04	49.64	.00	.01	.41	99.59	.917	
		62	3	42.18	.77	.01	.04	8.18	48.77	.01	.01	.41	99.61	.914	
		64	4	41.44	.00	.03	.01	8.28	48.87	.01	.01	.42	99.84	.913	
		66	5	42.13	.00	.01	.01	8.05	48.29	.00	.00	.40	98.89	.914	
		67	6	41.96	.00	.02	.03	8.09	48.47	.01	.00	.36	98.94	.914	
		68	7	41.58	.00	.04	.76	7.99	48.37	.03	.03	.52	99.32	.915	
784A-37R-1, 6–9	H410	335	1	41.00	.00	.01	.00	7.80	49.86	.01	.00	.36	99.04	.919	Harzburgite
		336	2	41.50	.00	.00	.00	7.95	49.26	.01	.00	.35	99.07	.917	
		337	3	41.11	.00	.01	.00	8.07	49.83	.01	.01	.37	99.41	.917	
		338	4	41.32	.00	.02	.00	7.90	49.54	.03	.02	.36	99.19	.918	
784A-38R-2, 87–89	H420	228	1	41.15	.00	.01	.00	8.07	49.48	.01	.02	.37	99.11	.916	Harzburgite
		229	2	41.06	.00	.00	.00	7.74	50.07	.02	.02	.38	99.29	.920	
		232	3	41.30	.00	.00	.00	8.09	49.91	.02	.02	.34	99.68	.917	
		237	4	40.32	.00	.01	.11	8.15	50.38	.01	.03	.35	99.36	.917	
784A-41R-CC, 8–11	H435	263	1	41.62	.00	.01	.00	7.91	49.69	.03	.01	.38	99.65	.918	Harzburgite
		264	2	41.91	.00	.02	.01	7.70	49.81	.02	.00	.37	99.84	.920	
		266	3	41.74	.00	.01	.01	7.83	49.70	.02	.01	.36	99.68	.919	
		267	4	41.25	.00	.00	.00	7.75	49.94	.02	.01	.37	99.34	.920	
784A-42R-1, 12–15	H440	68	9	41.54	.00	.01	.00	7.82	50.53	.01	.01	.36	100.28	.920	Harzburgite
		69	10	41.41	.00	.01	.06	7.76	50.47	.00	.01	.38	100.10	.921	
		72	11	41.71	.00	.02	.01	8.01	50.69	.01	.00	.38	100.83	.919	
		73	12	41.13	.00	.02	.01	7.84	50.65	.00	.00	.43	100.08	.920	
		74	13	41.13	.00	.01	.00	7.73	50.16	.01	.00	.41	99.45	.920	
		75	14	41.30	.00	.01	.00	7.79	50.58	.01	.00	.41	100.10	.920	
		76	15	40.98	.00	.02	.00	7.95	50.56	.00	.01	.36	99.88	.919	
		77	16	40.61	.00	.02	.00	7.92	50.96	.00	.03	.41	99.95	.920	
		80	17	41.43	.00	.00	.00	7.65	50.32	.01	.00	.36	99.77	.921	
784A-45R-1, 76–80	H455	243	18	41.22	.00	.02	.00	7.79	50.06	.01	.00	.38	99.48	.920	Harzburgite
		244	19	41.96	.00	.02	.00	7.72	50.09	.02	.01	.35	100.17	.920	
		245	20	40.99	.00	.00	.01	7.65	50.27	.01	.00	.40	99.33	.921	
		246	21	41.02	.00	.01	.00	7.59	50.54	.01	.02	.37	99.56	.922	
784A-45R-1, 95–98	H460	22	25	41.32	.00	.01	.00	7.40	50.15	.01	.01	.36	99.26	.924	Harzburgite
		23	26	41.67	.00	.01	.01	7.28	50.28	.01	.01	.42	99.69	.925	
		26	27	40.87	.00	.01	.00	7.58	50.49	.02	.00	.38	99.35	.922	
		27	28	40.77	.00	.02	.00	7.62	50.47	.02	.01	.40	99.31	.922	
		28	29	41.34	.00	.03	.00	7.69	50.10	.01	.02	.43	99.62	.921	
		29	30	41.19	.00	.01	.01	7.61	50.71	.00	.01	.41	99.95	.922	
		30	31	40.96	.00	.03	.01	7.81	50.39	.00	.00	.41	99.61	.920	
		31	32	40.56	.00	.01	.01	7.84	50.32	.01	.00	.40	99.15	.920	
		32	33	41.01	.00	.01	.00	7.47	50.67	.00	.01	.39	99.56	.924	
		33	34	40.95	.00	.02	.00	7.59	50.24	.01	.01	.38	99.20	.922	
784A-45R-1, 128–133	H470	364	35	41.69	.00	.01	.02	7.42	50.21	.01	.01	.38	99.75	.923	Harzburgite
		365	36	41.89	.00	.00	.00	7.54	49.11	.02	.01	.35	98.92	.921	
		367	37	42.20	.00	.00	.01	7.61	49.67	.03	.01	.35	99.88	.921	
		370	38	42.10	.00	.02	.01	7.75	49.62	.02	.01	.37	99.90	.919	
		371	39	41.92	.00	.01	.01	7.64	49.59	.01	.02	.38	99.58	.920	
784A-45R-2, 1–5	H475	401	40	40.81	.00	.02	.02	7.59	50.02	.03	.00	.34	98.83	.922	Harzburgite
		402	41	41.12	.00	.01	.01	7.67	49.98	.03	.02	.35	99.19	.921	
		403	42	40.95	.00	.02	.01	7.60	50.37	.03	.00	.34	99.32	.922	
		407	43	41.34	.00	.01	.02	7.64	50.28	.03	.01	.36	99.69	.921	
		415	44	41.03	.00	.01	.01	7.88	49.73	.04	.01	.34	99.05	.918	
		416	45	40.82	.00	.02	.01	7.86	49.74	.03	.00	.33	98.81	.919	

APPENDIX C (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Rock name
784A-45R-2, 40–42	H480	11	46	42.41	.00	.01	.00	7.71	50.93	.02	.01	.39	101.48	.922	Harzburgite
		12	47	41.28	.00	.01	.01	7.65	50.79	.00	.02	.37	100.13	.922	
		13	48	41.31	.00	.01	.00	7.88	50.50	.01	.00	.41	100.12	.919	
		14	49	41.30	.00	.00	.02	7.76	50.22	.00	.01	.39	99.70	.920	
		15	50	41.31	.00	.01	.01	7.68	50.69	.00	.00	.41	100.11	.922	
		16	51	40.94	.00	.01	.00	7.82	50.75	.00	.00	.38	99.90	.920	
		17	52	41.47	.00	.02	.00	7.75	50.57	.00	.00	.38	100.19	.921	
		19	53	41.62	.00	.01	.00	7.95	49.87	.00	.01	.39	99.85	.918	
		20	54	41.26	.00	.01	.00	7.85	50.38	.02	.01	.44	99.97	.920	
784A-45R-CC, 11–14	H485	305	56	41.73	.00	.00	.00	7.92	50.07	.02	.01	.39	100.14	.918	Harzburgite
		306	57	41.75	.00	.00	.01	7.94	49.63	.02	.01	.34	99.70	.918	
		307	58	41.89	.00	.00	.01	7.91	49.73	.02	.02	.36	99.94	.918	
		311	59	41.19	.00	.01	.00	7.82	49.77	.01	.02	.31	99.13	.919	
784A-45R-CC, 23–27	H490	381	60	42.16	.00	.00	.00	7.46	49.79	.01	.01	.34	99.77	.922	Harzburgite
		382	61	41.31	.00	.00	.01	7.65	49.89	.03	.02	.38	99.29	.921	
		383	62	41.54	.00	.01	.00	7.75	49.74	.02	.00	.37	99.43	.920	
		384	63	42.02	.00	.01	.00	7.47	49.83	.01	.02	.38	99.74	.922	
		385	64	41.24	.00	.00	.00	7.44	49.99	.02	.01	.37	99.07	.923	

[a] In this paper (see Table 3).

APPENDIX D

Analyses of Pyroxenes in Peridotites from Conical and Torishima Forearc Seamounts

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
778A-2R-1, 82–84	H810	13	1	57.53	1.00	.02	.46	4.62	35.72	0.84	.01	.09	100.29	.932	1.552	91.788	6.660	Harzburgite
		15	3	58.05	0.90	.01	.38	4.30	35.91	0.47	.01	.13	100.16	.937	0.874	92.886	6.240	
		16	4	57.28	0.98	.02	.51	4.24	35.78	0.91	.00	.14	99.86	.938	1.685	92.186	6.129	
		11	5	54.67	1.05	.02	.93	1.57	18.09	23.26	.00	.12	99.71	.954	46.846	50.686	2.468	
		12	6	54.63	0.72	.02	.65	1.19	17.91	24.87	.00	.11	100.10	.964	49.038	49.130	1.831	
		17	7	54.90	1.00	.04	.94	1.13	17.76	24.65	.02	.10	100.54	.966	49.064	49.180	1.756	
778A-3R-CC, 4–7	H815	68	33	56.61	2.06	.03	.38	5.09	35.01	0.42	.02	.05	99.67	.925	0.791	91.727	7.482	Harzburgite
		71	34	56.22	2.67	.05	.43	5.29	34.70	0.27	.03	.01	99.67	.921	0.513	91.649	7.839	
		73	35	56.08	3.05	.05	.79	5.02	34.07	0.79	.03	.05	99.93	.924	1.516	90.964	7.520	
		74	36	55.78	3.34	.03	.93	4.93	34.46	0.65	.03	.05	100.20	.926	1.240	91.423	7.338	
		83	38	55.53	2.60	.06	.54	4.97	34.50	0.54	.02	.04	98.80	.925	1.030	91.569	7.401	
		84	39	56.34	2.61	.02	.52	4.90	34.20	0.46	.02	.05	99.12	.926	0.887	91.739	7.374	
		85	40	56.18	2.87	.05	.61	4.89	34.18	0.81	.03	.05	99.67	.926	1.552	91.133	7.315	
		86	41	56.15	2.06	.04	.22	5.02	34.80	0.38	.02	.05	98.74	.925	0.721	91.846	7.433	
		69	42	53.22	2.64	.10	.96	1.58	17.18	23.57	.02	.05	99.32	.951	48.394	49.074	2.532	
		70	43	54.02	1.47	.09	.51	1.37	17.83	24.08	.00	.03	99.40	.959	48.204	49.656	2.141	
		72	44	53.36	2.47	.09	.71	1.73	17.52	23.36	.03	.05	99.32	.948	47.591	49.658	2.751	
779A-3R-CC, 19–20	D908	23	1	57.07	1.50	.02	.59	5.04	35.12	0.49	.00	.11	99.94	.925	0.920	91.698	7.383	Dunite
		24	2	57.04	1.46	.02	.57	5.09	34.83	0.61	.01	.10	99.73	.924	1.150	91.360	7.490	
		25	3	57.26	1.17	.02	.36	5.23	35.37	0.45	.00	.10	99.96	.923	0.837	91.567	7.596	
		26	4	57.33	1.25	.02	.37	5.16	35.17	0.54	.01	.10	99.95	.924	1.009	91.462	7.528	
779A-5R-2, 43–45	H910	25	5	57.70	0.57	.02	.29	5.15	35.54	0.24	.01	.10	99.62	.925	0.447	92.068	7.485	Harzburgite
		26	6	58.32	0.91	.02	.48	4.96	34.50	0.55	.01	.08	99.83	.925	1.049	91.565	7.385	
		27	7	58.77	0.47	.02	.21	5.12	35.29	0.29	.00	.12	100.29	.925	0.543	91.971	7.486	
779A-8R-1, 41–45	H916	36	9	57.84	1.03	.02	.26	5.37	36.11	0.44	.02	.03	101.12	.923	0.802	91.559	7.639	Harzburgite
		37	10	57.27	1.25	.04	.41	5.48	36.06	0.32	.02	.02	100.87	.921	0.584	91.605	7.810	
		38	11	56.54	1.60	.02	.56	5.22	35.31	0.70	.02	.04	100.01	.923	1.299	91.142	7.559	
		39	12	57.23	1.37	.01	.57	5.29	36.05	0.35	.02	.05	100.94	.924	0.641	91.802	7.558	
		47	13	56.58	1.83	.01	.58	5.43	35.42	0.35	.00	.04	100.24	.921	0.650	91.482	7.868	
		49	15	57.52	1.58	.02	.51	5.34	35.68	0.29	.01	.04	100.99	.923	0.536	91.759	7.705	
		51	17	56.63	1.66	.01	.69	5.25	34.75	1.47	.03	.06	100.55	.922	2.727	89.673	7.601	
		52	18	58.19	0.98	.02	.23	5.34	35.92	0.22	.01	.06	100.97	.923	0.405	91.928	7.667	
		35	22	54.62	1.15	.04	.39	1.69	18.69	24.36	.02	.06	101.02	.952	47.135	50.312	2.552	
		40	23	54.01	1.20	.04	.59	1.69	18.40	24.13	.03	.04	100.13	.951	47.270	50.146	2.584	
		41	24	54.02	1.25	.03	.63	1.75	18.43	23.74	.03	.08	99.96	.949	46.782	50.526	2.692	
		42	25	54.08	0.85	.03	.31	1.70	18.59	24.51	.04	.08	100.19	.951	47.408	50.025	2.567	
		43	26	55.14	0.43	.02	.18	1.43	18.73	24.89	.01	.05	100.88	.959	47.807	50.049	2.144	
		44	27	55.03	1.16	.06	.69	1.59	18.35	24.28	.00	.06	101.22	.954	47.561	50.008	2.431	
		45	28	54.63	1.36	.04	.68	1.60	18.33	24.29	.03	.04	101.00	.953	47.590	49.963	2.447	
		46	29	53.44	1.14	.03	.59	1.54	18.07	24.77	.01	.04	99.63	.954	48.463	49.185	2.352	
779A-11R-1, 20–22	H924	110	31	54.82	1.04	.02	.72	1.51	17.74	23.89	.03	.04	99.81	.954	48.021	49.610	2.369	Harzburgite
		111	32	55.12	0.78	.01	.54	1.55	18.05	23.56	.01	.06	99.68	.954	47.232	50.343	2.425	
		112	33	55.64	0.94	.01	.62	1.52	17.53	23.76	.01	.05	100.08	.954	48.161	49.434	2.405	
779A-11R-1, 90–92	H926	126	34	59.30	0.28	.02	.22	5.13	35.19	0.41	.01	.08	100.64	.924	0.768	91.730	7.502	Harzburgite
		127	35	59.18	0.52	.03	.37	5.07	34.88	0.41	.02	.07	100.55	.925	0.775	91.743	7.482	
		132	36	58.84	0.54	.01	.43	5.12	34.50	0.59	.00	.13	100.16	.923	1.122	91.278	7.600	

APPENDIX D (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
		131	37	58.69	0.49	.01	.37	5.06	34.60	0.85	.00	.07	100.14	.924	1.606	90.933	7.461	
		128	38	56.11	0.69	.03	.92	1.68	17.58	22.99	.01	.06	100.07	.949	47.150	50.160	2.689	
		129	39	55.81	0.64	.00	.47	1.78	17.68	23.16	.01	.09	99.64	.947	47.125	50.048	2.827	
		132	40	56.08	0.57	.01	.85	1.62	17.53	23.11	.01	.11	99.89	.951	47.393	50.014	2.593	
779A-12R-1, 38–42	H928	321	41	58.42	1.04	.00	.50	5.17	33.93	0.86	.01	.12	100.05	.921	1.651	90.604	7.745	Harzburgite
		322	42	57.52	0.91	.01	.41	5.32	34.21	0.74	.03	.08	99.23	.920	1.410	90.679	7.911	
		323	43	58.82	1.02	.01	.41	5.00	34.40	0.67	.01	.08	100.42	.925	1.278	91.279	7.443	
779A-13R-2, 50–54	H930	49	44	57.22	2.13	.02	.57	5.63	34.25	0.22	.01	.04	100.09	.916	0.421	91.171	8.408	Harzburgite
		50	45	56.87	2.28	.02	.52	5.64	33.64	0.77	.02	.08	99.84	.914	1.482	90.048	8.470	
		54	46	57.40	2.24	.03	.63	5.37	33.81	0.42	.01	.11	100.02	.918	0.813	91.072	8.115	
		51	50	54.01	2.44	.06	1.00	1.73	17.03	23.42	.02	.09	99.80	.946	48.326	48.888	2.786	
		52	51	55.03	1.51	.05	.62	1.54	17.05	24.03	.01	.06	99.90	.952	49.089	48.456	2.455	
		53	52	54.78	1.31	.05	.62	1.57	17.36	24.01	.01	.10	99.81	.952	48.616	48.903	2.481	
779A-14R-2, 139–141	H936	30	53	56.65	2.47	.02	.61	5.57	33.62	0.74	.00	.08	99.76	.915	1.427	90.190	8.383	Harzburgite
		31	54	56.51	2.46	.02	.73	5.63	33.78	0.80	.01	.10	100.04	.914	1.533	90.047	8.420	
		32	55	57.09	1.82	.02	.36	5.74	34.17	0.39	.00	.06	99.65	.914	0.744	90.707	8.549	
		33	56	55.72	1.31	.04	.37	1.80	17.39	23.78	.01	.06	100.48	.945	48.159	48.996	2.845	
		34	57	54.15	2.39	.02	.86	2.17	17.32	22.75	.00	.12	99.78	.934	46.869	49.642	3.489	
		35	58	55.05	1.36	.05	.74	1.58	17.08	23.86	.03	.10	99.85	.951	48.838	48.638	2.524	
779A-17R-3, 8–83	H942	18	3	58.31	1.56	.01	.60	4.95	34.34	0.71	.00	.08	100.56	.925	1.356	91.263	7.381	Harzburgite
		19	4	57.57	1.33	.02	.51	5.16	34.47	0.28	.01	.12	99.47	.923	0.536	91.758	7.706	
		17	7	55.59	1.16	.02	.63	1.39	17.46	24.19	.01	.08	100.53	.957	48.804	49.007	2.189	
		20	8	55.20	1.11	.04	.59	1.52	17.63	23.64	.01	.12	99.86	.954	47.899	49.697	2.404	
779A-22R-1, 65–69	H948	2	1	57.08	0.51	.01	.28	5.24	36.40	0.44	.02	.09	100.07	.925	0.800	91.790	7.410	Harzburgite
		3	2	56.42	0.60	.02	.41	5.11	36.25	0.61	.02	.09	99.53	.927	1.110	91.640	7.250	
		5	3	56.51	0.69	.01	.39	5.22	36.67	0.61	.02	.11	100.23	.926	1.100	91.590	7.310	
		6	4	57.21	0.54	.01	.30	5.33	36.44	0.61	.01	.11	100.56	.924	1.100	91.400	7.500	
		7	5	56.40	0.51	.00	.22	5.48	36.67	0.35	.02	.10	99.75	.923	0.630	91.680	7.690	
		8	6	56.35	0.74	.02	.47	5.28	36.72	0.51	.01	.10	100.20	.925	0.920	91.690	7.400	
		9	7	55.91	0.74	.00	.44	5.15	36.26	0.69	.02	.09	99.30	.926	1.250	91.460	7.290	
		10	8	55.97	0.64	.01	.40	5.36	36.34	0.63	.02	.08	96.45	.924	1.149	91.310	7.560	
		28	9	56.18	0.59	.01	.32	5.18	36.19	0.71	.01	.12	99.31	.926	1.290	91.370	7.340	
		29	10	56.57	0.46	.00	.30	5.26	36.55	0.62	.00	.11	99.87	.925	1.120	91.500	7.390	
		30	11	56.97	0.50	.02	.35	5.29	37.01	0.37	.00	.10	100.61	.926	0.660	91.960	7.380	
779A-22R-3, 55–57	H952	87	9	58.00	0.53	.00	.36	5.72	34.63	0.56	.03	.09	99.92	.915	1.053	90.556	8.392	Harzburgite
		89	10	58.63	0.55	.01	.32	5.11	34.44	0.66	.00	.10	99.82	.923	1.256	91.156	7.588	
		90	11	58.62	0.57	.01	.36	5.03	34.50	0.84	.01	.11	100.05	.924	1.592	90.967	7.441	
779A-26R-2, 47–50	H956	35	16	55.58	2.62	.02	.66	5.77	34.45	0.29	.01	.05	99.45	.914	0.550	90.908	8.542	Harzburgite
		36	17	55.76	2.63	.03	.75	5.42	33.90	0.52	.00	.06	99.07	.918	1.002	90.849	8.149	
		37	18	54.83	3.19	.03	.83	5.27	32.94	1.41	.01	.05	98.56	.918	2.746	89.244	8.010	
		38	19	55.35	2.51	.03	.61	5.70	34.35	0.43	.03	.03	99.04	.915	0.816	90.736	8.447	
		39	20	55.36	2.69	.03	.76	5.49	33.46	1.43	.01	.05	99.28	.916	2.736	89.065	8.199	
		53	30	55.46	2.56	.00	.63	5.52	34.47	0.37	.02	.03	99.06	.918	0.703	91.111	8.186	
		54	31	55.91	2.59	.03	.72	5.28	33.65	0.71	.02	.05	98.96	.919	1.375	90.646	7.980	
		55	32	55.13	2.75	.02	.67	5.25	33.71	1.19	.02	.06	98.80	.920	2.280	89.868	7.852	
		15	25	52.97	2.02	.04	.79	1.68	17.91	24.04	.02	.04	99.51	.950	47.824	49.568	2.609	
		34	26	53.89	0.68	.06	.34	1.35	17.98	24.96	.03	.06	99.35	.960	48.915	49.021	2.065	

APPENDIX D (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
		40	27	53.93	1.14	.04	.54	1.52	17.65	24.53	.02	.03	99.40	.954	48.795	48.845	2.360	
		41	28	54.87	0.62	.03	.18	2.02	20.18	21.43	.01	.06	99.40	.947	41.953	54.961	3.087	
		42	29	54.04	0.83	.04	.36	1.37	18.23	24.80	.01	.04	99.72	.960	48.408	49.505	2.087	
		52	34	53.58	0.81	.05	.28	1.56	18.03	24.75	.02	.04	99.12	.954	48.481	49.134	2.385	
		56	35	54.01	1.67	.06	.72	1.54	17.46	24.69	.02	.06	100.23	.953	49.200	48.405	2.395	
		57	36	53.52	1.64	.05	.82	1.59	17.73	24.07	.02	.05	99.49	.952	48.162	49.355	2.483	
779A-26R-3, 102–105	H958	61	38	56.38	2.75	.07	.69	5.00	33.94	0.49	.00	.08	99.40	.924	0.949	91.489	7.562	Harzburgite
		68	39	57.77	2.42	.06	.55	5.14	34.23	0.67	.00	.07	100.91	.922	1.281	91.049	7.670	
		69	40	57.35	2.65	.05	.67	5.18	34.00	0.81	.00	.13	100.84	.921	1.553	90.695	7.752	
		72	41	56.59	2.67	.06	.67	5.00	33.97	0.95	.01	.11	100.03	.924	1.823	90.688	7.489	
		66	42	54.77	2.46	.14	.92	1.69	16.86	22.53	.02	.10	99.49	.947	47.627	49.584	2.788	
		67	43	55.62	1.49	.10	.50	1.55	17.18	23.41	.02	.09	99.96	.952	48.247	49.259	2.493	
		73	44	54.40	2.49	.16	.97	1.75	16.88	22.81	.01	.09	99.56	.945	47.860	49.274	2.866	
780C-6R-1, 67–69	H010	20	15	56.75	1.05	.01	.20	5.62	35.47	0.31	.01	.08	99.50	.918	0.574	91.310	8.117	Harzburgite
		21	16	56.78	1.24	.02	.23	5.66	35.38	0.25	.01	.09	99.66	.918	0.464	91.338	8.198	
		22	17	56.62	1.70	.03	.43	5.59	35.49	0.34	.00	.10	100.30	.919	0.629	91.303	8.068	
		23	18	55.46	1.90	.02	.58	5.52	35.22	0.35	.00	.08	99.13	.919	0.652	91.318	8.030	
		26	19	55.77	1.66	.02	.56	5.59	35.32	0.39	.01	.11	99.43	.918	0.724	91.180	8.096	
		27	20	56.05	2.12	.01	.68	5.26	34.22	1.92	.00	.09	100.35	.921	3.580	88.765	7.655	
		28	21	55.18	2.11	.03	.65	5.53	34.67	0.75	.01	.10	99.03	.918	1.407	90.495	8.098	
		30	23	55.22	2.35	.02	.79	5.46	34.67	0.44	.01	.12	99.08	.919	0.831	91.118	8.051	
		19	25	53.91	0.73	.03	.44	1.39	17.92	25.03	.00	.11	99.56	.958	49.035	48.840	2.125	
		24	26	53.42	1.72	.01	.75	1.69	17.76	24.37	.01	.07	99.80	.949	48.356	49.027	2.617	
		25	27	53.20	1.49	.02	.64	1.50	17.78	24.74	.01	.11	99.49	.955	48.848	48.840	2.312	
		31	28	53.59	1.11	.01	.54	1.49	17.93	24.84	.01	.09	99.61	.955	48.756	48.961	2.283	
		32	29	53.84	1.07	.03	.38	1.59	17.95	24.84	.01	.09	99.80	.953	48.655	48.914	2.431	
780C-10R-1, 11–13	H020	6	1	57.27	2.15	.02	.55	5.67	34.99	0.62	.00	.08	101.35	.917	1.154	90.608	8.237	Harzburgite
		7	2	57.20	1.90	.02	.51	5.65	35.58	0.44	.00	.11	101.41	.918	0.810	91.076	8.114	
		8	3	56.86	2.04	.02	.49	5.78	34.92	0.26	.01	.11	100.49	.915	0.487	91.057	8.456	
		9	4	56.92	2.25	.02	.57	5.63	34.79	0.42	.01	.07	100.68	.917	0.789	90.953	8.258	
		10	8	54.48	1.61	.05	.62	1.91	18.42	22.91	.02	.10	100.12	.945	45.795	51.225	2.980	
		11	9	54.92	0.76	.05	.27	1.64	17.98	24.36	.01	.07	100.06	.951	48.091	49.382	2.527	
		12	10	54.99	1.45	.04	.77	1.55	17.76	24.48	.01	.11	101.16	.953	48.574	49.026	2.400	
		13	11	54.75	1.24	.02	.57	1.47	17.89	24.55	.01	.09	100.59	.956	48.531	49.201	2.268	
		14	12	54.70	1.10	.05	.37	1.66	17.74	24.37	.01	.09	100.09	.950	48.405	49.021	2.574	
		15	13	55.40	0.62	.04	.26	1.38	18.16	24.94	.01	.11	100.92	.959	48.633	49.266	2.100	
780C-16R-1, 53–59	H025	86	53	57.64	1.78	.00	.60	5.20	33.78	0.88	.01	.10	99.99	.920	1.694	90.490	7.815	Harzburgite
		87	54	57.80	1.80	.01	.61	5.18	33.99	0.86	.00	.06	100.31	.921	1.648	90.605	7.747	
		89	55	56.87	1.59	.02	.44	5.47	34.41	0.52	.00	.13	99.45	.918	0.987	90.905	8.107	
		94	56	57.22	1.34	.02	.34	5.33	34.79	0.28	.01	.08	99.41	.921	0.530	91.597	7.873	
		84	57	54.63	0.95	.03	.34	1.71	17.72	24.11	.01	.12	99.62	.949	48.127	49.209	2.664	
		85	58	54.68	0.95	.04	.57	1.28	17.99	24.68	.01	.09	100.29	.962	48.672	49.358	1.970	
		88	59	54.60	0.92	.03	.37	2.05	18.17	23.59	.00	.11	99.84	.940	46.742	50.088	3.170	
		93	60	54.97	1.41	.04	.74	1.66	17.33	23.96	.01	.09	100.21	.949	48.536	48.839	2.625	
780C-18R-1, 65–67	H035	44	40	56.09	2.20	.01	.59	5.62	34.12	0.91	.00	.09	99.63	.915	1.725	89.962	8.313	Harzburgite
		45	41	56.19	2.48	.01	.68	5.62	33.95	0.72	.01	.08	99.74	.915	1.376	90.243	8.381	
		52	43	56.56	2.40	.02	.62	5.61	34.31	0.59	.01	.08	100.20	.916	1.120	90.572	8.308	
		37	45	53.52	1.65	.03	.75	1.70	17.32	24.34	.00	.05	99.36	.948	48.912	48.422	2.666	
		38	46	54.06	1.05	.01	.46	1.54	17.56	24.56	.00	.08	99.32	.953	48.932	48.673	2.395	

APPENDIX D (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
		39	47	53.23	1.48	.03	.46	1.93	17.70	24.21	.01	.10	99.15	.942	48.092	48.916	2.992	
		40	48	54.37	0.98	.03	.49	1.58	17.60	24.64	.01	.09	99.79	.952	48.929	48.622	2.449	
		48	49	53.61	1.38	.02	.61	1.46	17.41	24.72	.00	.10	99.31	.955	49.360	48.364	2.275	
		49	50	52.70	2.39	.03	1.12	1.66	16.84	24.18	.00	.10	99.02	.948	49.444	47.907	2.649	
		50	51	54.49	0.92	.05	.27	1.66	17.94	24.25	.00	.08	99.66	.951	48.016	49.419	2.565	
		51	52	53.19	2.20	.05	.87	1.84	17.23	23.93	.00	.09	99.40	.943	48.503	48.586	2.911	
780D-5X-1, 0–4	H040	4	61	57.81	1.46	.02	.39	5.10	34.87	0.37	.00	.05	100.07	.924	0.700	91.770	7.530	Harzburgite
		11	62	57.33	1.85	.02	.49	5.32	33.94	0.66	.00	.10	99.71	.919	1.268	90.751	7.981	
		14	63	57.26	1.92	.00	.58	5.25	34.50	0.19	.00	.09	99.79	.921	0.363	91.799	7.837	
		5	64	55.15	0.86	.01	.28	1.45	17.94	24.15	.01	.07	99.92	.957	48.069	49.678	2.253	
		12	65	54.29	0.95	.03	.41	1.37	17.61	24.22	.00	.09	98.97	.958	48.646	49.207	2.148	
		13	66	54.69	1.07	.02	.37	1.61	17.81	23.89	.01	.13	99.60	.952	47.853	49.630	2.517	
783A-16R-CC, 14–17	H325	66	49	57.59	2.31	.03	.60	5.19	33.45	1.03	.01	.11	100.32	.920	1.995	90.157	7.848	Harzburgite
		70	50	57.18	1.79	.02	.51	5.29	34.53	0.65	.00	.09	100.06	.921	1.231	90.952	7.817	
		71	51	57.33	1.84	.01	.46	5.33	35.03	0.61	.00	.10	100.71	.921	1.140	91.085	7.775	
		73	52	57.48	1.69	.02	.51	5.18	34.61	0.40	.00	.09	99.98	.923	0.761	91.552	7.687	
		67	53	54.52	1.56	.06	.64	1.65	17.17	24.11	.00	.12	99.83	.949	48.919	48.467	2.613	
		68	54	54.72	1.38	.04	.51	1.87	17.57	23.77	.01	.11	99.98	.944	47.853	49.209	2.938	
		69	55	53.71	1.92	.06	.66	1.68	17.25	24.53	.01	.11	99.93	.948	49.218	48.151	2.631	
		72	56	54.01	1.80	.04	.82	1.76	17.15	24.08	.00	.07	99.73	.946	48.831	48.383	2.786	
783A-16R-CC, 19–22	H330	143	57	58.15	1.82	.04	.51	5.58	33.73	0.79	.00	.09	100.71	.915	1.517	90.119	8.364	Harzburgite
		144	58	57.75	1.66	.03	.46	5.69	33.72	0.65	.01	.08	100.05	.914	1.250	90.210	8.540	
		148	59	57.83	1.67	.03	.51	5.50	33.83	0.68	.01	.06	100.12	.916	1.307	90.444	8.249	
		145	60	55.13	1.48	.05	.57	2.34	17.34	22.76	.01	.08	99.76	.930	46.725	49.525	3.750	
		146	61	54.66	1.45	.06	.51	1.80	17.27	23.55	.02	.05	99.37	.945	48.080	49.052	2.868	
		147	62	55.44	1.05	.06	.50	1.67	17.59	23.64	.01	.08	100.04	.949	47.840	49.522	2.638	
783A-17R-1, 7–10	H335	351	63	55.31	1.29	.04	.63	1.63	17.53	23.62	.01	.11	100.17	.950	47.930	49.488	2.582	Harzburgite
		352	64	56.13	1.37	.03	.54	1.91	17.68	23.19	.01	.07	100.93	.943	47.060	49.915	3.025	
		353	65	54.25	0.63	.04	.19	1.43	18.11	24.68	.00	.08	99.41	.958	48.401	49.411	2.189	
783A-18R-1, 48–51	H340	22	28	56.67	1.84	.03	.56	5.70	34.17	0.95	.01	.10	100.03	.914	1.795	89.801	8.404	Harzburgite
		23	29	57.09	2.16	.01	.58	5.71	34.05	1.01	.02	.10	100.73	.914	1.912	89.654	8.435	
		24	30	56.74	1.98	.04	.64	5.86	33.88	0.89	.01	.11	100.15	.912	1.692	89.612	8.696	
		27	31	56.25	1.91	.03	.49	5.87	34.22	0.96	.02	.13	99.88	.912	1.806	89.573	8.620	
		28	32	56.56	1.80	.01	.50	5.81	34.53	0.50	.02	.10	99.83	.914	0.942	90.514	8.544	
		29	33	55.97	2.80	.02	.47	5.76	33.87	0.69	.02	.10	99.70	.913	1.319	90.086	8.595	
		32	34	55.40	3.41	.00	.46	5.78	33.59	0.60	.01	.09	99.34	.912	1.157	90.141	8.702	
		35	35	56.29	2.12	.04	1.45	5.78	34.36	0.86	.03	.24	101.17	.914	1.617	89.898	8.484	
		37	37	54.55	3.73	.02	.53	5.69	33.22	0.66	.01	.10	98.51	.912	1.286	90.060	8.654	
		38	38	57.13	2.12	.01	.56	5.85	34.54	0.49	.00	.11	100.81	.913	0.923	90.480	8.597	
		18	41	53.60	1.93	.04	1.22	2.04	17.45	24.09	.02	.08	100.47	.938	48.220	48.593	3.187	
		19	42	54.51	1.36	.01	.42	2.01	17.75	23.55	.01	.13	99.75	.940	47.277	49.574	3.149	
		21	44	53.56	1.74	.05	.94	1.87	17.75	23.95	.02	.08	99.96	.944	47.801	49.286	2.913	
		30	45	54.18	1.32	.04	.56	1.80	17.87	24.29	.01	.09	100.16	.947	48.046	49.175	2.779	
		31	46	54.10	1.17	.04	.68	1.63	17.50	24.66	.01	.12	99.91	.950	49.047	48.423	2.530	
		33	47	53.76	2.25	.04	.74	2.07	17.55	23.71	.02	.12	100.26	.938	47.666	49.085	3.248	
		34	48	53.91	1.76	.03	.67	1.95	17.51	23.59	.02	.09	99.53	.941	47.683	49.240	3.076	
783A-18R-1, 75–78	H345	13	3	55.37	2.01	.04	.42	5.70	34.53	0.57	.00	.05	98.69	.915	1.074	90.541	8.385	Harzburgite
		25	5	56.07	1.88	.03	.42	5.51	33.88	0.85	.00	.09	98.73	.916	1.626	90.149	8.225	

APPENDIX D (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
		26	6	56.81	1.61	.03	.37	5.50	34.48	0.43	.00	.10	99.33	.918	0.816	91.037	8.147	
		27	7	56.51	1.85	.04	.49	5.56	34.11	0.52	.00	.09	99.17	.916	0.994	90.711	8.295	
		9	9	53.37	1.04	.10	.83	1.57	17.82	23.92	.03	.17	98.85	.953	47.900	49.646	2.454	
		10	10	53.59	1.39	.07	.47	1.83	18.07	23.67	.01	.09	99.19	.946	47.116	50.041	2.843	
		11	11	53.29	1.70	.08	1.40	1.76	17.32	23.78	.01	.22	99.56	.946	48.285	48.926	2.789	
		19	12	53.66	1.69	.06	.54	2.02	17.54	23.27	.00	.12	98.90	.939	47.250	49.549	3.201	
		20	13	53.70	1.13	.07	.81	1.93	18.03	23.61	.04	.17	99.49	.943	47.032	49.967	3.001	
		39	17	53.76	1.59	.04	.60	1.85	17.52	23.25	.00	.09	98.70	.944	47.383	49.674	2.943	
		47	20	53.88	2.09	.08	1.22	1.83	16.84	22.98	.02	.18	99.12	.943	48.039	48.975	2.986	
		48	21	54.89	0.56	.04	.16	1.24	17.57	24.14	.01	.10	98.71	.962	48.717	49.330	1.953	
783A-18R-1, 79–82	H350	203	66	57.23	1.11	.01	.24	5.67	34.52	0.45	.02	.08	99.33	.916	0.851	90.784	8.366	Harzburgite
		220	67	57.86	1.75	.00	.38	5.70	33.99	0.78	.02	.09	100.57	.914	1.485	90.043	8.472	
		221	68	57.92	1.36	.00	.52	5.59	34.56	0.52	.01	.07	100.55	.917	0.982	90.780	8.238	
		222	69	57.67	2.39	.02	.50	5.71	34.25	0.52	.02	.05	101.13	.914	0.988	90.543	8.469	
		223	70	56.54	1.91	.00	.52	5.97	34.60	0.51	.00	.08	100.13	.912	0.957	90.302	8.741	
		209	72	54.10	1.71	.03	.77	1.97	17.82	22.82	.01	.07	99.30	.942	46.430	50.441	3.128	
		216	73	54.97	2.08	.05	.81	2.06	17.45	23.54	.03	.08	101.07	.938	47.628	49.119	3.253	
		217	74	54.63	1.86	.03	.80	2.12	17.32	23.44	.02	.10	100.32	.936	47.651	48.985	3.364	
		218	75	55.20	1.97	.01	.78	2.16	18.00	22.05	.02	.10	100.29	.937	45.205	51.339	3.456	
		219	76	54.77	1.47	.03	.72	1.79	17.27	23.85	.01	.07	99.98	.945	48.403	48.761	2.835	
783A-18R-1, 100–103	H355	65	23	54.09	1.52	.04	.25	1.75	17.79	23.09	.01	.11	98.65	.948	46.925	50.299	2.776	Harzburgite
		69	24	54.32	1.34	.03	.63	1.60	17.31	23.25	.00	.08	98.56	.951	47.858	49.571	2.571	
		71	25	53.88	1.90	.04	.78	2.18	17.60	21.60	.00	.09	98.07	.935	45.201	51.239	3.561	
		821	1	56.27	1.91	.03	.75	5.79	35.07	0.40	.01	.16	100.39	.915	0.745	90.841	8.414	
		822	2	56.10	1.71	.01	.40	5.77	35.17	0.47	.00	.08	99.71	.916	0.872	90.773	8.355	
		823	3	56.12	1.68	.02	.49	5.81	34.39	0.56	.00	.09	99.16	.913	1.058	90.376	8.566	
		824	4	56.34	1.69	.02	.46	5.76	34.62	0.82	.01	.10	99.82	.915	1.533	90.060	8.406	
		825	5	56.30	1.63	.01	.37	5.75	34.93	0.57	.00	.05	99.61	.915	1.062	90.573	8.365	
		826	6	56.07	1.56	.02	.40	5.75	34.99	0.75	.00	.07	99.61	.916	1.391	90.285	8.324	
		818	11	53.40	1.31	.02	.67	1.69	17.89	24.11	.01	.08	99.18	.950	47.915	49.463	2.621	
		819	12	52.56	1.54	.00	.77	1.82	17.60	24.19	.01	.12	98.61	.945	48.287	48.877	2.836	
		820	13	53.35	1.01	.04	.62	1.75	18.19	23.85	.00	.07	98.88	.949	47.207	50.089	2.704	
784A-37R-1, 6–9	H410	334	39	58.12	1.83	.00	.54	5.36	33.56	0.65	.01	.10	100.17	.918	1.26	90.62	8.12	Harzburgite
		340	40	58.38	1.85	.00	.61	5.24	33.84	0.51	.01	.09	100.53	.920	0.99	91.10	7.91	
		341	41	58.31	1.92	.01	.57	5.24	33.99	0.62	.00	.09	100.75	.920	1.19	90.94	7.87	
		327	42	55.79	1.45	.02	.49	1.86	17.43	23.36	.01	.08	100.49	.944	47.61	49.43	2.96	
		328	43	56.38	1.05	.02	.40	1.56	17.75	23.77	.00	.07	101.00	.953	47.84	49.70	2.45	
		329	44	55.76	1.89	.02	.69	1.93	17.72	22.73	.01	.10	100.85	.942	46.49	50.43	3.08	
		339	45	55.46	1.56	.03	.69	1.87	17.32	22.99	.01	.08	100.01	.943	47.36	49.64	3.01	
784A-38R-2, 87–89	H420	230	46	57.81	1.55	.01	.48	5.32	34.05	0.96	.00	.09	100.27	.919	1.83	90.26	7.91	Harzburgite
		231	47	57.04	1.42	.02	.46	5.48	34.42	0.88	.01	.09	99.82	.918	1.66	90.28	8.06	
		238	48	57.71	1.66	.02	.60	5.33	34.08	0.73	.02	.11	100.26	.919	1.40	90.65	7.95	
		233	49	55.02	1.46	.06	.71	1.78	17.68	23.40	.02	.07	100.20	.947	47.38	49.81	2.81	
		234	50	54.45	1.64	.04	.79	1.93	17.59	23.47	.03	.11	100.05	.942	47.46	49.49	3.05	
		236	52	55.13	1.41	.03	.60	1.99	17.82	23.22	.02	.12	100.34	.941	46.85	50.02	3.13	
784A-41R-CC, 8–11	H435	260	53	58.30	1.49	.02	.38	5.49	34.33	0.34	.01	.07	100.43	.918	0.65	91.17	8.18	Harzburgite
		262	54	58.08	1.31	.01	.23	5.34	35.08	0.46	.01	.11	100.63	.921	0.86	91.34	7.80	
		268	55	57.24	1.87	.03	.55	5.20	34.35	0.59	.01	.14	99.98	.922	1.13	91.13	7.74	
		259	56	55.49	1.47	.04	.52	1.99	18.03	22.86	.02	.08	100.50	.942	46.18	50.68	3.14	

APPENDIX D (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
		261	57	55.30	1.21	.04	.47	1.83	17.82	23.49	.02	.08	100.26	.946	47.25	49.87	2.87	
		265	58	55.28	1.37	.04	.47	1.87	17.52	23.47	.01	.08	100.11	.943	47.60	49.44	2.96	
784A-42R-1, 12–15	H440	56	1	57.29	1.20	.02	.30	5.61	34.61	0.52	.01	.08	99.64	.917	0.98	90.77	8.25	Harzburgite
		57	2	56.62	1.77	.02	.55	5.44	34.51	0.67	.00	.10	99.68	.919	1.27	90.71	8.02	
		58	3	56.38	1.74	.04	.67	5.70	34.06	1.00	.00	.16	99.75	.914	1.89	89.69	8.42	
		60	4	57.15	1.89	.01	.58	5.70	34.29	0.69	.01	.08	100.40	.915	1.31	90.28	8.42	
		64	5	57.46	1.71	.02	.54	5.51	34.44	0.60	.00	.09	100.37	.918	1.14	90.72	8.14	
		65	6	56.39	1.64	.03	.47	5.53	34.47	0.62	.00	.09	99.24	.917	1.17	90.67	8.16	
		66	7	56.42	1.68	.03	.42	5.36	33.92	0.79	.01	.06	98.69	.919	1.51	90.47	8.02	
		67	8	56.43	2.06	.02	.58	5.52	34.16	0.74	.00	.06	99.57	.917	1.41	90.40	8.20	
		59	9	53.87	1.56	.04	.56	1.93	17.40	24.48	.00	.10	99.94	.941	48.77	48.23	3.00	
		61	10	53.85	0.83	.03	.29	1.77	17.76	24.75	.01	.08	99.37	.947	48.68	48.60	2.72	
		62	11	53.91	1.90	.05	.92	2.10	17.12	24.05	.01	.09	100.15	.936	48.58	48.11	3.31	
		63	12	53.56	1.23	.03	.51	1.96	17.38	24.40	.01	.10	99.18	.940	48.69	48.25	3.05	
784A-45R-1, 76–80	H455	242	60	58.22	1.37	.00	.47	5.09	34.61	0.65	.01	.08	100.50	.924	1.23	91.24	7.53	Harzburgite
		247	61	56.95	1.34	.02	.41	5.05	35.08	0.63	.01	.10	99.59	.925	1.18	91.44	7.38	
		251	62	57.85	1.39	.00	.54	5.06	34.34	0.52	.00	.07	99.77	.924	1.00	91.45	7.56	
		249	64	55.27	0.96	.03	.49	1.59	17.83	23.71	.01	.10	99.99	.952	47.65	49.85	2.49	
		250	65	55.51	1.19	.03	.54	1.86	17.71	23.29	.00	.11	100.24	.944	47.16	49.90	2.94	
784A-45R-1, 95–98	H460	11	13	56.55	1.25	.01	.41	5.48	34.56	0.70	.00	.08	99.04	.918	1.32	90.62	8.06	Harzburgite
		12	14	56.30	1.17	.02	.36	5.50	34.72	0.44	.00	.10	98.61	.918	0.83	91.08	8.09	
		13	15	57.04	1.57	.02	.60	5.37	33.40	1.78	.02	.08	99.88	.917	3.39	88.61	7.99	
		14	16	56.91	1.66	.02	.52	5.35	34.06	0.86	.00	.10	99.48	.919	1.64	90.39	7.97	
		17	17	56.68	1.61	.04	.57	5.26	33.76	1.03	.00	.09	99.04	.920	1.98	90.14	7.88	
		18	18	57.05	1.44	.02	.52	5.35	34.60	0.70	.00	.07	99.75	.920	1.32	90.80	7.88	
		19	19	56.58	1.70	.03	.58	5.46	34.57	0.65	.00	.07	99.64	.919	1.23	90.73	8.04	
		21	20	57.08	1.51	.03	.54	5.37	34.59	0.51	.01	.05	99.69	.920	0.97	91.10	7.93	
		9	22	53.28	1.20	.04	.57	1.69	17.55	24.45	.00	.09	98.87	.949	48.72	48.65	2.63	
		10	23	53.58	1.20	.04	.59	1.73	17.60	24.33	.00	.09	99.16	.948	48.50	48.81	2.69	
		15	24	52.79	1.73	.04	.82	1.99	17.48	24.02	.04	.10	99.01	.940	48.14	48.74	3.11	
		16	25	53.44	1.49	.02	.67	1.90	17.70	24.02	.00	.10	99.34	.943	47.92	49.12	2.96	
784A-45R-1, 128–133	H470	363	66	57.41	0.95	.01	.27	5.08	34.64	0.43	.01	.08	98.88	.924	0.82	91.64	7.54	Harzburgite
		373	67	56.91	1.42	.01	.53	5.05	34.05	0.88	.02	.11	98.98	.923	1.69	90.76	7.55	
		374	68	57.01	1.25	.01	.38	5.07	34.35	0.58	.01	.11	98.77	.924	1.11	91.33	7.56	
		362	69	53.95	1.34	.02	.62	1.75	17.84	23.48	.01	.10	99.11	.948	47.28	49.97	2.75	
		366	70	54.12	1.17	.04	.55	1.60	17.60	23.45	.01	.08	98.62	.951	47.68	49.78	2.54	
		372	71	53.93	1.36	.05	.60	1.73	17.77	23.37	.03	.10	98.94	.948	47.27	50.00	2.73	
784A-45R-2, 1–5	H475	405	85	57.08	1.57	.01	.52	5.15	34.48	0.79	.02	.07	99.69	.923	1.50	90.89	7.62	Harzburgite
		406	86	56.82	1.61	.04	.53	5.15	34.68	0.74	.02	.06	99.65	.923	1.40	91.02	7.58	
		412	87	57.12	1.72	.04	.62	5.07	34.19	0.89	.00	.10	99.75	.923	1.70	90.75	7.55	
		413	88	57.01	1.77	.01	.61	5.09	34.11	1.18	.01	.09	99.88	.923	2.24	90.21	7.55	
		410	90	55.14	1.28	.04	.59	1.91	18.28	22.77	.01	.09	100.11	.945	45.82	51.18	3.00	
		411	91	54.99	1.20	.04	.58	1.69	17.52	23.43	.01	.10	99.56	.949	47.70	49.62	2.69	
		414	92	54.53	1.58	.04	.77	1.61	17.65	23.55	.01	.09	99.83	.951	47.71	49.75	2.55	
784A-45R-2, 40–42	H480	26	26	57.78	1.45	.02	.38	5.35	34.96	0.65	.00	.10	100.69	.921	1.22	90.97	7.81	Harzburgite
		27	27	57.74	1.24	.02	.37	5.53	34.52	0.42	.03	.05	100.72	.919	0.78	91.21	8.01	
		28	28	56.08	1.57	.01	.47	5.79	35.81	0.28	.00	.09	100.10	.917	0.51	91.21	8.27	
		30	29	56.89	1.70	.02	.51	5.44	35.01	0.89	.00	.07	100.53	.920	1.65	90.46	7.89	

APPENDIX D (continued).

Hole, core, section, interval (cm)	Rock number[a]	Point number	Analysis number	SiO_2	Al_2O_3	TiO_2	Cr_2O_3	FeO	MgO	CaO	K_2O	NiO	Total	Mg#	Ca (%)	Mg (%)	Fe (%)	Rock name
		31	30	56.90	1.41	.02	.51	5.41	35.02	0.88	.00	.10	100.25	.920	1.63	90.52	7.85	
		32	31	56.40	1.56	.01	.51	5.40	35.07	0.90	.00	.10	99.95	.920	1.67	90.51	7.82	
		33	32	56.50	1.52	.02	.54	5.45	35.17	0.94	.02	.10	100.26	.920	1.74	90.40	7.86	
		34	33	56.99	1.47	.02	.44	5.33	34.79	0.83	.01	.05	99.93	.921	1.55	90.65	7.79	
		22	35	53.71	1.61	.04	.85	1.86	17.45	24.42	.01	.08	100.03	.944	48.70	48.41	2.89	
		23	36	53.95	1.58	.03	.74	1.80	17.46	24.39	.00	.09	100.04	.945	48.70	48.50	2.81	
		24	37	53.71	1.70	.04	.84	2.00	17.32	24.14	.01	.11	99.87	.939	48.48	48.39	3.13	
		25	38	54.51	0.51	.03	.18	1.60	18.28	24.91	.01	.14	100.17	.953	48.28	49.30	2.42	
784A-45R-CC, 11–14	H485	312	72	57.97	1.73	.01	.48	5.19	33.88	0.87	.00	.12	100.25	.921	1.67	90.55	7.78	Harzburgite
		313	73	58.06	1.59	.03	.51	5.28	33.81	0.77	.01	.10	100.16	.919	1.48	90.58	7.94	
		314	74	57.69	1.77	.01	.49	5.28	34.09	0.53	.00	.10	99.96	.920	1.02	91.07	7.91	
		308	75	55.44	1.29	.04	.50	1.89	17.78	22.89	.01	.09	99.93	.944	46.62	50.38	3.00	
		309	76	55.51	1.11	.03	.47	1.58	17.57	23.90	.02	.06	100.25	.952	48.21	49.30	2.49	
		310	77	55.51	1.35	.04	.58	1.66	17.54	23.73	.01	.09	100.51	.950	48.01	49.37	2.62	
784A-45R-CC, 23–27	H490	380	78	57.83	1.12	.00	.41	5.10	34.92	0.48	.02	.08	99.96	.924	0.90	91.59	7.50	Harzburgite
		387	79	56.91	1.68	.01	.50	5.05	34.93	0.56	.00	.08	99.72	.925	1.05	91.52	7.42	
		378	81	54.06	1.69	.03	.88	1.80	17.14	23.19	.02	.07	98.88	.944	47.87	49.23	2.90	

[a] In this paper (see Table 3).