Table 1. Locations, Water Depths, Lithologies, and Dominant Deformation and Alteration Characteristics of Samples Collected by Submersible in 2003, Atlantis Massif South Wall[a]

Sample	Depth, m	Latitude, N	Longitude, W	Rock Type	Dominant Deformation and Alteration Features	Protolith/Degree of Metasomatism	Comments
3863-1157	862	30°7.506′	42°7.410′	Amphibole fels	Static metasomatism; precursor HT deformation of porphyroclasts; multiple veins	Gb/H	Serp-trem veins (up to 5mm thick); late cc vein cut by pelagic carb vein with microfossils
3863-1204	862	30°7.506′	42°7.410′	Talc-amph schist	Heterogeneous mylonitic texture	UM/H	
3863-1210a	862	30°7.506′	42°7.410′	Amphibole fels	Static metasomatism, precursor HT deformation of porphyroclasts	Gb?/H	Piece 1 of 2
3863-1210b	862	30°7.506′	42°7.410′	Talc-amph schist	Moderate crystal-plastic deformation	UM/H	Piece 2 of 2
3863-1212	862	30°7.506′	42°7.410′	Serpentinite	Local serp ribbon texture and minor fracturing	UM/N-L	Oxidized; late cc veins cut by pelagic carb veins with microfossils
3863-1235	837	30°7.512′	42°7.416′	Talc-amph schist	Strong crystal-plastic deformation	UM/H	Kinked opx; oxidized; late cc veins
3863-1236	837	30°7.512′	42°7.416′	Chlorite-rich rock (blackwall)	Static metasomatism	UM/H	Fe-rich clinochlore (Boschi et al., 2006); late pelagic carb veins
3863-1240	837	30°7.512′	42°7.410′	Talc-amph schist	Strong crystal-plastic deformation; heterogeneous metasomatism	UM/H	Oxidized; chl-rich domains; late cc and pelagic carb veins
3863-1300	834	30°7.512′	42°7.410′	Talc-amph fels	Moderate crystal-plastic deformation; heterogeneous metasomatism	UM/H	Immediately below breccia contact; oxidized; chl-rich domains; late pelagic carb infillings
3863-1301	834	30°7.512′	42°7.410′	Serpentinite	Static serpentinization; precursor HT deformation of opx porphyroclasts; multiple veins	UM/N-L	Immediately below breccia contact; oxidized; serp veins cut by cc/carb veins
3863-1419	794	30°7.542′	42°7.356′	Talc-amph schist (mylonite)	Strong crystal-plastic deformation	UM/H	At breccia contact; relict oxidized serpentinite domains; late cc veins
3863-1425	794	30°7.542′	42°7.356′	Talc-amph schist (mylonite)	Strong crystal-plastic deformation	UM/H	At breccia contact; folded relicts of oxidized serpentinite domains; late cc veins
3863-1526	778	30°7.476′	42°7.140′	Talc-amph schist	Strong crystal-plastic deformation; heterogeneous metasomatism; multiple veins	UM/H	Oxidized serpentinite preserved in center; serp + talc veins cut by late cc veins
3865-1245	795	30°7.452′	42°7.218′	Amph-chl schist (mylonitic)	Strong crystal-plastic deformation; heterogeneous metasomatism	Gb/H	At breccia contact
3865-1355	783	30°7.494′	42°7.128′	Amph schist	Weak foliation defined by amphibole	Gb/H	Porphyroclasts (relict px?); nearly monomineralic
3867-1253	843	30°7.362′	42°7.200′	Mylonitic gabbro	Strong crystal-plastic deformation; dyn rextl; multiple veins	Gb/H	Amph veins, rare plg; preh and zeol veins and cavity fillings

Table 1. (continued)

Sample	Depth, m	Latitude, N	Longitude, W	Rock Type	Dominant Deformation and Alteration Features	Protolith/Degree of Metasomatism	Comments
3867-1254	843	30°7.356′	42°7.200′	Mylonitic gabbro	Strong crystal-plastic deformation; dyn rextl; multiple veins	Gb/H	Preh and zeol veins
3867-1558	748	30°7.488′	42°7.140′	Medium-grained gabbro	Strong crystal-plastic deformation; plg-neoblasts; dyn rextl; heterogeneous metasomatism	Gb/L-M	1.5m below breccia contact; HT brown amph and LT tremolitic amph; chl-rich metasomatic rim
3867-1603	748	30°7.488′	42°7.134′	Medium-grained gabbro	Strong crystal-plastic deformation, plg-neoblast; dyn rextl; heterogeneous metasomatism	Gb/L-M	3.5m below breccia contact; HT brown amph and LT tremolitic amph, chl-rich rim, late pelagic carb vein
3867-1607	751	30°7.494′	42°7.140′	Meta-pyroxenite?	Weak crystal-plastic deformation; local metasomatic domains	UM/N-L	5.5m below breccia contact; px partially to totally replaced by HT brown amph, chl-rich domains
3867-1621	759	30°7.482′	42°7.140′	Serpentinite	Static serpentinization; multiple veins	UM/L	~10m below breccia contact; oxidized; serp + amph±chl veins cut by late cc veins
3867-1623	759	30°7.488′	42°7.140′	Serpentinite	Static serpentinization; heterogeneous metasomatism; multiple veins	UM/L-M	~10m below breccia contact; oxidized; serp + amph±chl veins cut by late cc veins
3869-1126	839	30°7.368′	42°7.194′	Coarse-grained gabbro	Heterogeneous deformation and metasomatism	Gb/L-M	
3869-1220	781	30°7.458′	42°7.182′	Talc-amph schist (mylonitic)	Strong crystal-plastic deformation	UM/H	
3872-1136a	798	30°7.482′	42°7.134′	Serpentinite	Static alteration; multiple veins	UM/H	Serp + amph±chl veins cut by late cc veins
3872-1316	812	30°7.452′	42°7.164′	Serpentinite	Static serpentinization; heterogeneous metasomatism; multiple veins	UM/N-L	Serp veins cut by late cc veins
3872-1350	798	30°7.470′	42°7.146′	Mylonitic gabbro	Weak foliation; incipient rodingitization, multiple veins	Gb/M	HT brown amph, local trem + chl-rich metasomatic domains; preh + chl after plg; preh vein
3873-1124	959	30°7.416′	42°7.842′	Serpentinite/ talc-amph schist	Strong crystal-plastic deformation; localized metasomatism; multiple veins	UM/H	Relict oxidized serpentinite in center; serp + amph±chl veins cut by late cc and pelagic carb veins
3873-1149	958	30°7.386′	42°7.818′	Micro-gabbro	Incipient rodingitization	Gb/M	Chl vein
3873-1216	962	30°7.356′	42°7.806′	Serpentinite/ talc-amph schist	Heterogeneous metasomatism and cataclastic deformation; multiple veins	UM/M-H	Relict oxidized serpentinite with relict ol; serp veins cut by cc veins; carb crust on surface
3873-1245	956	30°7.356′	42°7.806′	Serpentinite	Local cataclastic deformation; heterogeneous metasomatism	UM/M	Oxidized; metasomatic rim; serp + amph±chl veins

Table 1. (continued)

Sample	Depth, m	Latitude, N	Longitude, W	Rock Type	Dominant Deformation and Alteration Features	Protolith/Degree of Metasomatism	Comments
3873-1250	956	30°7.338′	42°7.776′	Amph-rich talc schist (mylonitic)	Strong crystal-plastic deformation	Gb/H	Possibly mixed protolith
3873-1300	950	30°7.338′	42°7.776′	Serpentinite	Moderate crystal-plastic deformation; ribbon textured serp; multiple veins	UM/M	Oxidized; relict ol; metasomatism in local mylonitic domains; serp veins cut by late cc veins
3873-1317	943	30°7.338′	42°7.764′	Serpentinite/ talc-amph schist	Heterogeneous deformation and metasomatism; multiple veins	UM/M	Relict oxidized serpentinite with local cataclastic def; metasomatic domains with moderate crystal-plastic def; serp + amph±chl veins cut by late cc veins
3873-1344	923	30°7.332′	42°7.686′	Mylonitic serpentinite/ talc schist	Heterogeneous crystal-plastic deformation; mylonite and metasomatism in distinct zones	UM/M-H	At contact to sedimentary caprocks; relict serpentinite mylonite with preserved ol; oxidation at contact to metasomatic zones
3873-1413	917	30°7.374′	42°7.614′	Serpentinite	Moderate crystal-plastic deformation; ribbon textured serp; metasomatism in local mylonitic domains	UM/L-M	Precursor HT deformation of opx porphyroclasts; relict ol; serp veins
3873-1544	797	30°7.500′	42°7.392′	Mylonitic metagabbro	Strong crystal-plastic deformation, plg-neoblast, dyn rextl	Gb/N-L	HT brown amph after primary px; originally coarse grained
3873-1548	797	30°7.500′	42°7.392′	Mylonitic metagabbro	Strong crystal-plastic deformation, plg-neoblast, dyn rextl	Gb/N-L	HT brown amph after primary px; originally coarse grained
3876-1117	869	30°7.458′	42°7.122′	Medium-grained gabbro	Minor crystal-plastic deformation	Gb/N-L	HT green amph after primary px; def twin in plg; cut by zeolite veins. Pelagic carb coating on surface
3876-1215	798	30°7.482′	42°7.140′	Coarse-grained pyroxenite	Net-veined	UM/L	HT green amph after px; veins filled with preh + zeol
3876-1310	774	30°7.656′	42°.834′	Serpentinite/ Incipient talc fels	Static serpentinization and metasomatism, microfractures	UM/M	At breccia contact; talc-amph filled microfractures cut by late cc veins
3877-1144	1150	30°7.026′	42°7.116′	Serpentinite (mylonitic)	Heterogeneous crystal-plastic deformation and metasomatism; ribbon textured serp; multiple veins	UM/M	Oxidized; serp + amph±chl veins cut by late cc veins and carb infillings
3877-1158	1115	30°7.026′	42°7.122′	Serpentinite (local metasomatism)	Heterogeneous crystal-plastic deformation and metasomatism, microfractures; multiple veins	UM/L-M	Metasomatism associated with 3 cm thick talc-trem-chl vein, cut by late cc veins
3877-1205	1115	30°7.020′	42°7.122′	Coarse-grained metagabbro	Strong rodingitization, veined	Gb/H	Preh-rich; cc veins

Table 1. (continued)

Sample	Depth, m	Latitude, N	Longitude, W	Rock Type	Dominant Deformation and Alteration Features	Protolith/Degree of Metasomatism	Comments
3877-1307	1017	30°7.218′	42°7.140′	Serpentinite	Ribbon textured serp, microfractures; multiple veins	UM/N-L	Weakly oxidized; serp veins; orthogonal cc vein network
3877-1313	1009	30°7.224′	42°7.140′	Amph-chl fels	Minor crystal plastic deformation; multiple veins	UM/H	Relict oxidized serpeninite domains; relict Cr-spinel; up to 5 cm thick trem-asbestos veins
3877-1344	913	30°7.320′	42°7.206′	Serpentinite	Ribbon textured serp	UM/N-L	Serp veins; in-situ brecciation with pelagic carb infilling
3877-1406	908	30°7.320′	42°7.200′	Serpentinite	Well preserved porphyroclastic texture; ribbon and hourglass serpentine; multiple veins	UM/N-L	Precursor HT def. of opx porphyroclasts; serp veins cut by late cc veins
3879-1253	847	30°7.476′	42°7.170′	Serpentinite	Static metasomatism	UM/N-L	Late cc veins
3880-1349	819	30°7.236′	42°7.086′	Course-grained Fe-Ti gabbro	Plg-neoblast, dyn rextl	Gb/L	Oxide-rich; HT green amph after px; local preh after plg; chl vein
3881-1119	860	30°7.404′	42°7.128′	Serpentinite	Static serpentinization; multiple veins	UM/N	Serp veins cut by late cc veins
3881-1132a	822	30°7.422′	42°7.098′	Serpentinite	Ribbon textured serp; multiple veins	UM/N	Serp veins; minor late cc veins

[a] Mineral abbreviations and textures: amph, amphibole; serp, serpentine; trem, tremolite; chl, chlorite; ol, olivine; plg, plagioclase; px, pyroxene; opx, orthopyroxene; preh, prehnite; zeol, zeolite; cc, calcite; carb, sedimentary carbonate; def, deformation; dyn rextl, dynamic recrystallization mineral fabrics; HT, high temperature (amphibolite-granulate facies); LT, lower temperature (greenschist facies). Rock abbreviations: UM, ultramafic protolith; Gb, gabbroic protolith. Degree of metasomatism reflects the relative modal amounts of the characteristic metasomatic minerals talc, amphibole, chlorite: N, negligible <10%; L, low 10–30%; M, moderate 30–60%; H, >60%.