

**IODP EXPEDITION 305 DAILY SCIENCE REPORTS  
7 January–2 March 2005**

TO: Tom Davies  
FM: Jay Miller

JA Daily Science Report for Expedition 305, 7 January 2005.

Arrived Ponta Delgada, dockside by 2130 hr.

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JA Daily Science Report for Expedition 305, 8–11 January 2005.

Dockside, Ponta Delgada

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JA Daily Science Report for Expedition 305, 12–14 January 2005.

Underway to Hole U1309D.

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JA Daily Science Report for Expedition 305, 15 January 2005.

Underway to Hole U1309D. ETA Sunday afternoon, 16 January.

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JA Daily Science Report for Expedition 305, 16 January 2005.

LOCATION: Site U1309 (prospectus site AMFW-01A)  
Latitude: 30°10.1195'N Longitude: 42°07.1311'W Water depth: 1645 mbsl

SCIENCE UPDATE: We arrived on Site U1309 early afternoon local time. Magnetics data were collected along a spreading flowline over  $\leq 2$  Myr crust from the east flank of the Mid-Atlantic Ridge to the drill site. These data fill a gap left by prior, widely-spaced survey tracks. We began tripping pipe for the reoccupation of Hole U1309D at  $\sim 1700$  hr.

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JA Daily Science Report for Expedition 305, 17 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-79G to 85R (401.3 to 429.4 mbsf, 80.4% recovery) continued in the slightly to moderately altered, medium coarse grained olivine gabbro recovered as Expedition 304 concluded. Olivine gabbro dominates the cored section, with intervals of coarse grained to pegmatitic gabbro, oxide gabbro, and olivine-bearing gabbro. A  $\sim 1$  m thick epidote-rich band bisects one of these coarse grained gabbroic intervals. Deformation is rare and localized, and alteration while moderate to intense near veins, is slight to moderate elsewhere.

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JA Daily Science Report for Expedition 305, 18 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-86R to 94R (429.4 to 472.6 mbsf, 80% recovery) are medium-grained olivine gabbro and coarse-grained gabbro, alternating on a scale of less than 20 cm to a few meters. Intervals of coarse-grained oxide gabbro (<1 m thick) are rare. Alteration is slight to moderate (<10% to 50%) overall, with rare, more pervasively altered intervals or patches, commonly associated with veins. Evidence of deformation continues to be rare, although a few more fractured intervals have been recovered. Magmatic foliation where present is commonly subtle (somewhat more evident in medium-grained olivine gabbro than in coarse-grained gabbro). A thin (< 50 cm) interval of diabase was recovered in the bottom of Core U1309D-94R.

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JA Daily Science Report for Expedition 305, 19 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-95R to -103R (472.6 to 515.8 mbsf, 80% recovery) are predominantly coarse-grained gabbro and olivine-bearing gabbro, with several intervals of medium- to coarse-grained olivine gabbro. The top of Core U1309D-100R (497 mbsf) contains a 40-50 cm thick interval with abundant clinopyroxene and serpentinized olivine, with very little plagioclase, and grades down section into olivine gabbro (abundance of plagioclase increases to >40% over 20-30 cm). Magmatic fabric in the coarse-grained gabbro is for the most part subtle, with thin intervals (a few tens of cm) with more pronounced crystal orientation. The coarser grained gabbro intervals generally appear to be more intensely altered than the medium- to coarse-grained olivine-bearing gabbro.

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JA Daily Science Report for Expedition 305, 20 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-104R to -107R (515.8 to 535.0 mbsf, 82% recovery) are intercalated coarse-grained gabbro and olivine-bearing gabbro with medium-coarse grained olivine gabbro. Many contacts are sharp, but gradational transitions between lithologies are not uncommon. Modal mineralogy (generally abundance of olivine and clinopyroxene) can vary over a few centimeters, even in intervals characterized as an individual lithologic unit. Alteration is generally slight to moderate (commonly less than 20%, with some intervals as much as 50% altered). Magmatic fabric is subtle and indicators of strain are rare to nonexistent throughout this cored interval.

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JA Daily Science Report for Expedition 305, 21 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-108R to -115R (535.0 to 573.4 mbsf, 84% recovery) are relatively fresh (<15% altered) medium- to coarse-grained gabbro with patchy intervals of olivine-bearing gabbro and thin (few centimeter) seams of oxide- and sulfide-bearing gabbro. Below are intervals of pegmatitic gabbro in

medium-to coarse-grained gabbro. Gabbro grades into medium-grained, olivine-rich gabbro, and eventually into an ~2 m thick interval of serpentinized wehrlite. Plagioclase abundance then gradually increases down section and olivine abundance decreases, coincident with an increase in grain size to coarse-grained gabbro. Below this interval, grain size decreases and olivine abundance increases, and we recovered another 50-cm-thick interval of serpentinized wehrlite. The upper and lower contacts in this interval are indistinct or not recovered, however, through most of the interval there is an anastomosing, subvertical contact with medium-grained olivine gabbro. Below the olivine-rich interval, the core returns to medium-coarse grained olivine gabbro with thin intervals of very coarse-grained to pegmatitic gabbro. Evidence of deformation is mostly restricted to thin intervals of cataclasis with no robust evidence of significant strain (also reflected in high recovery). Alteration overall is slight to moderate, but more intense near veins and fractures.

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JA Daily Science Report for Expedition 305, 22 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-116R to -124R (573.4 to 616.6 mbsf, 83% recovery) is varitextured gabbro, olivine-bearing gabbro, and oxide gabbro. Grain size is predominantly coarse, with several intervals of medium- to coarse-grained, commonly olivine-bearing gabbro. Oxide gabbro intervals range from thin (few centimeter) seams to 1 m thick bands with several modal percent oxide. Alteration is variable, but generally 15-30%. Rare thin intervals (<20 cm thick) show evidence of deformation, but crystal-plastic fabric is, for the most part, subtle. Contacts between units occur as both sharp and gradational transitions.

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JA Daily Science Report for Expedition 305, 23 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-125R to -130R (616.6 to 645.4 mbsf, 81% recovery) are predominantly coarse-grained gabbro, with intervals of pegmatitic gabbro, medium- to coarse-grained olivine-bearing gabbro, and coarse-grained oxide gabbro. A diabase dike with a sharp upper contact and a sharp but crenulate lower contact intrudes the gabbro. A second interval of diabase has a subvertical, sharp but wavy contact through the middle part of the cored interval. Alteration is heterogeneous throughout; some intervals are fresh, others pervasively altered. Epidote is commonly present in patches throughout the cored interval. There are some intervals (tens of cm thick) with strong foliation but, particularly in the coarser grained gabbros, evidence of deformation (other than low strain cataclasis) is rare.

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JA Daily Science Report for Expedition 305, 24 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-131R to -135R (645.4 to 669.4 mbsf, 80% recovery) are coarse-grained, olivine-bearing gabbro, with intervals of medium-grained olivine-bearing gabbro, coarse-grained to pegmatitic gabbro, and coarse-grained oxide gabbro. Coarse-grained intervals are, in general, more pervasively altered. Epidote is present in veins and patches. Intervals with strong foliation are thin and rare, but intervals with subtle magmatic foliation appear to be slightly more common over the last few tens of meters of core.

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JA Daily Science Report for Expedition 305, 25 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-136R to -142R (669.4 to 703.0 mbsf, 82% recovery) are predominantly gabbroic, but there are some astounding textures and lithologic variability in this cored interval. The top of the interval recovered plagioclase-bearing wehrlite, including sharp contacts with cataclastic, coarse-grained gabbro. A subvertical, sheared intrusion of fine-grained oxide gabbro meanders through more than 3 m of core, entraining pieces of the gabbroic wall rock and exhibiting high-temperature deformation. Beneath the oxide gabbro, coarse-grained gabbro overlies an 8-m-thick section of medium- to coarse-grained oxide-bearing gabbro. The lower 10 m of the cored interval recovered medium- to coarse-grained gabbro with intervals of olivine-bearing gabbro.

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JA Daily Science Report for Expedition 305, 26 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-143R to -151R (703.0 to 746.20 mbsf, 73% recovery) are varitextured, medium- to coarse-grained gabbro without strong magmatic fabric. Patches and thin intervals (few tens of cm) of olivine-bearing to troctolitic gabbro occur throughout the cored interval. Core 305-U1309D-146R (~718 mbsf) recovered a 1 m thick, deformed oxide gabbro. The lower part of the cored interval (interleaved medium coarse to coarse-grained gabbro) is intersected by 1 cm thick, subvertical carbonate veins. Overall alteration is slight to moderate, more intense in halos around fractures.

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JA Daily Science Report for Expedition 305, 27 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-152R to -154R (746.2 to 757.8 mbsf, 41% recovery). Core 305-U1309D-152R was a low recovery interval of deformed gabbroic breccia. The last core of our third bit run (Core 305-U1309D-153R) returned to predominantly undeformed medium- to coarse-grained gabbro with a few diabase fragments. The first core cut with a new bit (Core 305-U1309D-154R) is diabase.

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JA Daily Science Report for Expedition 305, 28 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-155R to -160R (757.8 to 784.6 mbsf, 88% recovery) continue in diabase to microgabbro, to a sharp contact with medium-coarse grained olivine gabbro. Coarse-grained gabbro interfingers at the meter scale with medium-coarse grained olivine-bearing gabbro to the bottom of the cored interval with rare thin (few cm) seams of oxide gabbro. Alteration is low in general to moderate near veins and fractures, and evidence of strong deformation is rare.

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JA Daily Science Report for Expedition 305, 29 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-161R to -167R (784.6 to 818.2 mbsf, 84% recovery) are gabbro and olivine-bearing gabbro. Grain size varies from medium to coarse, and rarely to pegmatitic, with clinopyroxene crystals as large as 15 cm. Modal and grain size transitions are, for the most part, fairly abrupt, but the scale ranges from layered intervals only a few centimeters to a few tens of centimeters thick, to sections of coarse-grained gabbro a few meters thick. Only a couple of thin seams of oxide-bearing gabbro were recovered, as well as a 5 cm thick, moderately steeply dipping diabase dike. Alteration is generally low, and some magmatic fabric is present, expressed primarily in the finer grained gabbroic rocks.

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JA Daily Science Report for Expedition 305, 30 January 2005.

SCIENCE UPDATE: Cores 305-U1309D-168R to -171R (818.2 to 837.4 mbsf, 95% recovery) are medium-coarse grained gabbro. A thin seam of oxide gabbro is in Core U1309D-168R, however, the rest of the cored interval is modally homogeneous. Intervals of coarse-grained gabbro are common, and many contacts between coarse-grained and medium-coarse grained intervals are sharp and subhorizontal, although gradational transitions in grain size are also present. Alteration is intense in some places, but in general the rocks are less than 20% altered.

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JA Daily Science Report for Expedition 305, 31 January 2005.

SCIENCE UPDATE: First two logging runs complete. Triple combo and FMS runs both successful. Wireline heave compensation tests underway.

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JA Daily Science Report for Expedition 305, 1 February 2005.

SCIENCE UPDATE: Logging still underway. VSP and UBI runs complete.

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JA Daily Science Report for Expedition 305, 2 February 2005.

SCIENCE UPDATE: All five logging runs completed, data recovered from Triple Combo, FMS/Sonic, VSP, UBI, and GBM. Wireline heave compensation tests completed. Tripping pipe to continue deepening Hole U1309D.

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JA Daily Science Report for Expedition 305, 3 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-172R to -178R (837.4 to 871.0 mbsf, 90% recovery) resumed recovery of medium- to coarse-grained, grading to medium-grained gabbro. Medium-grained olivine gabbro occurs in sharp contact below the

lowest of two 20 cm to 80 cm thick coarse-grained gabbro intervals in Core U1309D-174R (~847 mbsf). The olivine gabbro has distinct modal and grain size layering and overlies an oxide gabbro exhibiting high-temperature deformation. The rest of the cored interval is generally undeformed. Medium- to coarse-grained gabbro with rare thin (tens of cm) intervals of medium- to coarse-grained oxide gabbro characterize the lower part of the cored interval. Alteration is low throughout, primarily manifested in thin cataclastic intervals, as halos around veins, and as alteration of olivine.

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JA Daily Science Report for Expedition 305, 4 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-179R to -184R (871.0 to 899.8 mbsf, 83% recovery) are predominantly coarse-grained gabbro, with intervals of medium-grained gabbro. Most grain size transitions are sharp and dipping, but attitude of dip is variable from steep to subhorizontal. A basaltic dike with a sharp, undulose contact intruded medium-grained gabbro in the upper part of the cored interval. Below the dike, a few irregular patches of oxide gabbro are within a coarse-grained gabbro. The middle of the cored interval recovered a few m thick, varitextured, medium- to coarse-grained oxide gabbro, exhibiting a range of deformation intensities. The lower part of the cored interval is coarse-grained gabbro with rare olivine-rich intervals.

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JA Daily Science Report for Expedition 305, 5 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-185R to -188R (899.8 to 919.0 mbsf, 81% recovery) are medium- to coarse-grained, oxide-bearing gabbro and gabbro, grading down section to coarse-grained, olivine-bearing and olivine gabbro. Modal changes are commonly subtle, but some grain size changes are sharp, planar, and steeply dipping in the core reference frame. Alteration is low, and evidence of strain, while low throughout, seems more pronounced in finer grained intervals.

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JA Daily Science Report for Expedition 305, 6 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-189R to -193R (919.0 to 938.2 mbsf, 93% recovery) are medium-to coarse-grained olivine gabbro to coarse-grained troctolitic gabbro in the upper part of the cored interval. Below the olivine-rich gabbro, the sequence returns to subtly modally and texturally heterogeneous gabbro, with thin intervals of pegmatitic gabbro and disseminated oxide-bearing gabbro. Alteration is low and evidence of deformation is rare.

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JA Daily Science Report for Expedition 305, 7 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-194R to -200R (938.2 to 969.7 mbsf, 97% recovery) are varitextured, medium- to coarse-grained gabbro. Little modal variation

in this cored interval, except in local proportion of plagioclase to pyroxene (only rare minor olivine and or oxide).

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JA Daily Science Report for Expedition 305, 8 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-201R to -206R (969.7 to 994.2 mbsf, 90% recovery) are predominantly medium- to coarse-grained gabbro. Contacts between grain size changes are, in places, sharp and range from subhorizontal to steeply dipping in the core reference frame. However, in some cases transitions between medium- and coarse-grained intervals are gradational. Modal changes are rare, with olivine-rich and olivine-bearing intervals of few tens of centimeters thick, and even more rare thin oxide-bearing intervals. The bottom of Core U1309D-205R and the top of Core U1309D-206R (~990 mbsf) contain a moderately altered diabase at least 1 m thick, intruded into medium-grained olivine gabbro.

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JA Daily Science Report for Expedition 305, 9 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-207R to -210R (994.2 to 1015.2 mbsf, 87% recovery) continue in medium- to coarse-grained gabbro and olivine-bearing gabbro. These cores contain rare, thin, intervals of medium-grained, disseminated oxide gabbro, and intervals with weak magmatic fabric. The cores continue to be only slightly altered overall.

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JA Daily Science Report for Expedition 305, 10 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-207R to -210R (1015.2 to 1048.8 mbsf, 93% recovery) are a complex series of varitextured gabbro and olivine gabbro. Grain size ranges from fine (<2 mm average) to pegmatitic, mode varies from as much as 20% olivine to virtually none. Contacts between grain size changes are commonly sharp, but with variable attitude, while changes in mode are generally (but not exclusively) more gradational. For example, in Core U1309D-214R (~1030 mbsf) a medium-grained olivine gabbro has sharp upper and lower intrusive contacts within coarse-grained gabbro. The upper contact is planar and subhorizontal, while the lower contact is a sharp but crenulate, steeply dipping, sutured igneous boundary. In places variations in grain size occur in patches smaller than the diameter of the core, resulting in islands of coarser grained gabbro nestled within isotropic medium-grained gabbro. Alteration is low (less than 10% except in local intervals) and evidence of deformation is rare to nonexistent.

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JA Daily Science Report for Expedition 305, 11 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-218R to -224R (1048.8 to 1082.4 mbsf, 87% recovery) are olivine gabbro. Grain size is variable on scales of a few cm to intervals of a few meters. Olivine abundance is generally 20%, and clinopyroxene/plagioclase

ranges from 1:1 to 1:2, imparting a leucocratic character in plagioclase-rich intervals. Changes in grain size are commonly sharp, in many intervals steeply dipping to subvertical.

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JA Daily Science Report for Expedition 305, 12 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-225R to -228R (1082.4 to 1101.6 mbsf, 85% recovery) include medium- to coarse-grained gabbro and olivine gabbro. The last two cores recovered from this bit run (Cores 305-U1309D-227R and -228R, 1092 to 1101 mbsf) include a sharp igneous contact with an ~7 m thick interval of olivine-rich troctolite (commonly 80-90% olivine). This interval has a distinct, heterogeneously distributed, anastomosing serpentine foliation, however, locally the intensity of serpentinization is as low as 10%-20%.

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JA Daily Science Report for Expedition 305, 13 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-229R to -237R (1101.6 to 1143.9 mbsf, 69% recovery) continue the striking change in lithologies encountered at the end of our last bit run. Core 305-U1309D-229R starts in medium-grained, leucocratic troctolitic gabbro, that in places has >50% olivine. Down section we pass through coarse-grained gabbro to olivine gabbro that includes a couple of thin shear zones that are steeply dipping in the core reference frame. We also recovered intervals of gabbro with steeply dipping fractures with cm wide alteration halos. The fractured, altered olivine gabbro continues through Core 305-U1039D-231R to troctolite, where the abundance of olivine increases gradationally but rapidly over a few cm, then back to gabbro. The gabbro has a sharp lower contact with olivine-rich troctolite (40-60% olivine). Continuing down section we see troctolite with more and more abundant olivine, as much as 80-90% in some intervals and plagioclase has a distinct interstitial character. There are gradational transitions to more plagioclase-rich troctolite, with coarser grained plagioclase and olivine, to leucocratic troctolite with hints of serpentine foliation. The subvertical serpentine foliation increases in intensity down section, but translates to steeply dipping (40-60i in the core reference frame) in some intervals as the core becomes much more olivine rich (> 80%) with interstitial plagioclase. The foliation appears to become more suppressed as rock becomes less altered. In Core 305-U1309D-234R to -236R serpentine foliation returns first as chaotic, subhorizontal anastomosing veins, translating over a few m to a strong subvertical orientation. The bottom of Core 305-U1309D-236R and the top of Core 305-U1309D-237R contain coarse-grained olivine gabbro, with a sharp lower contact into plagioclase-poor troctolite with a strong serpentine foliation.

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JA Daily Science Report for Expedition 305, 14 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-238R to -245R (1143.9 to 1182.3 mbsf, 60% recovery) continue in fine- to medium-grained, olivine-rich troctolite. Plagioclase abundance in the troctolite ranges from <10% to 20%, and has a distinct interstitial character. The troctolite is intercalated with coarse-grained olivine gabbro, that



becomes more abundant down section. Contacts between the troctolite and gabbro range from thin intervals with sharp contacts where gabbro veins crosscut the serpentine foliation in the troctolite, to thicker intervals of gabbro where the transition between troctolite and gabbro is gradational. The gradational contacts are marked by an increase in plagioclase abundance to more than 50% over a few cm of core. Locally the gabbro is pervasively altered, and it is moderately altered overall. Fractures and veins with cm or larger alteration halos are more abundant in the gabbroic intervals. Overall recovery for the day was ~70% olivine gabbro and 30% olivine-rich troctolite, with the last three cores recovering predominantly olivine gabbro.

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JA Daily Science Report for Expedition 305, 15 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-246R to -252R (1182.3 to 1215.9 mbsf, 74% recovery) start with a 1-m-thick, coarse-grained oxide gabbro yielding below to coarse-grained olivine gabbro. Although no lower contact was recovered, the next core starts a several m thick interval of olivine-rich troctolite (80-90% olivine with interstitial plagioclase) with intrusions of olivine-bearing gabbro. Below 1197 mbsf, through the rest of the cored interval, the recovered rocks are gabbroic, starting in medium-grained olivine-bearing gabbro, transitioning through a few m of troctolitic gabbro to gabbro. Overall, recovery for the day included 5% oxide gabbro, 25% gabbro, 15% olivine gabbro, 25% troctolitic gabbro, and 30% olivine-rich troctolite.

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JA Daily Science Report for Expedition 305, 16 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-253R to -254R (1215.9 to 1225.5 mbsf, 66% recovery) are coarse-grained oxide gabbro, medium-grained gabbro, and coarse-grained olivine gabbro. These gabbros range from only slightly altered (<5%) to as much as 30% altered, with olivine gabbros showing the more intense alteration. There is a weak foliation in the finer grained intervals, coarse-grained intervals are isotropic.

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JA Daily Science Report for Expedition 305, 17 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-255R to -261R (1225.5 to 1259.1 mbsf, 43% recovery) start in medium- to coarse-grained olivine gabbro, then pass through at least 6 m of olivine-rich troctolite with interstitial plagioclase and a distinct serpentine foliation. No upper or lower contact with the troctolite was recovered. Below the troctolite, we went through ~20 m where recovery decreased significantly in coarse-grained gabbro and oxide gabbro. The rocks recovered in this interval give little indication as to why recovery dropped from continuous pieces of drilled core (commonly only one long cylinder of core per 1.5 m section) to 3-5 cm thick rounded biscuits. The rocks show little deformation (outside of drilling-induced open but unmineralized fractures) and are only slightly to moderately altered.

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JA Daily Science Report for Expedition 305, 18 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-262R to -268R (1259.1 to 1292.7 mbsf, 69% recovery) are medium- to coarse-grained, gabbro, oxide gabbro, and olivine gabbro. Many of the recovered pieces are small and contacts between lithologies are not commonly preserved, but the general proportions of gabbro, oxide gabbro, and olivine gabbro are 3:1:1, respectively. Many gabbroic intervals are olivine-bearing, and olivine abundance increases down section. Evidence of deformation is low, and alteration is variable but generally low to moderate.

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JA Daily Science Report for Expedition 305, 19 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-269R to -274R (1292.7 to 1321.5 mbsf, 73% recovery) are medium- to coarse-grained gabbro, oxide gabbro, and olivine gabbro. Alteration ranges from 5 to 20%, with green amphibole after pyroxene, chlorite after plagioclase, and serpentine after olivine. Several thin (few tens of cm) intervals show evidence of shear.

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JA Daily Science Report for Expedition 305, 20 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-275R to -278R (1321.5 to 1339.2 mbsf, 77% recovery) are coarse-grained gabbro, with a few intervals of disseminated oxide gabbro and olivine-bearing gabbro. Alteration is moderate and texturally the gabbros are isotropic.

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JA Daily Science Report for Expedition 305, 21 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-279R to -284R (1339.2 to 1372.8 mbsf, 73% recovery) are medium- to coarse grained, isotropic gabbro with a few intervals of olivine-bearing gabbro. Alteration is low to moderate (5% to 30%), more intense in local patches and along rare veins.

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JA Daily Science Report for Expedition 305, 22 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-286R to -291R (1372.8 to 1396.8 mbsf, 87% recovery) are medium- to coarse-grained gabbro and olivine gabbro. Cores U1309D-287R and the top of -288R (1377.6 to 1380 mbsf) include a diabase with gabbroic xenoliths. No upper contact with the diabase was recovered, but there is a sharp, igneous lower contact with coarse-grained gabbro. Olivine is more abundant in the lower third of the cored interval. Intensity of alteration is low, and the gabbroic rocks are texturally isotropic other than subtle modal changes and grain size variations.

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JA Daily Science Report for Expedition 305, 23 February 2005.

SCIENCE UPDATE: Cores 305-U1309D-292R to -295R (1396.8 to 1415.5 mbsf, 64% recovery) are texturally isotropic, medium- to coarse-grained gabbro and olivine gabbro. A sulfide-rich oxide gabbro maintains a sharp, subvertical contact through 25 cm of Core U1309D-293R. Logging underway by midnight.

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JA Daily Science Report for Expedition 305, 24 February 2005.

SCIENCE UPDATE: Logging underway. Triple combo passes complete. FMS passes underway (sonic tool not operational). Plan to complete FMS before daylight and rig up for VSP. After VSP, UBI until operational time expires.

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JA Daily Science Report for Expedition 305, 25 February 2005.

SCIENCE UPDATE: Logging program abbreviated owing to excessive heave. Rigging down for transit.

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JA Daily Science Report for Expedition 305, 26 February–2 March 2005.

SCIENCE UPDATE: Underway to Ponta Delgada.