

**IODP EXPEDITION 312 DAILY SCIENCE REPORTS**  
**28 October–28 December 2005**

*Note:* The ship was in transit from Astoria, Oregon, to Acapulco, Mexico, from 28 October to 12 November.

TO: Tom Davies  
FM: Neil Banerjee

JA Daily Science Report for Expedition 312, 12 November 2005

LOCATION: in transit to Site 1256

SCIENCE UPDATE: Today we left port and are in transit to Site 1256. The first science meeting was held with an introduction to life on the ship for scientists. We also conducted our first safety meeting with the Captain. Lab preparations are underway.

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JA Daily Science Report for Expedition 312, 13 November 2005

LOCATION: in transit to Site 1256

SCIENCE UPDATE: Today a science meeting was held which reviewed the success of Leg 206 and Exp 309. The objectives of Exp 312 were also discussed. Lab preparations are continuing. Several Leg 206 and Exp 309 cores have been laid out in the core lab for the scientists to study. We are in transit to Site 1256.

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JA Daily Science Report for Expedition 312, 14 November 2005

LOCATION: in transit to Site 1256

SCIENCE UPDATE: Today a science meeting was held which reviewed the IODP publications policy and introduced the laboratory systems. We are in transit to Site 1256.

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JA Daily Science Report for Expedition 312, 15 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: We arrived at Site 1256 at 0730 on November 15, made up the logging BHA, and reentered Hole 1256D at 2030. Predicted depth for the bottom of Hole 1256D is 4900 mbrf (1255 mbsf). The WSTP has been cleaned and purged and is being prepared for deployment with the APCT to collect a basement fluid sample and temperature measurement at the bottom of the Hole. Our target depth is 4850 mbrf, 50 m above bottom.

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JA Daily Science Report for Expedition 312, 16 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: After reentry the formation began taking weight at 926.6 mbsf. The top drive was picked up, the center bit was dropped, and we began to wash and ream to the bottom of Hole 1256D. The hole is tight between 926.6 and 932.6 mbsf. We were unable to pass an obstruction at 1050.6 mbsf. We pulled back to 924.6 mbsf, pumped a 50 barrel high viscosity mud pill, retrieved the center bit and dropped a core barrel. We are continuing to wash and ream the tight Hole section between 926.6 to 942.6 mbsf.

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JA Daily Science Report for Expedition 312, 17 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Washing and reaming the tight hole continues. A 25 barrel high viscosity mud sweep was pumped to clean the hole of debris. The pipe was pulled back to 924 mbsf and the wash barrel retrieved, which contained several rounded basalt cobbles and basaltic gravel, sand, and silt. A deplugger was dropped to clear the throat of the bit, a new wash barrel was dropped, and another pill of high viscosity mud was pumped to sweep the hole. Reaming and washing continued from 924 to 944 mbsf but hole conditions did not improve significantly so the wash barrel was recovered and the drill string was tripped back to the rig floor. The used CC-9 RCB bit, top sub, and head sub were laid down and a new 9 7/8 tricone bit was affixed to the drilling BHA. The pipe was then tripped back to the sea floor for reentry in Hole 1256D.

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JA Daily Science Report for Expedition 312, 18 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Hole 1256D was reentered for the second time on Expedition 312 at 0430 with a 9 7/8 tricone bit. Washing and reaming the tight hole continues. Several intervals of high torque have been noted. Mud sweeps continue in an effort to flush cuttings and debris from the hole. Hole conditions appear to be improving but we have yet to reach bottom.

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JA Daily Science Report for Expedition 312, 19 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Continuing to wash and ream the tight hole. After encountering high torque at 1085 mbsf a mud sweep was pumped. The pipe became stuck at 1198

mbsf for ~45 minutes but was freed at 0600 hr. Washing and reaming continues with intermittent mud sweeps followed by displacement with seawater. The hole was washed and reamed to total depth (1255 mbsf) at 2000 hr, followed by circulation of a 50 barrel mud sweep and displacement by 2X bottom up volume of seawater.

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JA Daily Science Report for Expedition 312, 20 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: After washing and reaming to the bottom of Hole 1256D (1255 mbsf) the hole was cleaned with a 100 barrel mud sweep, the top drive was set back, and the drill string was pulled out of the hole. The bit cleared the cone at 0650 hr. The used tricone bit and bit sub was laid out and a new 9 7/8 RCB C-9 bit was made up. Hole 1256D was reentered for the third time at 1955 hr. The drill string began taking weight at 1161 mbsf, the top drive was picked up, and washing and reaming continued to the bottom of the hole.

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JA Daily Science Report for Expedition 312, 21 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: After washing to bottom a core barrel was dropped and coring began at 0715 hr. Cores 172R and 173R penetrated from 1255.1 to 1265.4 mbsf at 1.9 m/hr with an average recovery of 18.4%. The rocks are microcrystalline slightly to highly altered dark gray basalts interpreted as dikes separated by a complex boundary zone. Light gray and dark green halos flank chlorite, pyrite, quartz, and laumontite veins. Core 173R contains 7 oriented pieces with splayed, crosscutting, and steeply dipping veins. One vein displays a very weak, shallowly-plunging mineral lineation and steps indicating sinistral offset. Primary domains of coarser grain size are spherical in places, but one example is elongate and moderately dipping in Sample 173R-2 piece 1C.

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JA Daily Science Report for Expedition 312, 22 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 174R to 177R were cored from 1265.4 to 1285.7 mbsf with an average recovery of 22.8%. Penetration has slowed to approximately 1 m/hr. Cores 175R through 177R recovered six individual basalt units (68-72) distinguished by subtle textural variation and interpreted as dikes. All are variable in grain size from cryptocrystalline to fine-grained, in some cases grading inward from chilled margins. A steeply-dipping, sharp, cryptocrystalline chilled margin is preserved where Unit 69 intrudes Unit 68 and grades over ~40 cm to a microcrystalline to fine-grained dike core. This is the best evidence so far that we are in the sheeted dike complex.

The basalts are slightly to highly altered with the most intense alteration developed in complex cm-scale patches in which primary minerals are replaced by combinations of chlorite, quartz, pyrite, epidote, and actinolite(?). This is the first observation of epidote-rich patches in Hole 1256D. The basalts are cross-cut by numerous mm-scale quartz, chlorite, pyrite, anhydrite, prehnite or laumontite veins commonly with mm-wide chloritic halos. Subvertical veins are cut in most places by sub-horizontal veins. Dike chilled margins are commonly brecciated, generally highly altered, pyrite-mineralized, and disrupted by margin parallel and perpendicular quartz, chlorite, pyrite veins.

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JA Daily Science Report for Expedition 312, 23 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 178R to 181R were cored from 1285.7 to 1304.9 mbsf with an average recovery of 8.7%. Penetration remains approximately 1 m/hr. Unit 73 is a uniform, featureless slightly altered fine-grained basalt interrupted by cryptocrystalline dike margins at ~1290 and 1295 mbsf (top of 179R-1 and 180R-1) that extends from the top of Core 177R-1 through to Core 181R-1. Sample 179R-1, piece 2, 5-9 cm incorporates two chilled contacts separating three intrusive events. Rare quartz + chlorite ± pyrite ± carbonate veins have light gray or dark green alteration halos. Common tiny white veinlets and thicker chlorite + quartz veins with well developed alteration halos, occur subparallel to the cryptocrystalline chilled margins. The alternation of similar fine-grained basalts with cryptocrystalline dike margins and limited recovery of small pieces suggest the hole is currently penetrating a near-vertical dike margin or many thin dikes. We are nearing 50 hrs of rotation on the bit after which the pipe will be tripped for a bit change.

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JA Daily Science Report for Expedition 312, 24 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Core 182R recovered 0.38 m of basalt cobbles from 1304.9 to 1309.7 mbsf (7.9%). Overall, the grain size of the rocks has decreased somewhat from the beginning of operations at Site 1256 on Expedition 312. The drop in recovery may be related to penetration of a near-vertical dike margin or thin highly fractured dikes but this interpretation remains tentative. At 0545 hr the bit had accumulated 50.5 hours of rotation so the pipe was tripped for a bit change.

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JA Daily Science Report for Expedition 312, 25 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: After washing to bottom (30 m of fill) rotary coring resumed with a new C-9 bit and Cores 183R to 185R recovered 1.12 m of basalt from 1309.7 to 1319.5 mbsf (11.4%). Penetration has dropped to 0.8 m/hr as we continue to core

predominantly cryptocrystalline to microcrystalline basalts. Core 184R was recovered after only a one meter advance in 5 hours but with excellent recovery (92%). Hole conditions are good to excellent with smooth torque.

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JA Daily Science Report for Expedition 312, 26 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 186R to 188R recovered 3.42 m of basalt from 1319.5 to 1333.9 mbsf (23.7%). Our pace of advance remains below 1 m/hr (0.7 m/hr) but recovery has improved providing several oriented pieces as the grain size increases. The rocks are moderately altered microcrystalline to cryptocrystalline basalts. Pyroxene displays moderate pervasive replacement by chlorite and actinolite. Alteration halos adjacent to vein margins are less distinct than in cores above and grade into the moderately altered groundmass. Veins commonly have near vertical orientations but conjugate vein sets are also observed.

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JA Daily Science Report for Expedition 312, 27 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 189R and 190R recovered 1 m of basalt from 1333.9 to 1343.5 mbsf representing an average recovery of 10.4% at a grueling pace of 0.6 m/hr. One small cobble was jammed in the upper core catcher during retrieval of Core 190R after an advance of 4.8 meters in 10 hours. The jammed cobble had to be cut free of its prison with a grinder in the core tech shop. Unable to escape past the jammed cobble above into the core barrel, a second small basalt piece had noticeable abrasions on its periphery where the lower core catcher dogs had chewed the outer surface. Most recovered igneous contacts are composite structures with chilled margins, breccias, and alteration. In Cores 188R through 189R (1329 to 1333 mbsf) there are fewer structures as primary grain size increases. Several oriented pieces are present in Core 189. At 2115 hr the bit had accumulated 49.4 hrs of rotation so the pipe was tripped for a bit change.

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JA Daily Science Report for Expedition 312, 28 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: While the pipe trip to change the drill bit continued, the science party worked on their figures and had a mass debate on the relative merits of the terms diabase and dolerite. In the truly international spirit of the Integrated Ocean Drilling Programme, it was pointed out that that the American usage of the term diabase differs from the term's meaning in Japanese kanji, which follows the original European use of the term meaning an altered dolerite. The new bit entered Hole 1256D at 1418 hr and the drill string took weight at 1247 mbsf. The tight hole was washed and reamed from 1247 to 1343.5 mbsf, with vigorous pumping at a total

rate of 130 strokes per minute. Rotary coring of Core 191R began from 1343.5 mbsf at 2045 hr.

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JA Daily Science Report for Expedition 312, 29 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 191R and 192R recovered three pieces (22 cm) of basalt from 1343.5 to 1353.1 mbsf representing an average recovery of 2.3%. Our pace of advance continues to be <1 m/hr. We now have more than 5000 meters (3.1 miles; 248.6 chains; 2734 fathoms, 5468 yards; 49212 hands, 16,404 feet) of drill pipe suspended beneath the rig floor. We continue to struggle downward in our epic quest for gabbro.

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JA Daily Science Report for Expedition 312, 30 November 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 193R to 195R recovered 63 cm of moderately altered basalt from 1353.1 to 1363.7 mbsf representing an average recovery of 5.9% at 0.5 m/hr. One piece contains a sheared quartz + sulfide vein possibly related to a highly altered dike margin. Despite the slow pace of advance and limited recovery hole conditions continue to be good. Although the present bit has only accumulated ~35 hr of rotation, it has been decided to trip the pipe after the next core. The C-9 bit will be replaced with a C-7 bit, which has a more aggressive cutting structure in the hope of improving recovery and penetration rate.

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JA Daily Science Report for Expedition 312, 01 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: At 0300 hr Core 196R recovered 46 cm of moderately altered basalt from 1363.7 to 1367.5 mbsf representing an average recovery of 12.1%. By this time the bit had accumulated 40.2 hr of rotation and the pipe was tripped for a bit change. The used C-9 bit was laid down and a new C-7 bit, which has a more aggressive cutting structure was made up. We hope the switch to a slightly different bit will improve both penetration rate and recovery. Some might say that our limited recovery so far is like a glass that is almost empty. An optimist would say our glass is partly filled. The Expedition 312 science party has adopted the view that the few rocks recovered are analogous to a small amount of fine 25 year old single malt scotch in the bottom of a crystal glass waiting to be savored (postcruise). Hole 1256D was reentered for the sixth time at 1938 hr.

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JA Daily Science Report for Expedition 312, 02 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 197R and 198R recovered 53 cm of moderately altered basalt from 1367.5 to 1371.3 mbsf representing an average recovery of 13.9%. The average ROP ground down to an excruciating 0.3 m/hr. The shipboard scientific party is expediting a letter to Santa asking for gabbro and requesting an early visit. Since Mr. Claus visited the ship during drilling on Leg 206 we are confident he knows the way to Site 1256.

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JA Daily Science Report for Expedition 312, 03 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Hole 1256D was advanced 1.5 meters to 1372.8 mbsf but without recovery for Cores 199R and 200R. The drill string experienced high torque and while attempting to send the sinker bars down the pipe to retrieve the core barrel the pipe was briefly stuck. Nothing was recovered in the core barrel and high torque continued so the pipe was tripped. Upon retrieval of the bit it was discovered that all four cones were lost. A fishing BHA consisting of a Bowen 9.5 inch magnet and two junk baskets was run back into the hole, and we hope to resume coring soon.

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JA Daily Science Report for Expedition 312, 04 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Hole 1256D was reentered with a fishing array consisting of a 9 inch Bowen fishing magnet and 2 junk baskets. Fill was encountered 90 m above the bottom of the hole and the magnet was washed ahead to the bottom. After a few hours of fishing, the pipe was tripped and the fishing tools returned to the ship, where portions of the cones and bits of metal were recovered from the magnet. After diligent sieving and magnetic separation by the scientists a total of ~2 kg of metal was retrieved. A mill and 2 junk baskets were returned to the hole to pulverize any remaining junk.

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JA Daily Science Report for Expedition 312, 05 December 2005

LOCATION: Site 1256 Fishin' Hole

SCIENCE UPDATE: After recovery of the fishing magnet and two junk baskets a 9 inch concave mill bit and two junk baskets were deployed to grind up any metal still in the bottom of the hole. A 50 barrel mud sweep was run to try and clean out junk in between milling and working the junk baskets. The mill bit and junk baskets were recovered at 2130 hr. A circular impression with approximately the same radius as a cone base was worn in the center of the mill cutting face. The junk baskets contained several cobbles of basalt including one large piece that had a curved surface

corresponding to the inner radius of the borehole wall. The contents of the junk baskets have been sieved, dried, sorted, and magnetically separated. Several pieces of milled cone have been found along with pieces of WC inserts and fine metal scraps and filings. All of the metal will be weighed to estimate how much has been recovered. A second mill bit and junk basket are being deployed to grind up any remaining metal.

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JA Daily Science Report for Expedition 312, 06 December 2005

LOCATION: Site 1256 Fishin' Hole

SCIENCE UPDATE: A second 9 inch concave mill bit and junk basket was deployed to pulverize any remaining metal at the bottom of the hole. After ~4 hours of milling the drill string was recovered and the fishing magnet will be once again deployed to try and remove any remaining junk from the bottom of Hole 1256D. The contents of the junk baskets continue to be sieved, dried, sorted, and magnetically separated. Considerable interest has been generated among the science party by the presence of leucocratic fragments with granophyric textures, glass fragments, olivine phyric basalt pieces, and mineral sands in the junk basket material. The junk basket material will be sorted and curated for shipboard and shorebased analysis.

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JA Daily Science Report for Expedition 312, 07 December 2005

LOCATION: Site 1256 Fishin' Hole

SCIENCE UPDATE: The 9 inch Bowen fishing magnet and two junk baskets were once again deployed to recover metal from the bottom of Hole 1256D. The magnet was worked at the bottom of the hole then pulled back. We will reenter with a coring bit if the fishing magnet is recovered with no large pieces of metal.

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JA Daily Science Report for Expedition 312, 08 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: The 9 inch Bowen fishing magnet and two junk baskets were recovered at 0030 hr and laid out. Only fine metal filings were recovered on the magnet so a new C-9 RCB bit was made up. Hole 1256D was reentered for the 11th time at 0754 hr. Cores 202R and 203R were recovered from 1372.8 to 1377.3 mbsf with an average rate of penetration of 0.6 m/hr. Core 202R recovered 0.54 m of moderately altered basalt after an advance of 2 m. At the long anticipated announcement Core on deck! the galley erupted with jubilant post prandial applause and cheering that reverberated throughout the ship and across the Pacific. Core 203R recovered 0.12 m of basalt cobbles after an advance of 2.5 m.

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JA Daily Science Report for Expedition 312, 09 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 204R to 205R recovered 18 cm of moderately altered basalt from 1377.3 to 1386.9 mbsf representing an average recovery of 1.9% at 0.7 m/hr. A deplugger was dropped between Cores 204R and 205R to verify core barrel latching. Several of the pieces recovered in the last few cores lack wear marks from the bit. Thin section observations of rocks below ~Core 190R indicate high temperature recrystallization of primary clinopyroxene and plagioclase to aggregates of amphibole, plaioclase, and magnetite. This textural change in the rocks may be affecting recovery.

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JA Daily Science Report for Expedition 312, 10 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 206R to 208R recovered 40 cm of moderately altered basalt from 1386.9 to 1396.5 mbsf representing an average recovery of 4.2% and at an average rate of penetration of 0.5 m/hr. Core 208R advanced 3.8 m at 1.7 m/hr but only brought back one flat cobble. Hole conditions are good and mud sweeps have been increased to 75 barrels every 15 m of advance.

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JA Daily Science Report for Expedition 312, 11 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Core 209R recovered four roughly hewn moderately altered basaltic stones (15 cm) from 1396.5 to 1398.6 mbsf representing an average recovery of 7.1%. At 0500 hr the bit had accumulated 45.1 hr of rotation so the pipe was tripped for a bit change. Thin section observations have revealed that significant proportions of the basalts from the last several cores are thoroughly recrystallized to microcrystalline, granular aggregates of secondary clinopyroxene, orthopyroxene, hornblende, and secondary plagioclase, with sub-rounded blebs of magnetite and ilmenite. There is consensus that there must have been significant reheating of these rocks but the origin of these meta-basaltic assemblages continues to be debated. Whether these equigranular patches are the harbinger of plutonism will only be proven by our unshaken resolve to penetrate deeper.

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JA Daily Science Report for Expedition 312, 12 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 210R to 212R recovered 30 cm of moderately altered basalts from 1398.6 to 1406.1 mbsf. After nothing was recovered in Core 210R, recovery jumped from two flat pieces in Core 211R to 27 cm in Core 212R consisting

of cryptocrystalline to fine grained basaltic dike rocks displaying a patchy metamorphic overprint. Thin sections of samples from yesterday's cores reveal a continuing increase in the occurrence of high-temperature metamorphic clino- and ortho-pyroxenes. Lively debate continues regarding the magnitude of the temperatures and the reaction paths leading to these assemblages. At the bottom of Core 212R, virtue finally received a small reward in the form of a pair of ~1 cm-thick quartz diorite dikes.

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JA Daily Science Report for Expedition 312, 13 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: For the first time in the history of deep ocean drilling, Expedition 312 has penetrated through an in-situ section of upper oceanic crust (lavas and dikes) into gabbros that represent a fossil magma chamber. After recovering 61 cm of basaltic dikes with a centimeter-scale gabbroic vein and dike-gabbro contact at the base of Core 213R, Core 214R came on deck at 1305 hr containing 3.33 m of gabbro and pegmatitic gabbro (62.5% recovery), from the interval 1410.9 to 1415.7 mbsf. The recovery of Core 214R was heralded with thunderous applause punctuated by an occasional "Yee-Haw" from the attending scientists and technicians. Subsequent Core 215R penetrated to 1417.9 mbsf with 95% recovery of gabbro and we are currently continuing to recover gabbro. The entire Transocean crew is commended for their perseverance through the tough drilling conditions and hard rocks of the metamorphosed dike section to achieve this important but until now elusive scientific goal.

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JA Daily Science Report for Expedition 312, 14 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 216R to 220R recovered 4.05 m of moderately to highly altered, medium to coarse grained varitextured and oxide gabbro from 1417.9 to 1439.6 mbsf. Penetration rate has increased to ~1.1 m/hr and recovery for the day averaged ~19%.

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JA Daily Science Report for Expedition 312, 15 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Core 221R recovered 71 cm of medium to coarse grained gabbro and oxide gabbro from 1439.6 to 1444.6 mbsf. After recovery of Core 221R the bit had accumulated 50.6 hrs of rotation so the pipe was tripped for a bit change.

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JA Daily Science Report for Expedition 312, 16 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: After deploying the new bit and washing and reaming to bottom (10 m of fill), Cores 222R to 225R recovered 5.05 m of highly altered medium to coarse grained gabbro and highly altered fine grained aphyric basalt from 1444.6 to 1463.9 mbsf. Unit 89 ends with a rapid grain size decrease toward the bottom of Section 223R-2 and continues in three small gabbroic cobbles in Core 224R. Unit 90 consists of three small fine grained highly to completely altered basalt fragments in Core 225R.

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JA Daily Science Report for Expedition 312, 17 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 226R to 229R recovered 5.46 m of highly altered fine grained aphyric basalt with subordinate highly altered medium grained gabbro and felsic units from 1463.9 to 1483.0 mbsf at an average penetration rate of 1.1 m/hr.

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JA Daily Science Report for Expedition 312, 18 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: Cores 230R to 233R recovered 10.4 m of highly altered medium grained gabbro crosscut by several ~1 to 2 cm wide felsic dikelets from 1483.0 to 1502.5 mbsf at an average penetration rate of 1.3 m/hr. The gabbros contain several cm-scale basalt inclusions, possibly stoped from the sheeted dikes above.

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JA Daily Science Report for Expedition 312, 19 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: The last core of Expedition 312 (234R) was on deck at 0315 hr and recovered 25 cm of moderately altered fine grained aphyric to cryptocrystalline basalt cut by gabbro from 1502.5 to 1507.1 mbsf. After recovery of Core 234R the bit had accumulated 53 hr of rotation. The hole was conditioned and a 110 barrel sweep of high viscosity mud was pumped. The pipe was then tripped for the final bit change in preparation for logging.

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JA Daily Science Report for Expedition 312, 20 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: After hole conditioning the Schlumberger logging equipment was rigged up and the Triple Combo deployed. An obstruction was felt at 1440 mbsf that

the tool could not pass. The hole was logged from 1440 to 343 mbsf then a repeat pass was made from 1440 to 1095. The bottom of the hole is in gauge and in very good condition. The Triple Combo was retrieved at 1730 and layed down. The VSI was the made up and deployed to 155 mbsf where the tool was left to wait for daylight.

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JA Daily Science Report for Expedition 312, 21 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: After waiting at 155 mbsf in the casing for daylight, the VSI logged 60 stations from 1432 mbsf at ~22 m stations. No megafauna were observed during the VSP survey. The FMS was deployed next and met an obstruction at 1437 mbsf. The hole was logged from 1437 to 1377 mbsf but the tool lost communication so the calipers were closed and the tool was recovered without incident.

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JA Daily Science Report for Expedition 312, 22 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: After the FMS was recovered the UBI and Sonic tools were made up and run to 1430 mbsf. The hole was logged from 1430 to 1099 mbsf then a repeat pass from 1432 to 1079 mbsf was made. The FMS tool was repaired and redeployed to 1437 mbsf after which two passes up to 1099 mbsf were logged. A heave test on the Schlumberger logging winch was also conducted.

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JA Daily Science Report for Expedition 312, 23 December 2005

LOCATION: Site 1256

SCIENCE UPDATE: A final logging run with the TAP, DLL, and SGT tools was successfully completed. The pipe cleared the seafloor at 1345 hr and the drill string returned to the ship. The beacon was recovered at 1521 hr, and at 2200 we were underway at full speed to Balboa. The Transocean crew are commended for their diligence and hard work through tough drilling conditions to achieve an extremely successful result for the final Expedition of Phase 1 of IODP. Hole 1256D was left open and free of junk ready for future deepening in Phase 2.