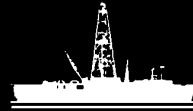


# NEWS RELEASE

## Ocean Drilling Program



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COLLEGE STATION, TX -- At almost a mile beneath the seafloor, the world's deepest hole to be drilled into ocean crust has provided a unique window through which scientists can view Earth's interior.

The drill site is located near the Costa Rica Rift about 200 miles west of Ecuador in a region where new crust is forming as the seafloor spreads. Scientists on board JOIDES Resolution, the drill ship for the Ocean Drilling Program (ODP), deepened the previously drilled hole to a total depth of 1562.3 meters (5,126 feet). Scientists examined the 5.9 million-year-old rocks recovered from the drill hole to better understand how new rocks form at seafloor spreading centers and how they change over time as they move away from their source.

By examining the chemistry and physical properties of recovered rocks, scientists learned how seawater circulates through the basalts and sediments of young ocean crust. They also learned that the seawater temperature becomes increasingly higher as the hole becomes deeper, reaching 148 degrees Centigrade at 1,298 meters (4,259 feet) beneath the seafloor.

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At the bottom of the borehole, scientists recovered rocks from sheeted dikes -- vertical ribbons of dense volcanic material -- which were intruded into the overlying layer of basalt. This formation is typical of an ophiolite complex which has been previously observed on land. The discovery of the same formation in ocean crust supports the theory that these complexes are portions of the deep ocean crust which have been shoved onto continents.

Scientists also performed a variety of logging experiments, a process in which sophisticated electronic instruments are lowered down the hole to read the physical and magnetic properties of the rocks. These instruments allowed the scientific party to analyze the rocks in the walls of the borehole and to make a high-resolution study of the structure of Earth's crust as it exists near a spreading center. The hole, which has been visited six times and deepened four times in 11 years, serves as a permanent underseas laboratory for scientists to view the geological processes that form new ocean crust.

Co-chief scientists for the cruise were Dr. Keir Becker of the Rosenstiel School of Marine and Atmospheric Science, University of Miami, and Dr. Hitoshi Sakai, Ocean Research Institute, University of Tokyo, Japan. Dr. Russell B. Merrill was the Texas A&M University staff scientist representative.

JOIDES Resolution departed Balboa, Panama, on August 27, and arrived in Callao, Peru, on October 20. She sailed with a scientific party of 24, a technical crew of 20 and a ship's crew of 65.

JOIDES Resolution, registered as SEDCO/BP 471, is the research vessel for ODP, an 18-nation scientific program funded

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by the United States National Science Foundation, Canada, the European Science Foundation Consortium for the Ocean Drilling Program, France, Japan, West Germany and the United Kingdom.

The 470-foot-long drill ship's derrick towers 200 feet above the waterline. A seven-story laboratory stack provides facilities for on board examination of sediment and hard-rock cores. Laboratories contain space and equipment for studies in chemical, gas and physical properties, paleontology, petrology, paleomagnetism and sedimentology. Marine geophysics research is conducted while the ship is under way.

Texas A&M University, as science operator, operates and staffs the drill ship and retrieves cores from strategic sites around the world. The science operator also ensures that adequate scientific analyses are performed on the cores. To do this, Texas A&M maintains shipboard scientific labs, provides logistical and technical support for shipboard scientific teams, manages post-cruise activities, is curator for the cores and of the scientific results.

Lamont-Doherty Geological Observatory of Columbia University is responsible for downhole logging.

Joint Oceanographic Institutions for Deep Earth Sampling (JOIDES), an international group of scientists, provides scientific planning and program advice. Joint Oceanographic Institutions (JOI, Inc.), a nonprofit consortium of 10 major U.S. oceanographic institutions, manages the program.

"The ship is currently drilling off the coast of Peru to

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study the record of changes in the ocean climate through time," said Dr. Philip D. Rabinowitz, director of ODP. "We are also looking at the processes of subduction by examining how the Nazca tectonic plate is sliding under South America.

"During January and February of 1987, the ship will drill in the Weddell Sea. Scientists will study the Antarctic's history of glaciation and circumpolar currents. They will also investigate the tectonic history of the region, specifically the processes which separated the South American and Antarctic continents," Rabinowitz said.

(Note: JOIDES institutions are: University of California at San Diego, Scripps Institution of Oceanography; Columbia University, Lamont-Doherty Geological Observatory; University of Hawaii, Hawaii Institute of Geophysics; University of Miami, Rosenstiel School of Marine and Atmospheric Science; Oregon State University, College of Oceanography; University of Rhode Island, Graduate School of Oceanography; Texas A&M University, Department of Oceanography; University of Texas at Austin, Institute of Geophysics; University of Washington, College of Ocean and Fishery Sciences; and Woods Hole Oceanographic Institution.

Non-U.S. members are Department of Energy, Mines, and Resources, Earth Sciences Sector, Canada; European Science Foundation Consortium for the Ocean Drilling Program, Belgium, Denmark, Finland, Iceland, Italy, Greece, the Netherlands, Norway, Spain, Sweden, Switzerland and Turkey; Bundesanstalt fur Geowissenschaften und Rohstoffe, Federal Republic of Germany; Institut Francais de Recherche pour l'Exploitation de la Mer, France; University of Tokyo, Ocean Research Institute, Japan; and Natural Environment Research Council, United Kingdom.)

Scientists participating on the cruise were Keir Becker, co-chief scientist, Rosenstiel School of Marine and Atmospheric Science, University of Miami, Florida; Hitoshi Sakai, co-chief scientist, Ocean Research Institute, University of Tokyo, Japan; Russell B. Merrill, staff scientist, Ocean Drilling Program, Texas A&M University, College Station, Texas; Andrew C. Adamson, Ocean Drilling Program, Texas A&M University, College Station, Texas; Janet Alexandrovich, Lamont-Doherty Geological Observatory, Palisades, New York; Jeffery C. Alt, Washington University, St. Louis, Missouri; Roger Anderson, Lamont-Doherty Geological Observatory, Palisades, New York; Daniel Bideau, IFREMER, Brest, France; Robert Gable, Bureau de Recherches Geologiques et Minieres, Orleans, France; Peter M. Herzig, Aachen Technical University, Aachen, Federal Republic of Germany; Simon Houghton, Open University, Buckinghamshire, United Kingdom; Hideo Ishizuko, Kochi University, Kochi, Japan; Hodaka Kawahata, University of Toronto, Canada; Hajimu Kinoshita, Chiba University, Chiba, Japan; Michael A. Lovell, University of Nottingham, United Kingdom; John Malpas, Memorial University, St. John's, Newfoundland, Canada; Harue Masuda, University of Tokyo, Tokyo, Japan; Roger H. Morin, U.S. Geological Survey, Denver, Colorado; Michael J. Mottl, University of Hawaii at Manoa, Honolulu, Hawaii; Janet E. Pariso, University of Washington, Seattle, Washington; Philippe Pezzard, Lamont-Doherty Geological Observatory, Palisades, New York; Joseph Phillips, University of Texas, Austin, Texas; Joel Sparks, University of Massachusetts, Amherst, Massachusetts; Stefan Uhlig, Institut fur Geowissenschaften und Lithospharenforschung, Giessen, West Germany.