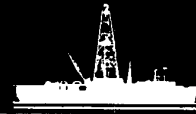


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# NEWS RELEASE

## Ocean Drilling Program



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ODP: Leg 136 and Leg 137

### **The Ocean Drilling Program helps in effort to monitor earthquakes and cleans out the Pacific Ocean's deepest crustal hole.**

COLLEGE STATION, TX -- This spring, scientists for the Ocean Drilling Program drilled a hole and then went fishing.

Most ODP cruises last two months, but the Texas A&M-operated program packed two cruises into March and April. The first cruise helped a fellow scientific organization learn more about Earth's seismic activity. ODP, operating the drill ship *JOIDES Resolution*, then cleaned out -- called fishing in drilling terminology -- the deepest hole ever drilled into ocean crust.

ODP's 36th cruise was just 17 days, but ODP was able to drill a hole for the Federation of Digital Seismic Networks (FDSN), an international group of organizations that studies Earth's seismology.

The hole, the first seafloor observatory for the federation, lies 225 kilometers southwest of the Hawaiian island of Oahu. The FDSN can now place a permanent earthquake-monitoring device into the hole, which will be part of a worldwide network of seismic information stations.

#### **Drilling the oceans' deepest crustal hole**

ODP's 37th cruise returned to a site on the Nazca tectonic plate about 320 kilometers west of Ecuador. The site encompasses a section of ocean crust that formed at the Costa Rica Rift 5.9 million years

ago and now creeps southward at about 3 centimeters or a little more than an inch a year.

The hole at this site, known to oceanographers as Hole 504B, penetrates 1,621 meters oceanic crust. Although slivers of ocean crust have been pushed onto land, crust forms far below sea level and far beyond view. Hole 504B represents the only opportunity in the world for scientists to observe a section of ocean crust as it moves away from a spreading center.

Normal ocean crust comprises three distinct layers: an upper layer of pillow basalts; a middle layer of vertical ribbons of dense volcanic material called sheeted dikes; and a lower layer of gabbro, a volcanic rock common to ocean crust.

ODP and its predecessor program, the Deep Sea Drilling Project, have drilled and deepened Hole 504B five times during the last 12 years. In 1986, ODP drilled almost to the bottom of the middle layer, the deepest penetration ever drilled into ocean crust.

On this cruise, *JOIDES Resolution* cleaned out drilling debris left down hole during the previous expedition. The ship then cored ahead 59.20 meters to prepare the hole for future drilling. Scientists returning to the site this fall plan to penetrate to the third layer.

Scientists also lowered a special instrument called a borehole televiewer down the hole. The instrument takes ultrasonic pictures to examine the fracture patterns in the borehole wall, similar to the ultrasound equipment that looks at the human body's internal structure. Scientists also gathered data about hydrothermal circulation to determine how ocean crust alters as it moves away from

its source.

Hole 504B has become a permanent laboratory for scientists to return to in the years to come. The hole signifies a unique window that gives scientists visible evidence of how oceanic crust forms and evolves.

Co-chief scientists for Leg 136 were Dr. Adam Dziewonski of Harvard University, Cambridge, Mass., and Dr. Roy Wilkens of the University of Hawaii, Honolulu. Dr. John Firth, Texas A&M University, College Station, was the staff scientist.

Chief scientist for Leg 137 was Dr. Keir Becker, University of Miami, Florida. Glen Foss, Texas A&M University, College Station, was senior operations superintendent. Anne G. Graham, also of Texas A&M was ODP staff representative.

*JOIDES Resolution*, registered as SEDCO/BP 471, is the research vessel for the ODP, which is funded by the United States National Science Foundation, Canada and Australia, the European Science Foundation Consortium for the Ocean Drilling Program, Federal Republic of Germany, France, Japan 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 and provides logistical and technical support for shipboard scientific teams. On shore, in the Texas A&M University Research Park, the science operator manages post-cruise activities, curates the cores and publishes 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.

"ODP's return to Hole 504B also marks the ship's circumnavigation of the globe," said Dr. Philip D. Rabinowitz, director. "In that time, we have sailed more than 135,000 miles and have drilled in all the world's oceans and many of its seas."

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Note: JOIDES Institutions are: University of California at San Diego; Columbia University; University of Hawaii; University of Miami; Oregon State University; University of Rhode Island; Texas A&M University; University of Texas at Austin; University of Washington; and Woods Hole Oceanographic Institution.

Also Canada/Australia Consortium, European Science Foundation Consortium: Belgium, Denmark, Finland, Iceland, Italy, Greece, the Netherlands, Norway, Spain, Sweden, Switzerland and Turkey; Federal Republic of Germany; France; Japan; the United Kingdom; and the U.S.S.R.)