NSF Press Release

NSF PR 02-73 - September 10, 2002

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Scientists Explore Large Gas Hydrate Field off Oregon Coast

Details emerge of possible new energy source

Ocean Drilling Program (ODP) scientists have completed a two-month expedition off the coast of Oregon to investigate the origin and distribution of frozen deposits of natural gas known as "gas hydrates." Funded largely by the National Science Foundation (NSF), their research could identify locations and quantify amounts of this potential natural resource, which may eventually serve as a major new worldwide energy source.

Among the most surprising findings of the recent offshore drilling was the fast rate at which gas hydrate is forming. When hydrate forms rapidly, the salts in the surrounding seafloor sediments do not have time to diffuse and the water in the sediment becomes saltier than seawater. Scientist Marta Torres of Oregon State University explained, "We observed high concentrations of sea salts in the upper 10-15 meters of sediment, indicating that hydrate is forming very rapidly below the seafloor in this region."

Although scientists know that gas hydrates are common in the seafloor on the margins of continents around the world, they do not know how much hydrate is present. Scientists onboard the research vessel JOIDES Resolution studied the deposits in an area known as Hydrate Ridge to determine how much gas hydrate is present beneath the seafloor.

According to Paul Dauphin, ODP program director at the National Science Foundation, "Gas hydrates have been known to scientists for some time, but were previously avoided because of potential safety problems. Through a better understanding of how to drill in such environments, ODP is developing tools and strategies to discover the full extent of gas hydrate deposits."

Anne Trehu of Oregon State University (USA), a co-chief scientist on the cruise, said, "Measurements made during this cruise will allow us to update estimates of the volume and flux of methane and other hydrocarbon gases trapped in the sediments on the Oregon continental margin and, by extension, in other regions."

Ocean drilling plays a critical role in addressing questions about hydrates because it provides the only means available of directly sampling the material and the sediments that host them deep beneath the seafloor. In 1995, ODP researchers drilled into gas hydrates in a relatively stable area off the U.S. east coast. Scientists have estimated that area could contain enough methane to supply U.S. energy needs for more than 100 years. They also found evidence suggesting that hydrates are involved in the global climate cycle, and that they can cause massive landslides.

On the recent cruise, scientists also gained an understanding of the importance of sediment composition and grain size in the distribution of hydrates within the sediments, which may provide clues to their locations.

ODP is an international partnership of scientists and research institutions organized to study the evolution and structure of the Earth. While ODP is funded primarily by the US National Science Foundation and its international partners, the US Department of Energy and the European Commission played important roles in funding much of the innovative technology used on this expedition. The Joint Oceanographic Institutions manages the program. Texas A & M University is responsible for science operations, and Lamont-Doherty Earth Observatory of Columbia University is responsible for logging services.

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Photographs from the expedition off the coast of Oregon are available on the web at: http://www-odp.tamu.edu/public/life/leg204.html

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