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Oil in the Ocean: Collecting Oil Samples

Deepwater Horizon, 2010
Principle Investigators: Chris Reddy, Jeff Seewald

Before scientists could calculate the amount of oil flowing into the Gulf, they needed to know the composition of the material gushing from the ruptured wellhead. To obtain this crucial piece of information, WHOI scientists used a device originally built to study hydrothermal vent fluids to capture and contain a sample of the oil and gas and then transport it back to the lab at pressure for analysis.

For the past decade, researchers studying the composition of hydrothermal vent fluids have used a device called an isobaric gas tight sampler (commonly known as a Seewald sampler after its lead inventor, Jeff Seewald) to collect samples from the hot vents. Soon after the spill began, Seewald and WHOI chemist Chris Reddy realized the sampler would be the ideal device to collect a sample directly from the wellhead in order to make a more complete analysis of the material pouring into the water.

When it was returned to the lab (at pressure), the sample was slowly and carefully tapped so that Reddy and others could measure the ratio of oil to gas and refine calculations of how much material was flowing into the gulf and its exact composition.

Enlarge Image

The manipulator arm of a robotic vehicle (upper right) moves the IGT sampler toward the jet of hot oil and gas shooting out of the broken Deepwater Horizon wellhead. When the sampler's snorkel reached an area of peak temperature, WHOI research associate Sean Sylva, sitting in a control room on a ship nearly a mile above, activated the snorkel to draw in a sample. (Photo courtesy of Oceaneering)

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U.S. Department of the Interior

From *Oceanus* Magazine

April 20, 2011

A Small Sip from a Big Gusher

The impressive-sounding Isobaric Gas-tight sampler was invented at WHOI to sample fluids jetting from seafloor hydrothermal vents, but was equally adept at collecting oil and gas gushing out of the broken Deepwater Horizon wellhead.
Source: Oceanus Magazine

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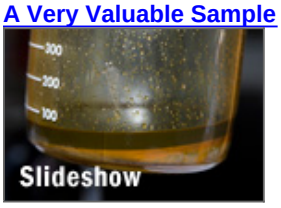
A Very Valuable Sample



Isobaric Gas-Tight Sampler

Watch video of the IGT sampler being used at hydrothermal vents in the western Pacific.
» View Video (Quicktime)

Related Technology

Isobaric Gas-Tight Sampler

Originally designed to sample fluids issuing from hydrothermal vents—and to keep those fluids at their native pressure—this device was used to make the only original samples of oil and gas flowing from the ruptured Deepwater Horizon well.

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