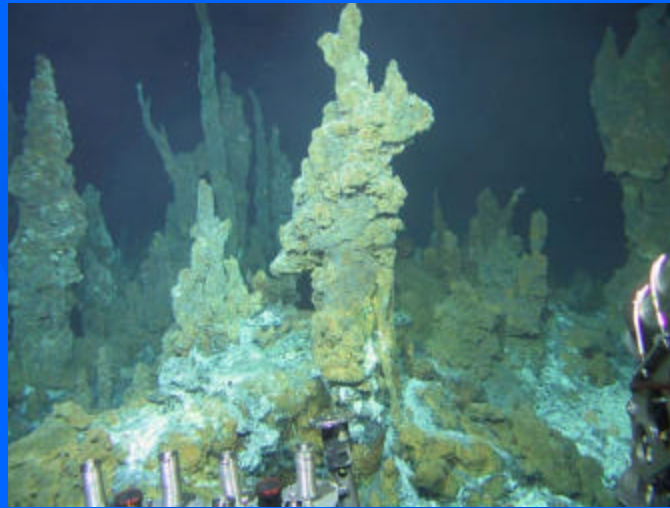
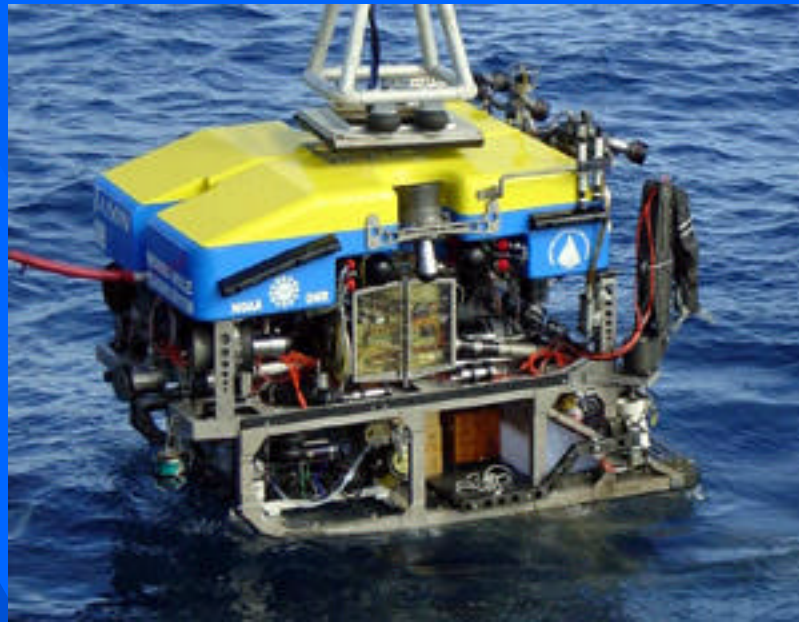


2002 ALVIN Operations



- 328 Operating Days
 - 97 Dives
 - 2121 m Average Depth
 - 7.5 hrs Average Dive Duration
 - 4.9 hrs Average Bottom Time
 - 3 Dives Lost (weather)
- ✓ *25th Anniversary Galapagos dives*
- ✓ *IMAX filming off San Diego*

2002 ROV Operations

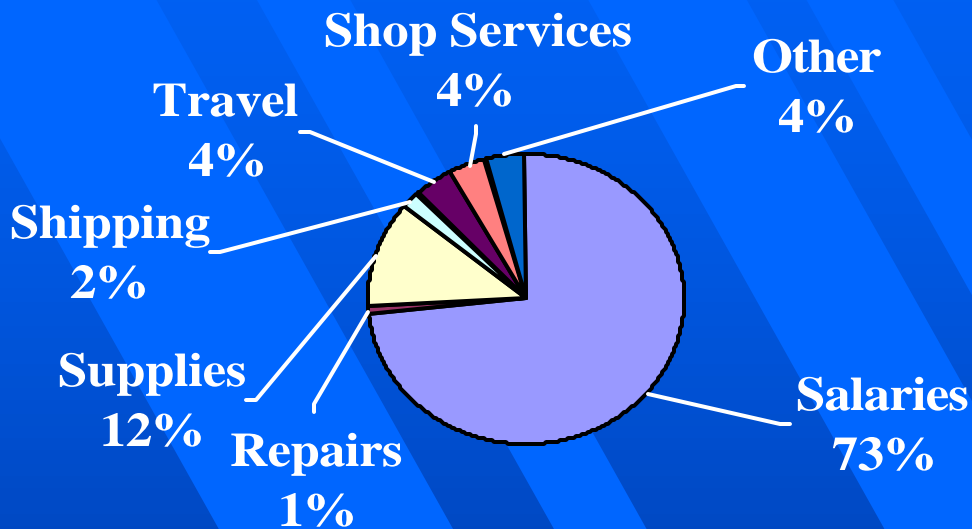


Jason2 joins NDSF team

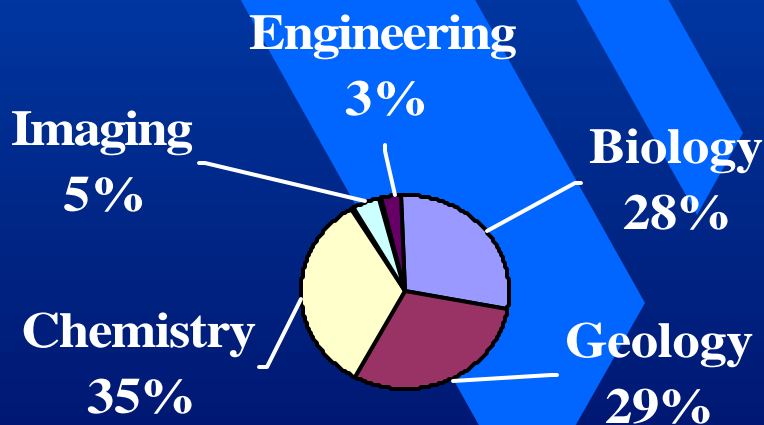
- 26 lowerings
 - 537 hrs. in water
 - 455 hrs. bottom time
 - 114 NM covered
 - 4,650m deepest dive
- ✓ *Sea trials in July off Astoria*
 - ✓ *Two science cruises (Juan de Fuca, Hawaii)*
 - ✓ *Vehicle performed to specs first time in the water*

National Deep Submergence Facility

2002 Operating Costs: \$4,100,134



2002 Dive Discipline Breakdown



WHOI Marine Operations and NDSF Web Site

The image shows a screenshot of a Netscape browser window displaying the WHOI Marine Operations website. The browser's address bar shows the URL <http://www.whoi.edu/marops/>. The website features a large blue banner with a photograph of a research vessel and a navigation menu with the following items: Research Vessels, NDSF Vehicles, Cruise Planning, Support Services, and Port Office. Below the banner, the text "Marine Operations" and "Woods Hole Oceanographic Institution" is visible.

The second screenshot shows the "NDSF Vehicles Overview" page. The browser's address bar shows <http://www.whoi.edu/marops/vehicles/index.html>. The page has a blue header with the WHOI logo and the text "Marine Operations". A navigation bar includes "Research Vessels", "NDSF Vehicles", "Cruise Planning", "Support Services", and "Port Office". Below this, a sub-navigation bar lists "Overview", "Alvin", "Jason II/Medea", "Argo II", and "DSL-120A".

The main content area is titled "National Deep Submergence Facility (NDSF) Vehicle Overview" and includes an "Overview" sidebar with links to: Main, Guidelines for Proposal Preparation, Vehicle Schedules, Cruise Synopses, Archiving Policy, Deep Submergence Publications, and Photo Database. The main text area contains three vehicle descriptions:

- Alvin**: WHOI operates the U.S. Navy-owned Deep Submergence Vehicle (DSV) Alvin as a national oceanographic facility. A typical eight-hour dive takes two scientists and a pilot as deep as 4,500 meters (14,764 feet). This high-tech mini submarine is 23-feet (7 meters) long.
- Jason II/Medea**: Jason/Medea is a remotely operated vehicle (ROV) system designed by the Institution's Deep Submergence Laboratory for scientific investigation of the deep ocean and seafloor. It is a dual vehicle system, with Medea serving in a tether management role that decouples Jason from surface motion. Both vehicles are designed to operate to a maximum depth of 6,500 meters (21,325 feet), are transportable, and can be operated from a variety of vessels.
- Argo II**: Argo II, a towed imaging and mapping vehicle,

National Deep Submergence Facility
www.whoi.edu/marops



WHOI Marine Operations and NDSF Web Site

WHOI Marine Operations - Jason II/Medea - Netscape

Home | Search | Related | Links | Contact | Site Index | WHOI Home

Woods Hole Oceanographic Institution Marine Operations

Research Vessels | **NDSF Vehicles** | Cruise Planning | Support Services | Port Office

Overview | Alvin | **Jason II/Medea** | Argo II | DSL-120A

Jason II/Medea

- Overview
- Specifications
- User Manual
- Support Vessel Requirements
- At-Sea Personnel Requirements
- Virtual Control Van
- Cruise Summaries

Cruise Summaries - *Atlantis Voyage 7 Leg 20 (ATV7L20)*

Cruise Report | Highlights

Chief Scientist: H. Paul Johnson, University of Washington
Funding: NSF Grant OCE00-95615 (PI - Johnson, Co-PIs - Baross, Hedges, Light, McCarthy, Butterfield), also NSF grants DEB-0103690 to Voight and OCE-0099231 to Sharma.
Location and Dates: Left Astoria, Oregon on August 29, 2002; returned to Newport, Oregon on September 23, 2002

Abstract of Scientific Goals
The primary goal of the cruise was to test the hypothesis that there is a substantial microbial biosphere residing within the upper 600 meters of oceanic igneous crust. We proposed to test this hypothesis at four paired sites on the Juan de Fuca Ridge:



This mosaic of images shot with the cameras

Barrel Elevator

The sampler uses a CTD pump to collect large samples of hydrothermal vent fluid in two large plastic barrels lined with Teflon bags. This system recovered almost 1000 liters of hydrothermal fluid during the cruise. To put this in perspective, typical missions in the past were considered successful if they captured 5 to 10 liters of hydrothermal fluid during an entire cruise.

Butterfield Sampler

Designed and built by Dave Butterfield (NOAA PMEL), this large manifold fluid sampler mounted under the stern of *Jason II* took roughly thirty 1-liter samples of fluid for analysis of microbes and inorganic chemicals in hydrothermal systems.

Lang Sampler

Designed and built by Susan Lang (University of Washington graduate student), this stand-alone instrument can take sequential samples of hydrothermal fluid over a period of a year (4 samples a month for 12 months) to determine the changes in fluid chemistry that are driven by earthquakes. The instrument also measure dissolved organic carbon and analyzes stable carbon isotopes. It is currently deployed at Baby Bare Seamount and may be the only sequential fluid sampler in the world.

ADCP Deployment

Jason II successfully deployed an acoustic Doppler current profiler (ADCP), which measures currents. Similar to a sonar device, an ADCP transmits signals at a fixed frequency; those signals reflect off of particles flowing in the water (such as plankton) with the current. The shift in frequency of the return signals is proportional to the velocity of the water (this is the Doppler effect).

Thermal Blanket Grab

Jason successfully deployed and recovered this instrument, which measures the warmth of the volcanic rocks on the seafloor (essentially, measuring the heat being conducted by that rock). The thermal blanket is a piece of



WHOI Marine Operations and NDSF Web Site

The screenshot shows a Netscape browser window displaying the WHOI Marine Operations website. The page title is "Woods Hole Oceanographic Institution Marine Operations". The navigation menu includes "Research Vessels", "NDSF Vehicles", "Cruise Planning", "Support Services", and "Port Office". Under "NDSF Vehicles", there are links for "Overview", "Alvin", "Jason II/Medea", "Argo II", and "DSL-120A". The "Alvin" section is active, showing an "Overview" page. The text describes Alvin as a national oceanographic facility, a Deep Submergence Vehicle (DSV) operated by the US Navy. It details a typical eight-hour dive, reaching depths of 4,500 meters (14,764 feet). The text mentions that Alvin can hover, maneuver in rugged topography, or rest on the bottom. A small image of the Alvin submersible is shown. Below the text is a map titled "Alvin Dives 1964 - 2002" showing the locations of Alvin's dives in the North Atlantic and Caribbean regions. The map uses a color scale for elevation in meters, ranging from -10,000 to 10,000. The map shows a high density of red stars representing dive locations, primarily in the North Atlantic and Caribbean. The map includes latitude and longitude coordinates and a color scale for elevation in meters.

WHOI Marine Operations - Alvin - Netscape

Woods Hole Oceanographic Institution
Marine Operations

Research Vessels | **NDSF Vehicles** | Cruise Planning | Support Services | Port Office

Overview | **Alvin** | Jason II/Medea | Argo II | DSL-120A

Alvin

- Overview
- Specifications
- User Manual
- Cruise Planning Information
- Observer Information

Overview

Man | History of Alvin | Dive Statistics | Dive Log | Dive Site Charts | Where is Alvin now? | Publications | Alvin Simulator | Lat/Lon-XY Coordinate Conversion Utility

WHOI operates the US Navy-owned Deep Submergence Vehicle (DSV) Alvin as a national oceanographic facility. A typical eight-hour dive takes two scientists and a pilot as deep as 4,500 meters (14,764 feet). When working at maximum depth, it takes about two hours for the submersible to reach the seafloor and another two to return to the surface. The four hours of working time on the bottom are crammed with carefully planned photography, sampling, and experiments conducted by the scientists using three 12-inch diameter viewports. Alvin can hover, maneuver in rugged topography or rest on the bottom.

Typically, four video cameras are mounted on Alvin's exterior with

Alvin Dives 1964 - 2002

Elevation (m)

10000 8000 6000 4000 2000 0 -2000 -4000 -6000 -8000 -10000

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www.whoi.edu/marops

