

A photograph of a sunset over the ocean. The sun is low on the horizon, creating a bright orange and yellow glow that reflects on the water. The sky is filled with dark, dramatic clouds, some of which are illuminated from below by the setting sun. The overall color palette is dominated by blues, oranges, and yellows.

# Deep Submergence Science Committee Activities 2002/2003

Report for  
UNOLS 03/03 Meeting  
by Patricia Fryer, DESSC Chair

# Fall DESSC Meeting San Francisco Dec. 5

- Science reports from NDSF users
- NDSF Chief Scientist replacement - no progress by WHOI, DESSC recommends finding an individual to perform this function is critical
- NDSF Operators report (available on-line)
- Other facilities and funding agency reports

# **NDSF Operator report**

- **WHOI Internal Review Committee**
- **Operations 2001/2002**
- **Upgrades to Jason 2 and DSL-120**  
**Field tests completed**  
**(1st science programs successful**  
**Jason 2 will be used at 6500 m, its full**  
**depth capability in early May on Fryer**  
**cruise.)**

# **NDSF Operator report (cont.)**

- **NDSF Draft proposal for upgrades to sensors and tools**
- **Scheduling issues**
- **Discussion of Replacement for Alvin**
  - General design goals**
  - Relative merits of HOV/ROV**
  - Depth capability of New Alvin**

# **General Capabilities of Replacement for Alvin**

- **Greater speed**
- **Improved science sensors and tools**
- **Improved maneuverability**
- **Increased power for propulsion and payload**
- **Greater endurance and improved ergonomics (longer dive time, especially when being used to maximum depth capability)**
- **Better visibility and lighting**
- **Improved navigation**
- **Improved safety systems**

# **General Capabilities (cont.)**

- **Improved manipulation ability**
- **Greater external sample storage and increased science payload**
- **Better communications**
- **Improved data collection, logging and interface capability to science instruments**
- **Comprehensive engineering, operational, and science-utilization documentation**
- **Depth capability to 6000-7000m (depending on technical feasibility and cost-benefit analysis)**

# HOV Benefits

- Engagement of the operator
- Visibility in 3-D
- Maneuverability/reliability
- Unobtrusiveness
- Capacity for outreach education and recruitment

# **OSB – Deep Submergence Study**

**NSF has requested the Ocean Science Board to convene a committee to review the future needs of the deep submergence science community.**

**DESSC has provided background information (documents) for the committee and will keep the user community apprised of the activities of the committee and encourage input from them.**

# **OSB Study**

**Membership of the committee will be made public in late March. There will be a 20-day period for the public to comment on the membership and then the public will be able to provide input regarding the tasking of the committee.**

**DESSC will continue to keep in contact with the committee and in Fryer's absence (at sea) DESSC members Bob Embley and Tim Shank have been asked to spear-head this effort.**

# **Report on the findings from previous submergence workshops presented at Fall DESSC meeting**

- **All recommend maintaining HOV capability**
- **This included 9 different workshops or symposia over the last 20 years. A summary table for the recommendations from each was presented (available on the UNOLS Web site)**

# **Discussion of the depth capability of a new submersible**

- **“Full” ocean depth (11,000 m) vs ~6500 m came up at the LINK Symposium in May 2002**
- **DESSC recommendations:**
  - **Concerns regarding effective use of resources**
  - **Current effort is outgrowth of community-wide discussions and workshops**
  - **Maintain the deployment capability from the existing support ship (no major modifications to the ship design, or submersible launch-recovery system)**
  - **Meet the stated needs of scientific community**

# **Link Symposium outcomes were reported:**

- **NOAA/NASA Jointly supported the May 02 meeting at the Kennedy Space flight Center**
- **Summary article in MTS Journal**
- **hoped-for products:**
  - web-based inventory (not much to report, unfortunately)**
  - recommendations for new technologies**
  - funding efforts (ongoing within NOAA/NASA)**

## **Priority actions suggested:**

- **Investigate potential new energy sources (including *in situ* energy sources)**
- **Develop means to determine orientation of samples**

# Samplers to develop

- Larva samplers

## Sterile sampling capability

- Obtain samples in good sites (for capture, tagging, tracking)
- Ability to collect volumes of sediment for assessing microorganism populations

# Samplers to develop

- Samplers that maintain *in situ* conditions
- Measure absolute seafloor pressure (to eliminate the problem of instrument “drift”)

Rock corers with the ability to take oriented samples

Manipulators with force sensitive feedback mechanism for delicate samples

# New Pune Presentation

discussion of progress (see web site available from the DESSC Dec. meeting summary page)

- Need for a variety of sub marine assets
- Support for seafloor work required from IUV, ROV and AUV

## Additional items

**Shallow Submergence Science Committee Chair Pomponi has been given greater responsibilities at HBOI and a new chair has been discussed.**



- presentation re UR Invertebrate Institute (Balad - available online at DE SC webpage)

## **REVEL summary presented**

- **NAAVE's program Dive and Explore presented**
- **MATE ROV competition at LINK described**  
**RIDGE outreach described (including**  
**Lectureships which are to be combined**  
**with DESSC outreach effort**

- **Nontraditional fields ( marine archeology**
- **Lectureship program in association with  
RIDGE2000**
- **I MAX movie and outreach activities**

## Replacements on DESSC announced:



# A ctivities since Dec. meeting:

- **Several articles prepared for UNOLS newsletter**

**updates to NADAC web site with input from NADAC members**

**Material prepared by UNOLS office and NDSF operator for outreach.**

# Activities since Dec. meeting (cont.)

## Bi ology outreach:

- **Various pamphlets have been produced for biologists to take to meetings**

Next DESSC meeting