

### **Working Group Membership**

M. Perfit (Chair)- U. Florida  
K. Becker -U. Miami  
J. Bellingham-MIT  
R.W. Embley-NOAA-Hatfield  
P. Fryer-U. Hawaii  
D. Fornari-WHOI  
P. Jeff Fox- Texas A&M  
J. Paul Johnson-U. Washington  
M. Lilley-U. Washington  
P. Lonsdale-SIO  
K. Von Damm-U. New Hampshire

### **Also Attending**

A. DeSilva-UNOLS (ex officio)  
D. Elthon-NSF (ex officio)  
D. Foster-WHOI (ex officio)

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## **APPENDIX II**

**Date:** February 14, 1997

**To:** Deep Submergence Research Community

**From:** Mike Perfit, DESSC Chair

**Subject:** DESSC Questionnaire to the Deep Submergence Research Community

### **Future Requirements for Deep Submergence Vehicles and Research Directions into the 21st Century**

The following short questionnaire is designed to compile some specific responses on key issues related to deep submergence vehicle access to the sea floor for academic research. The results of this compilation will be utilized by the Deep Submergence Science Committee (DESSC) and a DESSC Working Group that will meet on March 20, 1997. DESSC will provide the Federal Agencies (NSF, ONR, NOAA) with guidance from the scientific community regarding the possible inclusion of the capabilities of DSV SEA CLIFF in the 1998-99 time frame and future research directions that would utilize these capabilities, especially the increased operational depth capability (6000 m). The Working Group will provide a short report to the funding agencies and oceanographic community by April 1997. Although the Working Group is comprised of a wide spectrum of marine scientists with deep submergence experience, we hope to elicit responses from most of the deep submergence community through this questionnaire.

We have tried to keep the questions short and specific in order to not take up too much of your time. However, we have left room for you to make specific comments on most questions if you care to do so. Because of the short lead time before the Working Group meeting, we ask that you respond as soon as possible and no later than March 3. The questionnaire should be sent directly to the UNOLS Office or you can fill out the questionnaire on-line via the UNOLS/DESSC web site (<http://archive.unols.org/committees/dessc/index.html>). If you have more specific issues related to the general topic of deep submergence vehicle needs and future directions please enclose those on a separate sheet or send them in a separate e-mail or fax message to me (perfit@geology.ufl.edu; (352) 392-9294) or to the UNOLS Office (office@unols.org, fax: (401) 874-6167). The results of the questionnaire will be made available to ONR, NSF and NOAA and will be posted on the UNOLS and DESSC web sites.

The questions fall into two broad categories: A - Future directions in deep submergence science, and B - Disposition of the US Navy submersible SEA CLIFF.

We appreciate your taking the time to complete this questionnaire. The future makeup of deep submergence vehicle assets in the US will, in part, be guided by the community's response to this message.

Thank you.

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## QUESTIONNAIRE

### Category A - Future Directions in Deep Submergence Science (indicate all that apply)

1. What is your primary field of research?

- biology (physiology, ecology, microbiology)
- chemistry
- physical oceanography
- sedimentology
- marine geology
- petrology
- geophysics
- tectonics/structure
- engineering
- \_\_\_\_\_ (other)

2. Which area(s) is your research work principally focused on NOW?

- continental shelf/slope
- abyssal plains
- mid-ocean ridges
- transforms
- trenches
- seamounts
- mid-water
- \_\_\_\_\_ (other)

3. Which area(s) do you expect your research work will be concentrated in the next 10 years?

- continental shelf/slope
- abyssal plains
- mid-ocean ridges
- transforms
- trenches
- seamounts
- mid-water
- \_\_\_\_\_ (other)

4. How many times (cruises) in the past 5 years have you used deep submergence vehicles for your research?

ROV/tethered vehicles? Name of vehicles \_\_\_\_\_

Manned submersibles? Name of vehicles \_\_\_\_\_

5. What is the maximum depth range that deep submergence vehicles (all types) available to US scientists should have in terms of your future science requirements for the next 20 years?

- 3000m
- 4500m
- 6000m
- 7500m
- 9000m

6. Do you foresee that there is and will be a need for human-occupied submersibles to accomplish scientific missions in the depth ranges given below?

	CRITICAL			NOT IMPORTANT	
1500-3000	1	2	3	4	5
3000-4500	1	2	3	4	5
4500-6000	1	2	3	4	5
6000-7500	1	2	3	4	5
7500-9000	1	2	3	4	5

Comments:

7. On a scale of 1 (critical) to 5 (not important), how important is it to your present or future research to have a human-occupied submersible capable of working between the depths of 4500 and 6000(+) m?

CRITICAL				NOT IMPORTANT
1	2	3	4	5

Comments:

8. To what extent could your current and future science objectives at depths greater than 4500 meters be accomplished by human operated vehicles (HOVs), remotely operated vehicles (ROVs) or autonomous vehicles (AUVs)?

HOV-	100%	75%	50%	25%	less than 10%
ROV-	100%	75%	50%	25%	less than 10%
AUV-	100%	75%	50%	25%	less than 10%

Comments:

### Category B - Disposition of the US Navy Submersible SEA CLIFF

The cost of carrying out the work required to implement solutions associated with the questions below is unknown at this time. Navy moneys traditionally budgeted to support their submersible program are not likely to be provided to operate SEA CLIFF. Fiscal aspects of the problem (i.e. conversion costs) are currently being evaluated by WHOI and the Navy. It is still uncertain at what level funds will be

provided by the Navy and other Federal agencies to pay for the possible scenarios of a SEA CLIFF/ALVIN conversion. Consequently, in answering the following questions, please ignore the potential funding constraints. The working group will be addressing the financial issues after the data is made available and the potential impact these may have on the ongoing operations of the National Deep Submergence Facility.

1. Should the capabilities of both ALVIN and SEA CLIFF be merged so that the result is a 6000 m depth capable submersible?

Yes                      No                      Unsure

Comments:

2. Should SEA CLIFF replace ALVIN as the primary research submersible for US scientists?

Yes                      No                      Unsure

Comments:

3. Should SEA CLIFF be given to another institution or facility with the desire to operate a manned submersible although federal funding levels for deep submergence science will likely stay level for the foreseeable future?

Yes                      No                      Unsure

Comments:

4. Should SEA CLIFF equipment (e.g. manipulators, electronics, sonars, vehicle systems) be transferred to the National Deep Submergence Facility at Woods Hole to enhance ALVIN while the 6000 m SEA CLIFF titanium sphere is preserved for possible future replacement for the existing 4500 m depth rated ALVIN sphere?

Yes                      No                      Unsure

Comments:

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## **APPENDIX III**

### **SURVEY RESPONSES 106 QUESTIONNAIRES SUBMITTED April 1997**

#### **Category A - Future Directions in Deep Submergence Science (indicate all that apply)**

Note: The survey response totals and comments are indicated in parentheses

1. What is your primary field of research? See [Figure 1](#).