

CRUISE INSTRUCTIONS

Islands in the Stream
Sustainable Seas Expeditions 2001

NOAA Ship GORDON GUNTER

Cruise Number: GU-01-03

Signature Page

Nicholas A. Prahl
Rear Admiral, NOAA
Director, Atlantic Marine Center

Date

Dr. Sylvia Earle
Chief Scientist
Sustainable Seas Expeditions

Date

Phil Nuytten
NUYTCO Research, Ltd

Date



**Islands in the Stream
Sustainable Seas Expeditions 2001**

Cruise Instructions – Table of Contents

<u>Basic Information</u>	1
<u>1.0 DESCRIPTION OF OPERATIONS</u>	2
<u>2.0 PROJECT INFORMATION</u>	5
<u>3.0 ITINERARY</u>	7
<u>4.0 PERSONNEL</u>	12
<u>5.0 EQUIPMENT LISTS</u>	16
<u>6.0 ORGANIZATIONAL STRUCTURE</u>	18
<u>7.0 SUBMERSIBLE OPERATIONS SAFETY & EMERGENCY INFORMATION</u>	22
<u>8.0 DISPOSITION OF DATA</u>	23
<u>9.0 COMMUNICATIONS</u>	24
<u>10.0 HAZMAT</u>	25

List of Appendices

25

CRUISE INSTRUCTIONS

Islands in the Stream: Sustainable Seas Expeditions 2001

April 17, 2001

CHIEF SCIENTIST: Dr. Sylvia A. Earle
SSE Program Director, National Geographic Society
1145 17th St. NW
Washington, DC 20036
202-862-8678 in DC
510-530-9388 in Oakland
209-481-0140 by Cell

VESSEL: NOAA Ship: GORDON GUNTER - Cruise Number: GU-01-03

STUDY AREAS: Pinnacles - June 12 through 15
Northwest Florida Shelf – June 17 through 24
Southwest Florida Shelf – June 27 through July 8

CRUISE DATES: June 12 through July 12

GOALS AND OBJECTIVES: The Islands in the Stream SSE expedition will explore protected and non-protected coral and hard bottom communities of the Pinnacles (due south of Pascagoula, MS) and the West Florida Shelf, including the Madison/Swanson, Steamboat Lumps, and Florida Middle Grounds fisheries reserves, as well as paleoshorelines along Pulley Ridge, and concluding with exploration of the Dry Tortugas. Additional investigations will focus on the currents that connect the different habitats. Community characteristics including underlying geology, biology, and ecology will be studied, and the current patterns that function as the pathways for dispersal of invertebrate larvae and the migratory routes of marine mammals, fish species, and sea turtles will be assessed. Oceanographic measurements will help researchers assess water quality conditions entering and exiting marine protected areas. Both deep and shallow water habitats will be examined.

The expedition will include DeepWorker submersible operations, ROV operations, the collection of oceanographic data, and sampling (coral, rocks, water). Some samples will be collected from the ship using a Van Veen grab sampler. Night operations using a sub-bottom profiler are scheduled to be conducted in the vicinity of the Florida Middle Grounds. In addition, the expedition will provide an opportunity for observers to record information on the distribution and abundance of marine mammals, adding to existing efforts to learn more about these species and the areas they inhabit.

1.0 DESCRIPTION OF OPERATIONS

1.1 SUBMERSIBLE OPERATIONS: Dive operations will consist of a pre-dive check of the submersible, the dive itself, and a post-dive check of the submersible. The NUYTCO dive crew and pilots will perform pre- and post-dive submersible checkout tasks. During each dive, pilots will be required to perform system checks and communicate with the NUYTCO dive crew at approximately 15 minute intervals or as determined.

Launch and recovery of the submersible will utilize the ship's A-frame, a swing frame, and a constant tension winch. Each submersible comes equipped with a titanium crash frame with a single-point lift. Tugger winches will not be required based on tests run aboard the NOAA R/V McARTHUR. We will plan to conduct all launch and recovery operations under live conditions, however some conditions may warrant launch and recovery at anchor at the discretion of the Commanding Officer (CO) and with agreement from the Dive Supervisor. Details of launch and recovery procedures can be found in the Launch and Recovery Manual.

Each submersible dive will require the use of a support craft. The support craft will be outfitted with a fathometer, GPS and surface communications equipment. Underwater communications equipment may be used from the support craft if communications with the ship are not working, and may be accompanied by the dive supervisor or a designee at the discretion of the dive supervisor and with agreement of the CO. The project will make arrangements for procuring a support craft, or, if available, one of the ship's support crafts may be used.

Tracking and navigation support will consist of a TrackPoint II tracking system integrated with a WinFrog navigation system, providing distance of the submersible from the ship in X,

Y, and Z coordinates, as well as real-world coordinates. NUYTCO personnel will be responsible for tracking and navigation of the submersible.

Surface communications between the submersible pilot and the ship will be conducted using VHF, while underwater communications will be conducted using an appropriate system. Speakers will be provided by the project and will be installed under the direction of the LET so that ship's bridge can monitor communications between the NUYTCO dive crew and the submersible pilot.

Pilots will use the submersible to collect videotape, still images, water quality data and samples of coral and rock. Submersible dives will average approximately 4 hours, but may run longer. It is anticipated that the ship will conduct at least 2 launch and recoveries each day and may include concurrent operations with both submersibles. Pilots will visually record their observations using the cameras aboard the submersible. Subsequent to the dive, pilots will also annotate the videotape they collected, and work with data managers to capture digital stills from the video for further analysis. Two onboard Data Managers will ensure that the information collected is properly organized and stored. Any samples will have proper permits (the CO is to be provided a copy of these permits), and be appropriately marked and stored.

Please refer to section 7.0, SUBMERSIBLE OPERATIONS SAFETY AND EMERGENCY INFORMATION, for more detailed information on the operational limitations of the DeepWorker submersible, as well as pilot considerations. Please note that before each cruise leg, NUYTCO will provide a dossier to the CO for each person who will operate the submersible. Contents will include:

1. Pilot's resume' (Pilot provides)
2. Medical clearance (Pilot provides) Provided in accordance with Section 4.1
3. Copy of the pilot's self evaluation form (NUYTCO provides to pilots)
4. Copy of pilot's signed checkout dive form (NUYTCO provides)
5. Copy of the pilot certification letter (NUYTCO provides)

If these docs are not provided, the pilot will not be authorized to dive.

Submersible operations will also include the periodic use of the super phantom ROV, especially during the Pinnacles, Madison and Swanson, and Steamboat Lumps legs. The ROV will be equipped with cameras and lights, and will be deployed using the ship's A-frame, or an appropriate crane, either after manned submersible operations, or as a contingency during rough weather. Night ROV operations will require a deck hand to assist with the operation. NUYTCO has trained the science party on the use of the ROV, therefore night operations will not impact their schedule.

1.2 SURVEY OPERATIONS:

1.2.1 SHIPBOARD BATHYMETRY: Bathymetry is available for most of the areas where the submersible will be operating, but at times, the project would like the ship to provide information from the fathometer to assist with the identification of specific dive targets. Unlike last year, maps of dive tracks will not be developed onboard. There will

be no integration of the tracking and navigation system with the ArcView GIS. These products will be developed onshore once the WinFrog data has been obtained and transmitted.

1.2.2 SUB-BOTTOM PROFILER: during the Florida Middle Grounds leg, the project will use a sub-bottom profiler to obtain data of sub-bottom features on predetermined transects east of the reserve. The purpose is to identify suspected relict river channels. The tow fish is 38”x18”, weighing 100 lbs in air and 80 lbs in the water. The science party will provide a cable 50m in length, but if the ship has longer cable, we would prefer to use that. The profiler requires 110V power. The science party will also provide a computer console and monitor with a footprint of 24” square and 36” high that will be dedicated to this effort.

1.3 SAMPLING:

1.3.1 WATER: In addition to the samples obtained by the DeepWorker submersible as indicated above, we would like to use the ship’s starboard side crane to obtain samples of the water column from key locations throughout the expedition. It is anticipated that this would consist of collecting water samples at each dive location, as well as on a once-per-day basis during transits. Water samples will be taken within 1 meter of the surface, and will not require the Rosette Sampler. PIs will supply storage materials and labels. PIs will also provide required forms for any hazardous materials related to sampling. We would also like to obtain CTD information periodically throughout the mission.

1.3.2 SEDIMENT: During the Pinnacles, Madison and Swanson, and Steamboat Lumps legs, the project will use a Van Veen Grab sampler to collect sediment samples once submersible operations have been completed. The sampler is 48” high with a circular base 40” in diameter. It weighs approximately 250 lbs and sits on a wood frame 36” square and 36” high. Deployment will require a crane or A-frame and at least 200m of cable capable of handling the sampler. The science party will provide a 4’x4’ frame for dumping and processing the samples obtained. Samples will be stored in two coolers (40”x18”x20”) and weighing about 100-150 lbs when full. Coolers can be stored on deck or in a lab. Dry lab requirements are minimal. Each grab will take approximately 30 minutes to complete. The project requests a deck hand to assist with this operation.

1.3.3 CORAL, ROCKS, ETC: Specimen collection will include using the submersible’s manipulator and SCUBA divers to collect coral fragments, macroalgae, rocks, and sediment. PIs will provide sampling storage materials.

1.4 DIVE PLANNING: To ensure successful dive operations, a Post-Dive Debriefing and Plan of the Day (POD) meeting will be held every evening to assess the day’s events and plan the submersible dives for the following day. Critical personnel include the CO, the Chief Scientist, the science party, the submersible Dive Supervisor, the Chief Boatswains (or similar persons in charge of the deck crew for the vessel), and the Tracking and Navigation Technician. The POD will be distributed to this team and reevaluated the morning of operations in order to make any adjustments based on weather, sea state, or mechanical

conditions, as well as the health of the scheduled pilots. All actions will be the result of decisions agreed upon by the CO, the Chief Scientist, and the Dive Supervisor.

1.5 EDUCATION AND OUTREACH OPERATIONS: Operations associated with education and outreach efforts will include shuttle transfers of people and equipment. Shuttles will be arranged with POVs so as not to interfere with the use of the support craft supporting dive operations. These events will provide an opportunity for teachers, students, and the media to observe the operation and tour the ship. Transfer operations are weather dependent and subject to the CO's approval.

1.6 SCUBA OPERATIONS: All SCUBA operations conducted from the GORDON GUNTER or any other NOAA support vessel will meet with standard NOAA dive protocols. Divers must be NOAA certified or have a valid "reciprocity letter" and all divers must be approved by the NOAA Dive Center staff (P.O.C. are LT William Cobb or Mr. Dave Dinsmore at 206-526-6196). The National Geographic Photographer meets these criteria, and may be diving on any given day as determined during the POD meetings the evening before. All SCUBA operations will be conducted in coordination with the CO, the Chief Scientist, the ship's Divemaster and the Dive Supervisor. All SCUBA divers must be approved in advance by the NOAA Dive Center and are under the authority of the ship's divemaster and the Commanding Officer.

Notes regarding SCUBA diving off the Ship or Launches:

1. Dives are to be planned **in advance**.
2. There must be a written dive plan for every dive, containing at a minimum: purpose of dive, dive location, max depth, max bottom time, location of nearest hyperbaric chamber, means of contacting chamber, and verification that the chamber is operational on the day of the dive. These plans will be reviewed and approved by the Divemaster and CO. One copy is to be provided to the divemaster and one copy to the bridge. Divemaster will be responsible for drafting a Dive Accident Management Plan for each dive site. This plan is to be provided to the Divemaster at least 24 hours before by all divers prior to commencing the dive.
3. If the max depth and/or max time called for in the dive plan is exceeded, it will warrant a meeting between Divemaster, CO and divers to discuss further dive plans -- diving may be permanently suspended. Compliance with dive plans is not negotiable. Dives may be conducted at remote locations where it will be difficult and time-consuming to obtain adequate medical treatment. A SCUBA diving accident will disrupt the entire project. An accident which could have been prevented by following the dive plan is unacceptable.
4. Project divers will be allowed to store gear on a space available basis in the ship's dive locker. If the project anticipates needing SCUBA tanks and weights, the project will be responsible for supplying them. Ship's cylinders are to be used by NOAA-certified divers only, and only on dives called for in the cruise instructions. They are not to be used on "Away" dives. Divers will be responsible for ensuring their tanks are filled and ready for use.

2.0 PROJECT INFORMATION

2.1 PROJECT LIST: The following tables identify the projects that will be undertaken during the cruise. They reflect the primary submersible projects, several sampling efforts that will be undertaken using the submersibles on an opportunistic basis, projects that will not involve the submersible, and special events. Appendix A provides more details on these projects, while section 3.0, ITINERARY, describes when and where the activities will occur. Also, as indicated above, we will be using the ship’s CTD. Note: Open House events will be scheduled to last no more than 4 hours. Any marine transport vessels used to transfer personnel to and from GUNTER, must be approved in advance by the CO who is concerned for all passengers’ safety to and from GUNTER. At a minimum, any personnel transfer vessel supplied by the project, must have one lifejacket for each passenger (passengers must wear these jackets), a VHF radio, red safety flare and a floating safety line to retrieve a man overboard. If transports are conducted at night, functional navigation lights are required in accordance with the Safe Navigation Rules.

Table 1. *These projects comprise the primary focus of submersible operations.*

All Study Areas
Baseline characterization of deep water habitats
Deep water fish assemblage characterization
Florida Middle Grounds
Geographic (latitudinal & longitudinal) differences in flora-fauna
Investigation of relict river channels for signs of paleohuman habitation
Pulley Ridge
Geological and biological characterization
Dry Tortugas
Survey of IMO anchorage zones
Exploration of deepwater habitats off Riley's Hump
Investigation of crepuscular migration – reef to seagrass beds
Investigation of coral health

Table 2. *These projects focus on bathymetric surveys.*

All Study Areas
Opportunistic use of ship’s fathometer
Florida Middle Grounds
Sub-bottom profiler surveys to search for relict river channels

Table 3. *These projects will rely on opportunistic sample collection using the submersible.*

All Study Areas
Distribution and diversity of deep water macroalgal communities
Investigation of paleoshorelines

Table 4. *These are special events scheduled for the cruise.*

Special Events	Date
Open house – Tampa Bay	June 26

2.2 SAMPLING INFORMATION: The following provides an overview of the samples that we anticipate collecting, pending the required permits from the appropriate authorities.

Table 5. *Sampling information.*

Project	Sample Type	~ # of Samples
All Sites		
Baseline characterization	Rock	10-20/Site
Macroalgal communities	Macroalgae	10-20/Site
Marine Ecotoxicology	Water	10/Site

2.2 Hazardous Materials

The Chief Scientist shall be responsible for complying with NC Instructions 6280a, Hazardous Materials and Hazardous Waste; policy, guidance, and training dated February 4, 1991, paragraph 7.g and paragraph 9. By Federal Law, the ship may not sail without a complete inventory of Material safety Data Sheets (MSDS’s) and appropriating neutralizing agents, buffers, and/or absorbents in amounts adequate to address spills of a size equal to the amount of chemicals brought on board.

3.0 ITINERARY

This section provides a day-by-day synopsis of daily activities and the timing of major actions. More detail will be developed during the Plan of the Day (POD) process onboard the ship. A typical workday consists of 12 hours of submersible operations, (for the ship’s crew this should generally include time needed for meals, CTD or sidescan gear staging to avoid crew fatigue) starting when the crew begins to prepare the submersible for the dive day, and ending when the submersible is post-dived and secured. The remaining 12 hours will be devoted to additional projects such as ROV work, water and sediment sampling, and conducting surveys.

Mobilization and preparation in Pascagoula will include testing all equipment to ensure it is in operating order prior to departure. This includes, but is not limited to both DeepWorker submersibles, the ROV, the tracking and navigation system, the underwater communications system (test both shipboard and contingency RHIB-based systems), the video editing and duplication system, and all equipment to be used on the submersibles (cameras, lights, lasers, manipulators, sample collection baskets, etc.).

The Chief Scientist or an appropriate designee will be available onboard at all times during mobilization and preparation activities in Pascagoula to address any needs of the science party, as well as to assist the ship and NUYTCO in testing equipment and procedures. The Chief Scientist or an appropriate designee will also be available onboard at all times during port calls, and will be responsible for coordinating science party logistics and for ensuring the science party is prepared for any scheduled in port activities, as well as to ensure that the science party is onboard at the scheduled departure time.

- Summary -
Mobilization and Preparation – Pascagoula

June 9-10	Mobilization
June 11	Equipment testing, launch and recovery practice for ship and dive crew
June 12	Transit to the Pinnacles – sea trials, checkout dives
<u>West Florida Shelf Mission</u>	
June 13-15	Pinnacles
June 17-20	Madison/Swanson & Steamboat Lumps Reserves
June 21-24	Florida Middle Grounds Reserve
<u>Open House</u>	
June 25	Transit to Tampa Florida Aquarium
June 26	Conduct Open House
June 27	Transit from Tampa
<u>Pulley Ridge Mission</u>	
June 28-30	Pulley Ridge
<u>Dry Tortugas Mission</u>	
July 1	North IMO Anchorage
July 2	South IMO Anchorage
July 3-5	Riley’s Hump
July 6-7	Sherwood Forest

Table 6. *Detailed Itinerary – Day Operations*

Date	Day	Primary Activities	Location Name	Dive Location Lat/Long and depth
10-Jun	Sunday	Mobilize	Pascagoula	None
11-Jun	Monday	Mobilize	Pascagoula	None
12-Jun	Tuesday	Depart Pascagoula – Trials Checkout dive Koenig?	TBD	TBD
13-Jun	Wednesday	Pinnacles Ops	Alabama Alps	N 29 15.08' - W 87 20.26' 75m
			Double Top Reef	N 29 23.48' - W 87 58.92' 75m
14-Jun	Thursday	Pinnacles Ops	Pancake Reef	N 29 24.08' - W 87 58.87' 79m
			Yellowtail Reef	N 29 27.05' - W 87 35.50' 70m
15-Jun	Friday	Pinnacles Ops	Catspaw Reef	N 29 26.33' - W 87 35.00' 72m
			Roughtongue Reef	N 29 26.33' - W 87 34.50' 75m

Date	Day	Primary Activities	Location Name	Dive Location Lat/Long and depth
			Lophelia Bank	N 29 05' – W 88 19' 500m
16-Jun	Saturday	Transit – Submersible Maintenance	N/A	N/A
17-Jun	Sunday	Madison-Swanson Ops	Stu's Ridge	TBD onsite
			MS Pinnacles	TBD onsite
18-Jun	Monday	Madison-Swanson Ops	Unnamed	TBD onsite
18-Jun	Monday	Madison-Swanson Ops	Unnamed	TBD onsite
19-Jun	Tuesday	Madison-Swanson Ops	Unnamed	TBD onsite
20-Jun	Wednesday	Steamboat Lumps Ops	Red Grouper Site	TBD onsite
			Unnamed	TBD onsite
21-Jun	Thursday	Middle Grounds Ops Checkout dive Guggenheim Shuttle – Personnel Transfer	Northeast	N 28 45' - W 84 00' 150 ft
22-Jun	Friday	Middle Grounds Ops	Northwest	N 28 45' - W 84 25' 150 ft
			Middle-East	N 28 18' - W 84 00' 150 ft
23-Jun	Saturday	Middle Grounds Ops	Middle-West	N 28 18' - W 84 25' 150 ft
			Southeast	N 28 10' - W 84 00' 150 ft
24-Jun	Sunday	Middle Grounds Ops	Southwest	N 28 10' - W 84 25' 150 ft
25-Jun	Monday	Transit to Tampa – Submersible Maintenance	N/A	None
26-Jun	Tuesday	Open House Tampa	FL Aquarium	None
27-Jun	Wednesday	Transit from Tampa	N/A	None
28-Jun	Thursday	Pulley Ridge Ops Checkout dive Baumgartner	N/A	N 25 10' - W 83 40' 150m
			N/A	N 25 02' - W 83 43' 150m

Date	Day	Primary Activities	Location Name	Dive Location Lat/Long and depth
29-Jun	Friday	Pulley Ridge Ops	N/A	N 24 52' - W 83 39' 150m
			N/A	N 24 43' - W 83 42' 150m
30-Jun	Saturday	Pulley Ridge Ops	N/A	N 24 39' - W 83 42' 150m
1-Jul	Sunday	Dry Tortugas Ops Shuttle – Personnel Transfer	North IMO Anchorage	TBD 120 ft
2-Jul	Monday	Dry Tortugas Ops Shuttle – Personnel Transfer	South IMO Anchorage	TBD 150 ft
3-Jul	Tuesday	Dry Tortugas Ops Checkout dive Mueller Potential media onboard	Riley's Hump	TBD 60 - 1800 ft
4-Jul	Wednesday	Dry Tortugas Ops	Riley's Hump	TBD 60 ft
5-Jul	Thursday	Dry Tortugas Ops Teacher/Student-at-Sea day Shuttle – Personnel Transfer	Riley's Hump	TBD 60 ft
6-Jul	Friday	Dry Tortugas Ops Checkout dives Cava & Tagliareni	Sherwood Forest	TBD 80 – 300 ft
7-Jul	Saturday	Dry Tortugas Ops	Sherwood Forest	TBD 80 – 300 ft
8-Jul	Sunday	Demobilize Key West	Truman Annex	N/A
9-Jul	Monday	Transit	N/A	None
10-Jul	Tuesday	Transit	N/A	None
11-Jul	Wednesday	Arrive in Pascagoula	Pascagoula	None
12-Jul	Thursday	Demobilize	Pascagoula	None
13-Jul	Friday	Demobilize	Pascagoula	None

Table 7. Detailed Itinerary – Night Operations

Date	Day	Night Ops	Night Ops Location	Night Ops Lat/Long
10-Jun	Sunday	None	N/A	N/A
11-Jun	Monday	None	N/A	N/A

Date	Day	Night Ops	Night Ops Location	Night Ops Lat/Long
12-Jun	Tuesday	ROV - Sediment	Alabama Alps	N 29 15.08' - W 87 20.26'
13-Jun	Wednesday	ROV - Sediment	Pancake Reef	N 29 24.08' - W 87 58.87'
14-Jun	Thursday	ROV - Sediment	Catspaw Reef	N 29 26.33' - W 87 35.00'
15-Jun	Friday	ROV - Sediment	Lophelia Bank	N 29 05' – W 88 19'
16-Jun	Saturday	None	N/A	N/A
17-Jun	Sunday	ROV - Sediment	TBD	TBD
18-Jun	Monday	ROV - Sediment	TBD	TBD
19-Jun	Tuesday	ROV - Sediment	TBD	TBD
20-Jun	Wednesday	ROV - Sediment	TBD	TBD
21-Jun	Thursday	Profiler	East of Middle Grounds	TBD
22-Jun	Friday	Profiler	East of Middle Grounds	TBD
23-Jun	Saturday	Profiler	East of Middle Grounds	TBD
24-Jun	Sunday	Profiler	East of Middle Grounds	TBD
25-Jun	Monday	None	N/A	N/A
26-Jun	Tuesday	None	N/A	N/A
27-Jun	Wednesday	None	N/A	N/A
28-Jun	Thursday	TBD	TBD	TBD
29-Jun	Friday	TBD	TBD	TBD
30-Jun	Saturday	TBD	TBD	TBD
1-Jul	Sunday	ROV	North IMO Anchorage	TBD

Date	Day	Night Ops	Night Ops Location	Night Ops Lat/Long
2-Jul	Monday	ROV	South IMO Anchorage	TBD
3-Jul	Tuesday	ROV	Riley's Hump	TBD
4-Jul	Wednesday	ROV	Riley's Hump	TBD
5-Jul	Thursday	ROV	Sherwood Forest	TBD
6-Jul	Friday	None	Sherwood Forest	TBD
7-Jul	Saturday	Transit	To Key west	N/A
8-Jul	Sunday	None	N/A	N/A
9-Jul	Monday	None	N/A	N/A
10-Jul	Tuesday	None	N/A	N/A
11-Jul	Wednesday	None	N/A	N/A
12-Jul	Thursday	None	N/A	N/A
13-Jul	Friday	None	N/A	N/A

4.0 PERSONNEL

The following identifies personnel who will be involved during the cruise. Appendix D provides CONTACT INFORMATION for key personnel.

Table 8. *Personnel list.*

Name	Role	Pilot	Organization	Gender	Nationality
Sylvia Earle	Chief Scientist	X	NGS	F	USA
NUYTCO 1	Dive Supervisor	X	NUYTCO	M	Canada
NUYTCO 2	Technician	X	NUYTCO	M	Canada
NUYTCO 3	Technician	X	NUYTCO	M	Canada
Kip Evans	Chief Photographer	X	NGS	M	USA
Gale Mead	Data Manager	X	NGS	F	USA
Felicia Coleman	Mission Coord.		FSU	F	USA
Chris Koenig	Scientist	X	FSU	M	USA
Walt Jaap	Mission Coord.	X	FMRI	M	USA
Michael Faught	Scientist		FSU	M	USA
David Guggenheim	Scientist	X	CMC	M	USA
Doug Weaver	Scientist		USGS	M	USA
Margaret Miller	Scientist		NMFS	F	USA
Kathy Scanlon	Scientist		USGS	F	USA
Chris Bruno	NGS Intern		USCG	M	USA
Liz Garamendi	NGS Intern		NGS	F	USA
Bob Halley	Scientist		USGS	M	USA
Student	Intern		USF	?	USA
Ben Richards	Data Manager		NOAA/FKNMS	M	USA
Steve Baumgartner	Mission Coord.	X	NOAA/FKNMS	M	USA
Mary Tagliareni	Educator	X	NOAA/FKNMS	F	USA
Erich Mueller	Scientist	X	MOTE	M	USA
Jane Hawkrigde	Scientist		MOTE	F	USA
Laddie Akins	Scientist	X	REEF	M	USA
Marcy Lee	Data Manager		NOAA/GRNMS	F	USA
Fritz Wettstein	Scientist		NOAA/FKNMS	M	USA
Francesca Cava	Educator	X	NGS	F	USA
Mark Fonseca	Scientist		NOAA/NCCOS	M	USA
Alex Chadwick	Reporter		NPR	M	USA
TBD	Reporter		NPR	?	USA
TBD	Reporter		NPR	?	USA

There will only be 15 scientific berths available. Every person should have a bunk. “Hot bunking” among scientific berths may be authorized by the Command for very brief periods and in very limited numbers. Some berthing may not be available and denied if the M/F ratio is unbalanced. Advance planning and notification of berthing changes to the Command is essential to avoid any surprises.

Table 9. *Berthing plan for Pinnacles through Steamboat Lumps.*

Name	Role	T 12	W 13	Th 14	F 15	Sa 16	Su 17	M 18	T 19	W 20
Sylvia Earle	Chief Scientist	1	1	1	1	1	1	1	1	1
NUYTCO 1	Dive Supervisor	1	1	1	1	1	1	1	1	1
NUYTCO 2	Submersible Technician	1	1	1	1	1	1	1	1	1
NUYTCO 3	Submersible Technician	1	1	1	1	1	1	1	1	1
Kip Evans	Chief Photographer									
Gale Mead	Data Manager	1	1	1	1	1	1	1	1	1
Marcy Lee	Data Manager	1	1	1	1	1	1	1	1	1
Chris Bruno	Tracking and Navigation	1	1	1	1	1	1	1	1	1
Felicia Coleman	NMSS Mission Coordinator	1	1	1	1	1	1	1	1	1
Chris Koenig	Scientist	1	1	1	1	1	1	1	1	1
Doug Weaver	Scientist	1	1	1	1	1	1	1	1	1
Margaret Miller	Scientist	1	1	1	1	1	1	1	1	1
Kathy Scanlon	Scientist	1	1	1	1	1	1	1	1	1
Liz Garamendi	NGS Intern	1	1	1	1	1	1	1	1	1
Total Females		7	7	7	7	7	7	7	7	7
Total Males		6	6	6	6	6	6	6	6	6
Total Persons		13	13	13	13	13	13	13	13	13

Table 10. *Berthing plan for the Florida Middle Grounds through Pulley Ridge.*

Name	Role	Th 21	F 22	Sa 23	S 24	M 25	T 26	W 27	Th 28	F 29	Sa 30
Sylvia Earle	Chief Scientist	1	1	1	1	1	1	1	1	1	1
NUYTCO 1	Dive Supervisor	1	1	1	1	1	1	1	1	1	1
NUYTCO 2	Submersible Technician	1	1	1	1	1	1	1	1	1	1
Sylvia Earle	Chief Scientist		1	1	1	1	1	1	1	1	1
NUYTCO 1	Dive Supervisor		1	1	1	1	1	1	1	1	1
NUYTCO 2	Submersible Technician	1	1	1	1	1	1	1	1	1	1
Marcy Lee	Data Manager	1	1	1	1	1	1	1	1	1	1
NUYTCO 3	Submersible Technician		1	1	1	1	1	1	1	1	1
Ben Richards	Data Manager		1	1	1	1	1	1	1	1	1
Kip Evans	Chief Photographer	1	1	1	1	1	1	1	1	1	1
Chris Bruno	Scientist		1	1	1	1	1	1	1	1	1
Steve Baumgartner	Mission Coordinator	1	1	1	1	1	1	1	1	1	1
Chris Kenig	Scientist	1	1	1	1	1	1	1	1	1	1
Paulie Atkins	Scientist										
Francesca Cava	Scientist							1	1	1	
Mary Tagliareni	Scientist							1	1	1	
Eric Muehle	Scientist	1	1	1	1	1	1				
Jane Hawkrigde	Scientist				1	1	1				
Liz Garamendi	NGS Intern		1								
Ben Richards	Data Manager		1	1	1	1	1	1	1	1	1
Steve Baumgartner	Scientist										
Fritz Wettstein	Scientist				1	1	1	1	1	1	1
David Guggenheim	Scientist		1	1	1	1	1				
Mark Fonseca	Scientist		1	1	1	1	1				
Total Females		6	6	6	6	6	4	4	4	4	4
Alex Chadwick	NPR	7	7	7	7	7	11	11	11	11	11
Total Males		13	13	13	13	13	15	15	15	15	15
NPR 2	NPR										
NPR 3	NPR		1	1							
Total Females			2	2	2	2	2	3	3	3	3
Total Males			11	13	10	10	8	8	8	8	8
Total Persons			13	15	12	12	11	11	11	11	11

Table 11. *Berthing plan for the Florida Keys National Marine Sanctuary.*

4.1 **MEDICAL FORMS**

All personnel participating on board will complete a NOAA health Services Questionnaire prior to embarking on the vessel as per NC Instruction 6000. The Chief Scientist will collect the forms and submit them to AMC Health Services 30 days in advance of the cruise for release. The forms are to be sent together in an envelope marked "Medical Forms" with the cruise number.

5.0 EQUIPMENT LISTS

5.1 SUPPLIED BY THE SCIENTIFIC PARTY:

- Supplies for storing rock samples
- Supplies for storing water samples
- Media materials (several crates ~ 2x2x2)
- 1 computer
- 2 laptops
- 1 color printer
- 1 scanner
- 4 mini DV decks
- 2 VHS decks
- 2 studio monitors
- Possible support craft with working VHF, fathometer and GPS
- Sub-bottom profiler
- Van Veen grab sampler
- Mini Phantom ROV and tether

5.2 SUPPLIED BY NUYTCO:

- 2 DeepWorker Submersibles
- 2 Van 8x10 (tack to deck)
- 1 Super Phantom ROV (supplied by NGS)
- 4 “Fish Boxes” 6x6x3
- WinFrog Navigation System Computer (supplied by NGS)
- Underwater Communications System (includes transducers)
- Backup Underwater Communications System
- Digital Underwater communications System (possible – as available for testing)
- Air and oxygen cylinders (Ks, 80s, 50s)
- Bridge speakers for sub communications
- Scrubber Chemicals

5.3 SUPPLIED WITH THE SUBMERSIBLE (Through NGS):

- | | |
|--------------------------------------------|----------------------------|
| • Aries 3CCD underwater camera package | • 999 Lipstick Cameras |
| • Hitachi 3CCD underwater video camera | • Panasonic CCTV Lens |
| • Mini Benthos 35 mm still camera | • Sony Mini-DV-Video |
| • 100 Watt HID Max Lights | • HMI Lights 200 Watt |
| • DeepSea Super Dynamic color video camera | • Color Board Camera –Elmo |

5.4 SUPPLIED BY OMAO

- TrackPoint II Tracking System
- Transducers, Cable, Transponders
- Swing Frame (installed on A-Frame)
- Constant Tension Winch

5.5 SUPPLIED BY THE SHIP:

- Laboratory space for dive operations (tracking and comms station)

- Laboratory space for video duplication and editing
- Laboratory space for sidescan operations
- Storage space for equipment crates
- Storage space for media materials
- Rosette sampler and winch (CTD)
- Freezer space for samples
- SCUBA tanks (see note section 1.6)
- Small capstans to deploy and recover ducer pole

6.0 ORGANIZATIONAL STRUCTURE

6.1 KEY PERSONNEL – ROLES & RESPONSIBILITIES:

SSE Program Director

The SSE Program Director, Dr. Sylvia A. Earle, has overall responsibility and authority for developing and implementing the SSE Program including Cruise Plans.

Commanding Officer (CO)

The CO has authority over all operations related to safety of the vessel, and safety of all assigned personnel on board during the period of this project in accordance with applicable law and NOAA instructions. Before a submersible is launched from the ship, both the CO and Dive Supervisor must agree that all conditions are acceptable for the safe launch and recovery of the submersible. The CO is the final authority for any allowable modifications to these Cruise Instructions with regard to schedules, planned events, or personnel as it relates to safety aboard the ship. Marine Center approval is necessary for changes to the approved cruise schedule as it relates to allocated days.

The CO understands that the ship's mission is to accomplish the goals of SSE as stated in these project instructions. The CO has flexibility in the interpretation of these Cruise Instructions to be responsive to the requests of the Chief Scientist and Dive Supervisor - i.e. changing dive sites; course, speed, and time of launch and recovery; etc. Given that the CO and Dive Supervisor have their distinctive and particular responsibilities, yet must work closely in arriving at mutual agreement for launch and recovery, a close rapport must be established between them for any operations to occur on this project. Open communication is necessary and anything less is an impediment to the safety of the operation. The CO is the ultimate and final authority.

NUYTCO Operations Manager

The NUYTCO Operations Manager is in overall charge of submersible operations including supervision of all NUYTCO operational personnel. The Operations Manager may be the Dive Supervisor; however, when another individual is appointed as Dive Supervisor, during launch and recovery of the NUYTCO submersibles the Dive Supervisor shall be in control of such operations, with a direct line of communications to the CO.

Dive Supervisor

The Dive Supervisor will be responsible for safe and efficient submersible operations at sea and shares responsibility for the safe launch and recovery of the submersible with the CO. The Dive Supervisor will request from the CO, or the officer on the bridge, course, speeds, and positioning of the ship to ensure safety and efficiency of the submersible operation. These requests will not overrule the CO's responsibility for the safety of the ship, or the CO's authority. The Dive Supervisor will provide instruction to the deck crew when involved in launch, recovery, or handling of the submersible.

Chief Scientist

The Chief Scientist works with the SSE Program Director to develop Cruise Plans and is the person on board responsible for coordination and implementation of the Cruise Plan. The Chief Scientist will consult with the CO, FOO, Dive Supervisor, Site Coordinator, and other critical personnel to develop the POD. Normally, the SSE Chief Scientist is SSE Program Director Dr. Sylvia Earle. In her absence, she will assign another appropriate individual to serve in this role. The Chief Scientist or designee, should be aboard or easily accessible during all inports to attend to science party needs.

Mission Coordinator

The Mission Coordinator will provide assistance to the Chief Scientist with the development and implementation of the Cruise Plan. The Mission Coordinator will help prepare and organize materials for the post dive debrief/POD meeting, and when aboard the ship will attend these meetings as the site representative. The Mission Coordinator will be a scientist familiar with the area in which the project is working, and may serve as the Chief Scientist in her absence, at her discretion.

Surface Controller

The Surface Controller is responsible for overseeing tracking, communications and conduct of a specific dive and is expected to: a). with the approval of the Dive Supervisor direct the submersible to abort the dive when the conditions so indicate; b). maintain communications with the submersible at all times in accordance with existing procedures; c). keep the Dive Supervisor and the Bridge informed of any unusual conditions affecting the operations; d). perform other duties as may be assigned. The Surface Controller may be the Dive Supervisor.

Pilot

The Pilot is defined as the person who physically controls the submersible. The Pilot is responsible to the Dive Supervisor/Surface Controller/Launch Coordinator for all aspects of submersible operations as required to carry out the assigned mission. Each pilot must provide a resume containing the following information to NUYTCO for inclusion in their pilot dossier:

1. A copy of a medical examination conducted within the past two years that is equivalent to the examination required for a NOAA/AAUS diving physical (confidential)
2. a summary of training and experience with DeepWorker submersibles
3. a summary of training and experience with other submersibles

4. a summary of diving experience
5. a summary of other relevant experience, especially field experience
6. contact information and biographical summary

Tracking and Navigation Technician

The Tracking and Navigation Technician is responsible for the proper operation of the tracking equipment to ensure optimal mission tracking and navigation of the submersible during mission dives. The Tracking and Navigation Technician will report directly to the Surface Controller during a mission Dive, and all other times to the Dive Supervisor. The Tracking and Navigation Technician will work with the pilots prior to their dives and during the post dive debrief/POD meeting, to ensure the navigation goals of the project are met. The Tracking and Navigation Technician will determine the degree of error associated with the tracking system and the vessel positioning system. This technician will immediately inform the Surface Controller during a dive, and the Dive Supervisor at all other times in the event the Tracking and Navigation data or equipment is jeopardized.

Data Managers

Both NOAA and the National Geographic will provide a Data Manager who will work together to organize and oversee the on board processing, storage, and transmittal of data and information collected during submersible dive operations. This includes working with the pilots to ensure that post-dive debriefing forms are completed, assisting with tracking file management and video annotation efforts as needed. The Data Managers will report directly to the Chief Scientist.

The Data Managers will also work with the National Geographic Photographer and the Chief Scientist to organize and oversee the collection, duplication, and editing of all data and visual media collected by National Geographic photographers and by the submersible. The Data Managers will ensure that digital video tapes obtained by the submersible are duplicated and distributed in accordance with the MOU between NOAA and the National Geographic Society.

Swimmer

The Swimmer performs duties in conjunction with submersible operations under the direction of the Dive Supervisor. He/she must be a qualified swimmer and required to wear a form of flotation capable of floating an unconscious swimmer on the surface. The swimmer will be a NUYTCO employee.

Coxswain

The Coxswain (during launch and recovery) takes direction from the Dive Supervisor and otherwise under the direction of the Officer of the Deck. The primary responsibility of the Coxswain is the safety and location of the swimmer when in the water.

National Geographic Photographer

The National Geographic Photographer is responsible for image collection, transfer, and press requests pertaining to images obtained by themselves, other National Geographic photographers, and the submersible. The National Geographic Photographer is also

responsible for setting up and maintaining the shipboard video editing and duplication station. The National Geographic Photographer works at the direction of the SSE Program Director.

6.2 PROTOCOLS:

Dive Authority and Approval

The CO and the Dive Supervisor will make the final decision on whether or not to launch the submersible. The CO and Dive Supervisor will meet before launch/recovery operations commence and shall be in agreement as to how operations will be conducted. The Dive Supervisor will approve pilots for each submersible dive and verify qualifications of the assigned pilot to the CO. The CO shall not approve a launch unless a satisfactory pre-dive meeting and resulting plan has been accomplished.

The Dive Supervisor will review and approve all proposed pilots and their qualifications, as well as the locations, profiles, and procedures related to the diving of the submersible. Both the CO and Dive Supervisor must agree that conditions are acceptable for safe launch and recovery of the submersible. The Dive Supervisor will ensure a pre-dive meeting is held prior to the commencement of operations each day for the purpose of clarifying launch/recovery and piloting procedures and will attend the post dive debrief/Plan-of-the-Day (POD) meeting.

Alterations to the Cruise Plan

Alterations to the cruise plan will be determined based on experiences gained over time, will be discussed during onboard meetings, and will be detailed in the POD. Potential changes must be agreed to by the Chief Scientist and CO. Crew members' requirements for rest periods and meals should be taken into consideration for all changes.

Project Implementation

The CO, Dive Supervisor, Chief Scientist, Mission Coordinator, Field Operations Officer (FOO), and other required personnel will develop the POD based on the Cruise Plan and an evaluation of operations. The Chief Scientist and CO share decision-making authority for any departures from the schedule, planned activities, or personnel. A written POD will be posted by the Operations Officer for the information of all hands. Any changes to this POD must be approved by the CO

7.0 SUBMERSIBLE OPERATIONS SAFETY AND EMERGENCY INFORMATION

7.1 GENERAL OPERATIONAL REQUIREMENTS:

In FY 2001 two DeepWorker 2000 Submersibles (DW2000) will be available for each mission with 3-4 NUYTCO support personnel, one Dive Supervisor, two technicians, and a Submersible Tracking and Navigation technician.

1. NUYTCO DW 2000 Submersibles with single point lift systems or functional equivalent will be deployed from NOAA Vessels.
2. Submersible operations emergency procedures will be those as defined by the NUYTCO DeepWorker 2000 Operations Manual. The CO will be provided a copy of the latest version 30 days in advance.
3. DW2000 will not be deployed and operated without the second DW2000 or ROV (given the currents expected and the inability of the ROV to get to depth last year in Monterey Bay, the ability of the ROV should be tested as part of any emergency drill) in operational condition and equipped with a manipulator or other suitable device to effect emergency procedures. The Dive Supervisor is responsible for informing the CO immediately any time these conditions are not met.
4. Operations may involve simultaneous deployment of the two DW2000 submersibles with the concurrence of the Dive Supervisor and CO in accordance with the DeepWorker Operations Manual.
5. Night operations may occur as determined by the Dive Supervisor and CO.

7.2 DW 2000 SUBMERSIBLE OPERATIONAL LIMITATIONS:

The operational envelope for the GUNTER and DW 2000 submersibles is variable and dependent on the location and weather conditions. Operations will be determined by the CO and the Dive Supervisor. The pilot is not to surface unless making every attempt to notify the Dive Supervisor that he/she is doing so to avoid a possible collision with any surface vessels.

The pilot will have the authority to terminate a dive by whatever means necessary at any time that he feels a hazard to the submersible or personnel exists, without regard to mission success or completion.

1. DW2000 will not be operated where the water depth exceeds the test depth of 2800 ft.
2. DW2000 will not be operated below a depth of 2000 ft.
3. DW2000 will not be operated in such a fashion so as to pass under any object, that might pose a hazard either natural or man made.
4. DW2000 will remain clear of wreckage, debris, or natural terrain features which have entanglement or entrapment potential.

5. DW2000 will not operate without an effective means for obstacle avoidance and for detecting the existence of hazards in the immediate area.
6. DW2000 will not operate outside the range of U/W communication and tracking equipment.
7. DW2000 thrusters must be disabled when the swimmer is in the water adjacent to the sub or while the sub is on deck to avoid injury to personnel.
8. DW2000 Operations shall not preclude the operation of the Ship's primary navigation and communication systems, in particular the navigation fathometer.

7.3 REQUIRED COMPLIANCE:

NOAA/NOS in cooperation with NUYTCO will:

1. Prepare and distribute Notice to Mariners. In foreign waters, an appropriate equivalent notice is required.
2. Prepare and distribute US Navy Notification Letters per NAVSEA Inst 4740.1A
3. Prepare and distribute Notification Letters to the US Coast Guard.
4. Contact local Port Authority and Harbor Master
5. Written documentation of the above will be provided to the CO prior to the cruise.

7.4 EXTERNAL EMERGENCY NOTIFICATION:

See Emergency Contacts document

8.0 DISPOSITION OF DATA

8.1 DATA AND SAMPLES:

1. The Data Managers are responsible for the data quality, disposition, and archiving of data and samples collected aboard the ship for the primary project. The Chief Scientist in coordination with the sanctuary (or Belize and Mexico science leads) is responsible for the dissemination of copies of these data to participants on the cruise and will consider other requests.
2. The Data Managers will work with the appropriate ship's personnel to obtain relevant data collected by the ship's Scientific Computer System (SCS). The Data Managers will provide the CO a list of all data collected by the scientific party. ST needs to know what data is to be collected by the SCS before the ship departs Key West.
3. The CO is responsible for all data collected for ancillary projects until those data have been transferred to the Data Manager.

8.2 RECORDS AND REPORTS:

1. The ship's officers will maintain the Marine Operations Abstract (MOA) during the cruise. The ship's position will be entered for all operations, and otherwise every 30 minutes or when changing course or speed. The CO will give the Data Managers a copy of the MOA at the completion of the project. The CO will also provide the Data Manager with copies of the Bridge check off lists for each dive upon request.
2. Dive Checkout forms will be used to check out the sub prior to each dive and are the responsibility of the pilot and dive crew. Post dive, the forms will be signed by the Dive Supervisor. Copies of these forms will be available from NUYTCO upon request after the missions.
3. Dive Logs will be used to keep track of the subs performance during each dive and are the responsibility of the Dive Supervisor or designee. Copies of these forms will be available from NUYTCO upon request after the missions.
4. The Data Managers will ensure that all pilots complete a Post-dive Debriefing form that records pertinent information about their dive.
5. The Data Managers will assist the Chief Photographer and the pilots with filling in a video annotation data base using laptop computers.
6. The Chief Scientist will complete the Ships Operations Evaluation Form and forward to the Office of NOAA Corps Operations. The Operations Officer will provide this form.
7. All film collected during the cruise will be handled in accordance with the MOU between NOAA and NGS.
8. Foreign Research Clearance Reports - A request for research clearance in foreign waters has been submitted by NOS. The Chief Scientist is responsible for satisfying the post cruise obligations associated with diplomatic clearances to conduct research operations in foreign waters

9.0 COMMUNICATIONS

1. GUNTER will communicate daily, Monday through Friday, with the Atlantic Marine Center. Normally this will be via email message.
2. Because the scientific staff must sometimes communicate with other research vessels, commercial vessels, and shore-based NOAA facilities, the Chief Scientist or his designee may request the use of radio transceivers aboard the vessel.
3. GUNTER is equipped with INMARSAT and cellular telephone. The Chief Scientist may need access to these systems with permission from the CO. The CO will provide the Chief Scientist with a log of all calls, including email downloads, made from the ship by the scientific party at the completion of the project. Contact numbers are as follows:

Inmarsat B

011-874-330 391 310 (Voice)

011-874-330 391 311 (Fax)

011-584-330 391 312 (Telex)

011-874-391 023 929 (Data)

Inmarsat Mini-M

011-874-761 831 695 (Voice)

011-874-761 831 696 (Fax)

011-874-761 831 697 (Data)

011-874-761 831 698 (Voice)

Cell

504-731-5070 (Ship)

228-218-1694 (OOD)

Payment of all communications charges incurred by the science party will be requested in writing at the end of the project. Due to the location of the project areas, it is anticipated that most communications may be done by INMARSAT which is significantly more expensive than cellular.

10.0 HAZMAT

The ship's Environmental Compliance Officer must be informed and authorize storage of all HAZMAT before it is brought aboard.

APPENDICES

- (A) Detailed Project Descriptions
- (B) Chartlets depicting targets
- (C) Contact Information
- (D) Shuttle/Launch schedule (include vessel names)