Science Verification Cruise AT26-12

Participant handbook

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Science Verification Cruise: Recommendation from DeSSC and *ad hoc* members

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Rationale for the *DSV Alvin* upgrade Science Verification Cruise:

After successfully completing the *DSV Alvin* upgrade, the vehicle will be put through sea trials and certification. These activities are intended to assure that the submersible is seaworthy and fully functional. However, there are aspects of vehicle operation and performance that are critical to science but not in the purview of the sea trials. Herein we recommend that NSF and other appropriate agencies (ONR and NOAA) support a one-time "science verification cruise" dedicated to ensuring the readiness of a broad spectrum of scientific capabilities routinely conducted by the submersible.

It is apparent to DESSC and the broader community that the *Alvin* upgrade project is functionally equivalent to deploying a new vehicle. As such, a science verification cruise is instrumental to ensuring that the vehicle performs well prior to being used in a fully funded science expedition. It is also worth noting that users will likely be more receptive to requesting *DSV Alvin* time if they have a better sense of the vehicle's attributes. Moreover, we recommend that this cruise not be viewed as a conventional scientific expedition. Rather, it would provide a means of engaging a community of experienced users to evaluate the key scientific capabilities of the vehicle. This would be achieved through the pursuit of a judiciously selected set of research goals that would simultaneously *require* a core suite of operational activities to be carried out.

There is a long long history of partnership between the scientific community and NDSF operations. *DSV Alvin's* record as the most facile and capable HOV in the world is –in no small part- due to this relationship. The science verification effort recommended here is consistent with that tradition, and exemplifies the role that the broader community can play in refining the operations of the new vehicle.

As discussed during various DESSC and community meetings, the goals of this verification cruise would be to:

Test and establish the science capability of the vehicle
Conduct opportunistic science and exploration during testing
Broaden the user base, involve early career scientists

As defined by the various community meetings and oversight committees, the required scientific capabilities for the *DSV Alvin* upgrade are as follows:

- Direct **observations** of the deep ocean and seafloor
- High-resolution **imaging**/documentation of observations
- Systematic **exploration** of new, uninvestigated regions
- Systematic **surveys** of seabed and overlying water column
- **Sampling** at the seafloor and in the overlying water column
- **Interaction with instrumentation** at the seafloor
- **Transit** between work areas

DESSC recommends that this be the first user-driven activity prior to normal operations. The expedition should also be conducted with sufficient time to remedy any issues identified before the first fully funded expedition.

To account for uncertainties in the *DSV Alvin* upgrade schedule, and to permit the *RV Atlantis* to potentially participate in other activities, we suggest that the expedition begin on or around March 1, 2013.

Logistics and viable geographic areas of operation

We recommend that, contingent upon the completion of sea trials and the availability of the *RV Atlantis*, the expedition would depart following the operational and classification trials, or preferably after a short recess to permit any repairs or modifications after sea trials. Given the likely weather limitations at that time of year, the participants of the science verification cruise should plan on working below ~25°N in the Atlantic Ocean, which for our purposes could include the Gulf of Mexico and the Caribbean.

- We recommend the expedition be up to 10 dive days in length, with transits as needed to accommodate the diversity of activities and geographic areas of interest and types of activities. This duration is recommended to enable sufficient testing of all scientific systems in a variety of settings, to enable thorough assessment by the shipboard evaluators during different operational scenarios, to accommodate the widest possible diversity of investigators, and to enable the testing of multiple, user-supplied instruments. Based on community experience at sea, we suggest it is unlikely that a full evaluation can be completed in a shorter time frame.

- We recommend that the majority of the proposed dive sites be within a day or two of a major port that has easy access in the event that significant engineering or other port facilities are needed for repairs.

- We recommend that four berths per leg be dedicated to hosting NSF, ONR, and NOAA representatives. Participation is, of course, at the discretion of each agency. This will enable them to be a part of the evaluation process as appropriate, and to better understand the needs and challenges of the scientific community.

- We strongly recommend that four additional berths be dedicated to the science evaluators. Science evaluators will be dedicated to impartially assessing vehicle performance and assisting with mitigating any issues that arise. The evaluators will be focused on vehicle performance, and <u>will not be conducting their own science</u>. We suggest that the evaluators be the PI of the *Alvin* upgrade, the Chief Scientist for Deep Submergence at WHOI, an RHOC representative, and a DeSSC representative.

    - The evaluators, with input from the Science party, will be required to produce a comprehensive report that describes the vehicle's scientific capabilities and limitations, and must specifically address and comment upon the specific capability test (outlined below). This document will be made available to the

broader community, and will be used to provide guidance to future users, and to address and resolve issues prior to the first, fully dedicated science expedition.

- The evaluators will also be required to write (or participate in writing) public articles, such as to *Eos* and *Ocean Technology News*, that present the capabilities of the *DSV Alvin* upgrade project. The evaluators will do so in consultation with DESSC and the NDSF, and will engage other members of the community in these activities as appropriate.

- It is our recommendation that participating scientists make their best effort to involve early career scientists in their proposed verification activities. Involving early career scientists at this stage allows them to better understand how expeditions are staged, provides a unique learning opportunity for early career scientists to play a role in expedition planning and operations with less risk than might be incurred on a full science expedition.

- Accordingly, there would be ~16 berths available to the science party.

Science Capabilities to be evaluated

Navigation and Data Collection

- Based on previous sea-trials, it is likely that thorough tests of the in-hull data logging systems and displays, as well as of the LBL, USBL, and DVL and HOMER navigation systems, will be conducted.
- Submarine data streams (e.g., time, altitude, depth, heading, navigation, and other science-oriented sensors), and storage and access to systems on board *RV Atlantis* to facilitate scientists' use of the collected data.
- Frame grabber system – functionality and ability to feed this type of metadata into the R2R data system being developed for all UNOLS vessels.

Power, speed, and duration capability

- Realized transit speed.

Seafloor Mapping

- Multibeam mapping in terrains from flat to rough, without artifact, including protocols for data acquisition, and shipboard capabilities for post-dive data processing and production of gridded data.
- Comparison mapping (i.e. repeat mapping of an area).

Lighting & Imaging

- Illumination and its coverage is appropriate to collect "high quality" still and video imagery with all the standard cameras in their standard configuration.
- Verify the operations and "ease of use" of the recording systems.
- Assess the ease of producing video and still image data copies for science and archives.
- Optional: Assess the vehicle's capabilities to collect image series for photomosaicing (with the photomosaics to be made by the science party).

Sampling Capability

- Verify the ease of using the variety of standard NDSF HOV sampling systems and instruments (listing can be found at http://www.whoi.edu/page.do?pid=21075).
- Use of both manipulators for fine-scale sampling of sediments, rocks and organisms, as well as delicate manipulation of instrumentation.
- Assess the ease of using scientist-supplied samplers and sensors commonly employed in HOV-based field experiments (note: these must be compliant with HOV safety requirements)
- Use of a range of basket configurations and payloads that thoroughly assess the flexibility of the basket, accessibility by the manipulators, and its payload capacity.
- Verification of mid-water capabilities, including the ability to maintain neutral buoyancy and collect samples while hovering.

Instrument Interface

- Demonstrate and evaluate the capability to interface user-provided equipment/sensors to the vehicle, including power and communications and basket integration.
- Evaluate the vehicle's ability to interact with elevators to transport samples/equipment to/from the seafloor.

Ergonomics

- Evaluate how users interact in the personnel sphere with viewports, seating, camera and video controls and monitors, voice recording, other equipment and each other.
- Evaluate ease of mobilization and demobilization before and after each dive.

Other Ideas (to be considered in collaboration with NSF program officers)

- How do we simulate interactions with seafloor observatory infrastructure and IODP-related infrastructure (i.e., CORK servicing)?

SVC logistics

A) SVC CRUISE WEBSITE: We've set up a website to be the clearinghouse for any and all information you might need. Please check it for updates as well:
http://www.oeb.harvard.edu/faculty/girguis/svc.html

B) EXPEDITION LOGISTICS

Dates

March 12 - 13: Mobilize New Orleans, LA
March 14: Depart New Orleans

~~~~~AT SEA~~~~~
mid cruise transfer on March 22nd
~~~~~AT SEA~~~~~

March 26: Arrive in Gulfport, MS
March 27 end demob

1 Alvin Eng dive day + 8 SVC dive days + 4 transit days = 13 sea days total

Ship's port in New Orleans
PERRY ST. WARF
#1 Perry Street
Gretna, LA 70053

Ship's agent and shipping Information in New Orleans
Master R/V *ATLANTIS*
Attn: *Scientist's Name - AT26-12*
FILLETTE GREEN SHIPPING SERVICES (USA) CORP.
4760 Pontchartrain Drive
Slidell, Louisiana 70458

Phone: (504)581-7468 (24 hour service)
Fax: (504)835-1233
e-mail: nola@fillettegreen.com

Primary Contact:
Allen Guthrie, Operations Manager. Mobile: (504) 914-7205

Please also copy:
Tom Pumphret. Mobile: (504) 941-0007

Note: Agent and WHOI contacts Eric Benway (ebenway@whoi.edu) and Kerry Heywood (kheywood@whoi.edu) should always be copied on all communications. Shipment

information for all equipment, supplies and spares should be communicated to the Agent and all WHOI contacts.

This is just across the river from River Walk. This port is operated by Bolland Marine.

Ship's port in Gulfport, MS

There is only one port in Gulfport MS, not surprisingly called the Port of Gulfport. The RV Atlantis is slated to be at Dock/Berth #7. Eric Benway at WHOI is working on getting the physical address.

Ship's agent and shipping Information in Gulfport, MS

Shipments up to 200 lbs
Master: R/V Atlantis
Attn: *Scientist's Name*
Fillette Green Shipping Services (USA) Corp.
261 N. Conception Street Mobile, AL 36603

All shipments over 200 pounds should be scheduled to arrive while the ship is in port and directed to the address below. The agent must be notified of all shipments.

Port of Gulfport address:
Master: *R/V Atlantis*
Attn: *Scientist's Name*
Mississippi State Port at Gulfport
30th Avenue South Extension West Pier
Gulfport, MS 39501

Primary Contact:
Jason Halischak. Mobile: (251) 232-1659

Mailing address: P.O. Box 1842 Mobile, AL 36633
Phone: (251) 375-2224
Fax: (251) 432-6813
TELEX: 3772415 FGSS USWG
Email: mob@fillettegreen.com

C) TRAVEL

Airfare
Please contact Stephanie Hillsgrove by e-mail (shillsgrove@oeb.harvard.edu) or by phone (617-384-5674) to book your airline tickets. Be prepared to provide her with all the pertinent information required when booking airline tickets (full name on your drivers license, birthdate, etc). For convenience, it would be appreciated if you and your assistant (if you are bringing an assistant) book your tickets at the same time. Once they are booked, you will receive an email

with your flight information, etc. We can cover the costs of extra luggage if it's to get equipment to the ship. We cannot cover the costs of upgrades to business class, etc.

Lodging

New Orleans, LA: There is no lodging within walking distance of the ship's port in New Orleans. As such, as have booked a group of rooms for "most" of the SVC participants **at the Hyatt Regency in downtown New Orleans** (there are only a few of you who aren't at this locale, and I'm sure you know who you are). This will require a cab ride to get to the ship, but we will likely rent a car or two as well, to facilitate last minute purchases, etc. Stay tuned for more information.

Gulfport, MS: To our knowledge, everyone is either staying on board the ship on the night of the 26th or flying home that afternoon or evening. As such we have not booked any hotel rooms. **IF YOU REQUIRE A HOTEL ROOM IN GULFPORT**, please let Pete and Stephanie know ASAP.

Meals and other costs

We will be reimbursing your meals and any and all appropriate costs such as parking at the airport from which you departed, etc. **HOWEVER, we cannot reimburse you on a "per diem" basis per NSF and Harvard guidelines. Thus, you must plan on saving and submitting all receipts for appropriate incurred costs.** At the end of the expedition, you will submit your organized and labeled receipts to Stephanie and she will see to it that a reimbursement check is issued to you in short order.

Stephanie has prepared a "reimbursement form", which we will have on board the ship. In addition, all the reimbursement forms –as well as the policies of reimbursement eligibility- are found on the SVC cruise webpage (http://www.oeb.harvard.edu/faculty/girguis/svc.html) under the "reimbursement" link.

Participants

Leg one

Name	Institution	Gender	SVC leg	e-mail
Bourque, Jill	USGS	F	1 , 2	jbourque@usgs.gov
Chunyang Tan	Univ. Minn.	M	1	tanc@umn.edu
Delaney, Jenny	Harvard	F	1 , 2	jennifer.delaney@gmail.com
Demopoulos, Amanda	USGS	F	1 , 2	ademopoulos@usgs.gov
deSilva, Annette	UNOLS	F	1	office@unols.org
Ding, Kang	Univ. Minn.	M	1 , 2	mlcd@umn.edu
German, Chris	WHOI	M	1 , 2	cgerman@whoi.edu
Girguis, Peter	Harvard	M	1 , 2	pgirguis@oeb.harvard.edu
Howland, Jonathan	WHOI	M	1	jhowland@whoi.edu
Humphris, Susan	WHOI	F	1 , 2	shumphris@whoi.edu
Linder, Chris	WHOI	M	1 , 2	clinder@whoi.edu
Lippsett, Lonny	WHOI	M	1 , 2	llippsett@whoi.edu
Luther, George	UDel	M	1 , 2	luther@udel.edu
MacDonald, Dan	Udel	M	1 , 2	uri@udel.edu
Marlow, Jeff	Caltech	M	1	jjmarlow@gmail.com
McCue, Scott	WHOI	M	1	smccue@whoi.edu
Nuzzio, Don	UDel	M	1 , 2	dnuzz@mac.com
Schnoor, Tim	ONR	M	1	tim.schnoor@navy.mil
Soule, Adam	WHOI	M	1 , 2	ssoule@whoi.edu
Wankel, Scott	WHOI	M	1	sdwankel@whoi.edu
Wanless, Dorsey	WHOI	F	1	dwanless@whoi.edu

Total # of participants = 21 (6F, 15M)

Mid cruise transfer: This will occur between March 21st and March 22nd from Venice LA. The transfer is being handled by the Louisiana Universities Marine Consortium (LUMCON; http://www.lumcon.edu), and the vessel is expected to be a high speed catamaran. The tentative timeline is as follows:

March 21st: 8PM LUMCON 10-person van will pick up all Leg 2 SVC participants from the New Orleans Airport between 8:00 and 8:30 PM. The van will head straight to Venice, arriving sometime between 10:00 and 10:30 PM.

March 22nd: The catamaran will leave the dock ca. midnight (depending on the fog). If the departure is delayed, you will all be able to stay on board the vessel. Depending on the position of the small boat, ALVIN OPS, etc we will aim to do a personnel transfer from 6:00 to 7:00 AM. The catamaran will head back to Venice ca. 7 AM for a 1-2 PM arrival. Around 3-4 PM, the LUMCON 10-person van will take the leg 1 SVC participants to the Hilton New Orleans airport. Those SVC participants for whom we booked flights will stay the night and depart the following morning.

Leg two

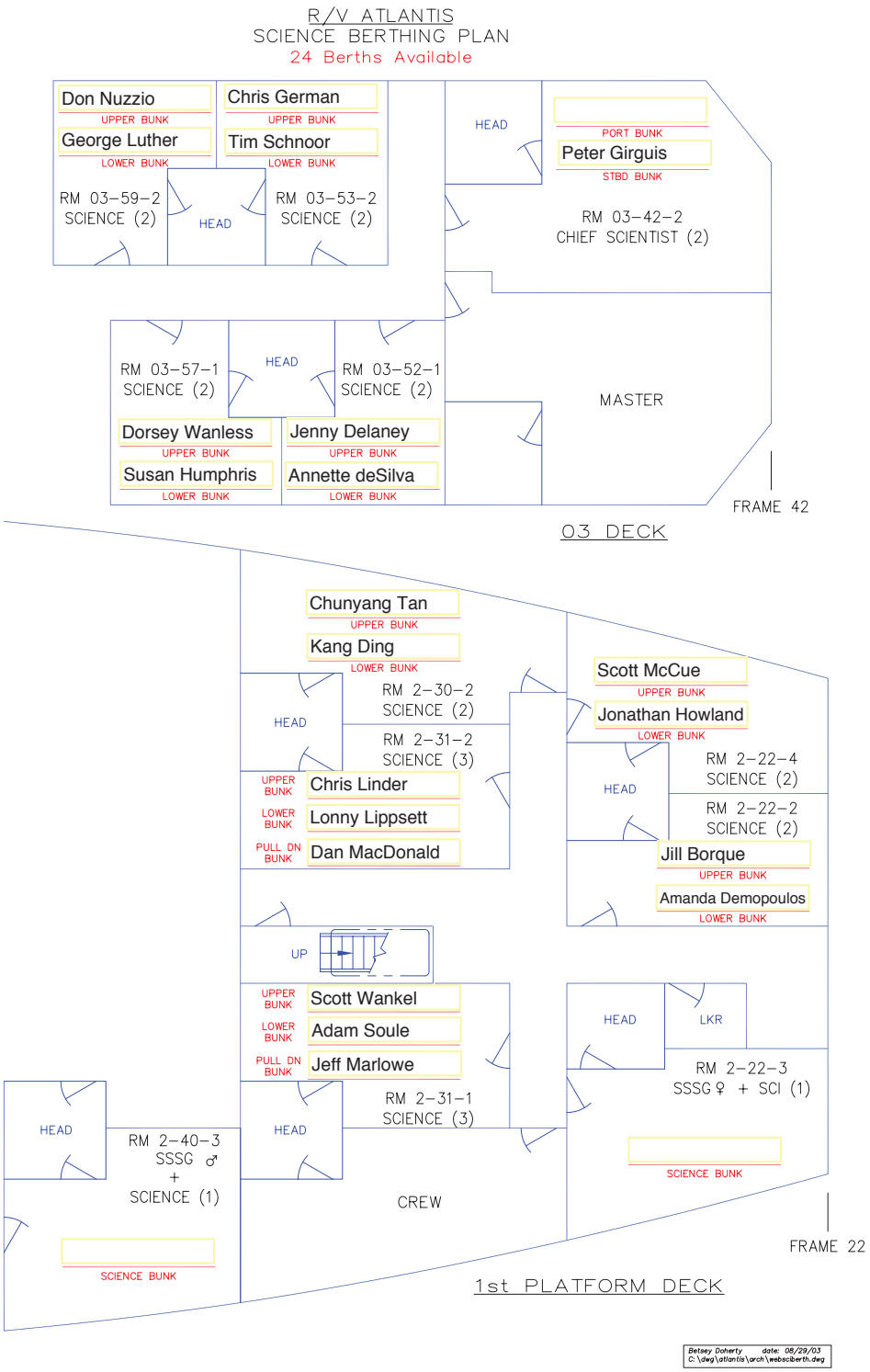
Name	Institution	Gender	SVC leg	email
Baums, Iliana	Penn State	F	2	baums@psu.edu
Bourque, Jill	USGS	F	1 , 2	jbourque@usgs.gov
Bronk, Debbie	NSF	F	2	dbronk@nsf.gov
Cohen, Jon	Univ Delaware	M	2	jhcohen@udel.edu
Delaney, Jenny	Harvard	F	1 , 2	jdelaney@fas.harvard.edu
Demopoulos , Amanda	USGS	F	1 , 2	amandademopoulos@gmail.com
Ding, Kang	Univ. Minn.	M	1 , 2	mlcd@umn.edu
Fisher, Chuck	Penn State	M	2	cfisher@psu.edu
Frank, Tammy	Nova Southeastern	F	2	tfrank1@nova.edu
German, Chris	WHOI	M	1 , 2	cgerman@whoi.edu
Girguis, Peter	Harvard	M	1 , 2	pgirguis@oeb.harvard.edu
Humphris, Susan	WHOI	F	1 , 2	shumphris@whoi.edu
Linder, Chris	WHOI	M	1 , 2	clinder@whoi.edu
Lippsett, Lonny	WHOI	M	1 , 2	llippsett@whoi.edu
Luther, George	UDel	M	1 , 2	luther@udel.edu
MacDonald, Dan	UDel	M	1 , 2	uri@udel.edu
Nuzzio, Don	UDel	M	1 , 2	dnuzz@mac.com
Olins,	Harvard	F	2	

Heather				
Soule, Adam	WHOI	M	1 , 2	ssoule@whoi.edu
Van Dover, Cindy	Duke	F	2	clv3@duke.edu
Wu, Shijun	Univ. Minn.	M	2	swu2324@gmail.com

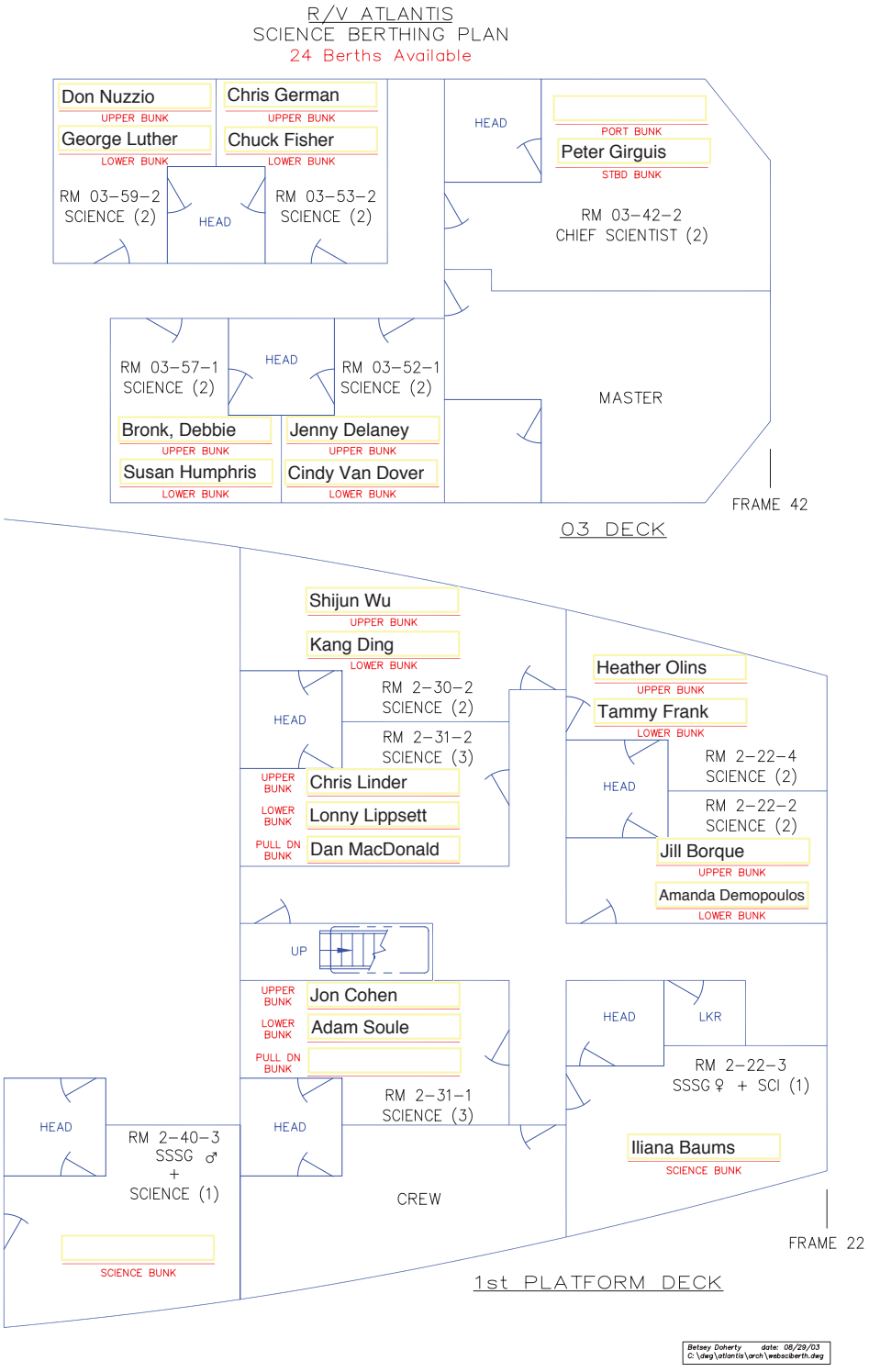
Total # of participants = 21 (9F, 12M)

Berthing assignments

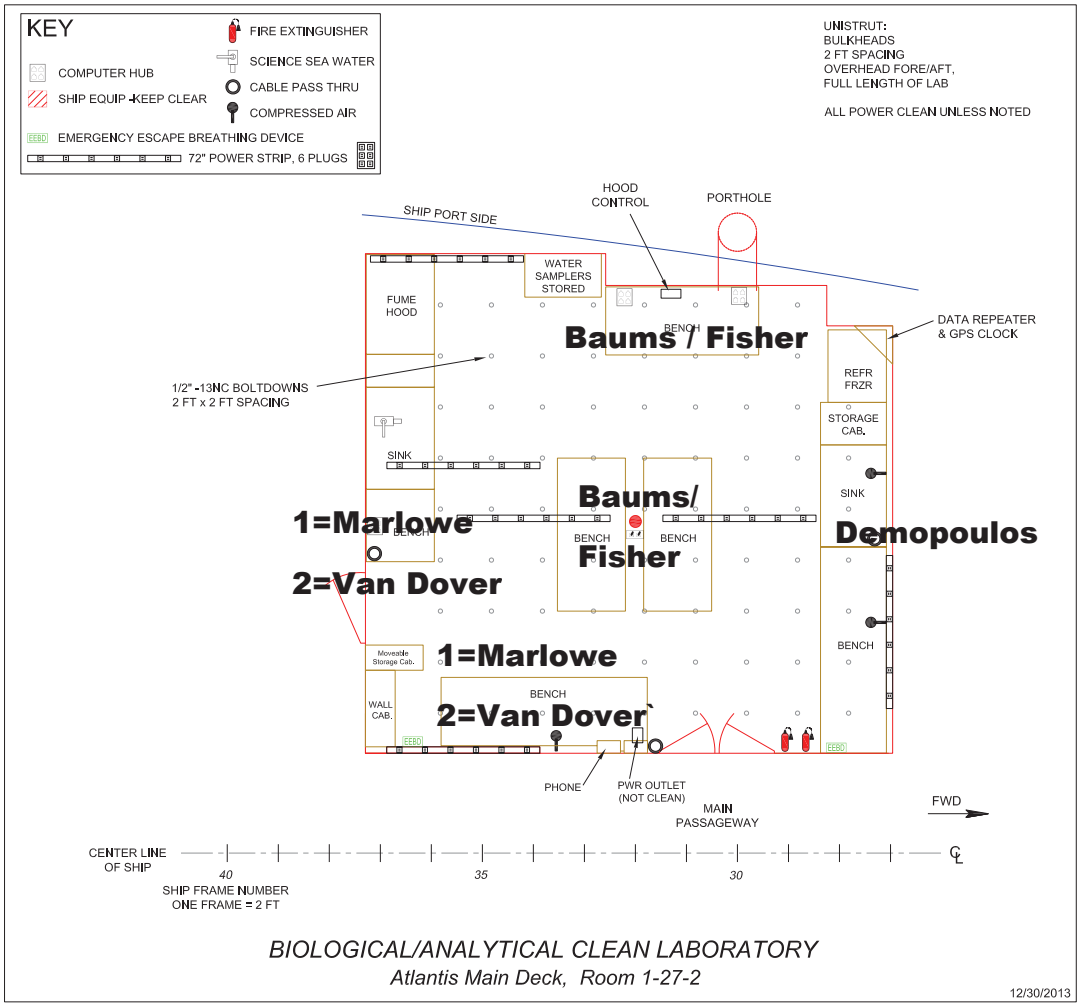
LEG ONE

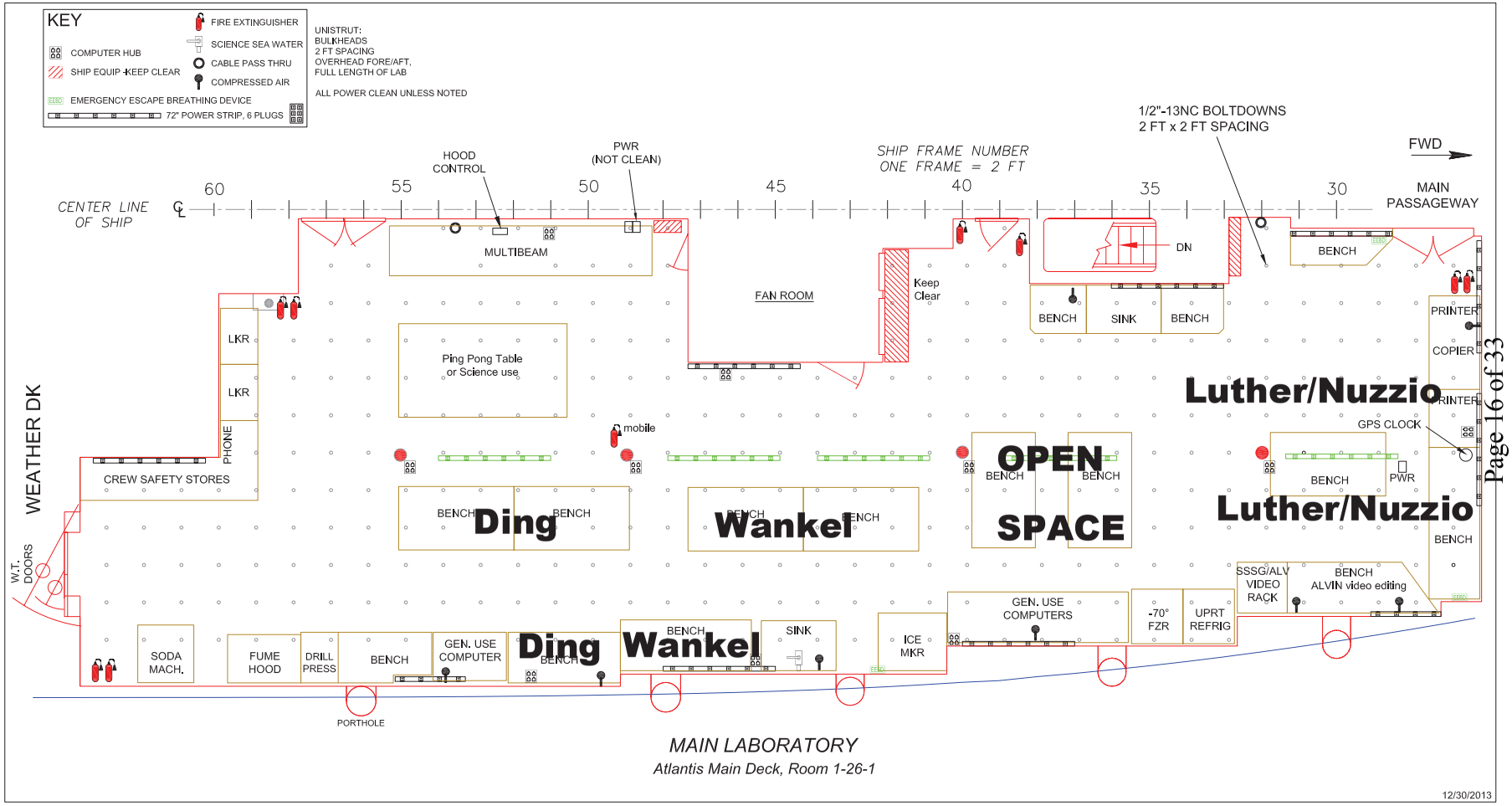


LEG 2


R/V ATLANTIS
SCIENCE BERTHING PLAN
24 Berths Available
Don Nuzzio
UPPER BUNK
George Luther
LOWER BUNK
Chris German
UPPER BUNK
Chuck Fisher
LOWER BUNK
RM 03-59-2
SCIENCE (2)
HEAD
RM 03-53-2
SCIENCE (2)
HEAD
PORT BUNK
Peter Girguis
STBD BUNK
RM 03-42-2
CHIEF SCIENTIST (2)
RM 03-57-1
SCIENCE (2)
HEAD
RM 03-52-1
SCIENCE (2)
MASTER
Bronk, Debbie
UPPER BUNK
Susan Humphris
LOWER BUNK
Jenny Delaney
UPPER BUNK
Cindy Van Dover
LOWER BUNK
FRAME 42
03 DECK
Shijun Wu
UPPER BUNK
Kang Ding
LOWER BUNK
HEAD
RM 2-30-2
SCIENCE (2)
RM 2-31-2
SCIENCE (3)
UPPER BUNK
Chris Linder
LOWER BUNK
Lonny Lippsett
PULL DN BUNK
Dan MacDonald
Heather Olins
UPPER BUNK
Tammy Frank
LOWER BUNK
HEAD
RM 2-22-4
SCIENCE (2)
RM 2-22-2
SCIENCE (2)
Jill Borque
UPPER BUNK
Amanda Demopoulos
LOWER BUNK
UP
UPPER BUNK
Jon Cohen
LOWER BUNK
Adam Soule
PULL DN BUNK
HEAD
LKR
RM 2-22-3
SSSG ♀ + SCI (1)
HEAD
RM 2-40-3
SSSG ♂
+
SCIENCE (1)
HEAD
RM 2-31-1
SCIENCE (3)
Iliana Baums
SCIENCE BUNK
CREW
SCIENCE BUNK
FRAME 22
1st PLATFORM DECK
Betsey Doherty date: 08/29/03
C:\dwg\atlantis\arch\websciberth.dwg

Lab assignments

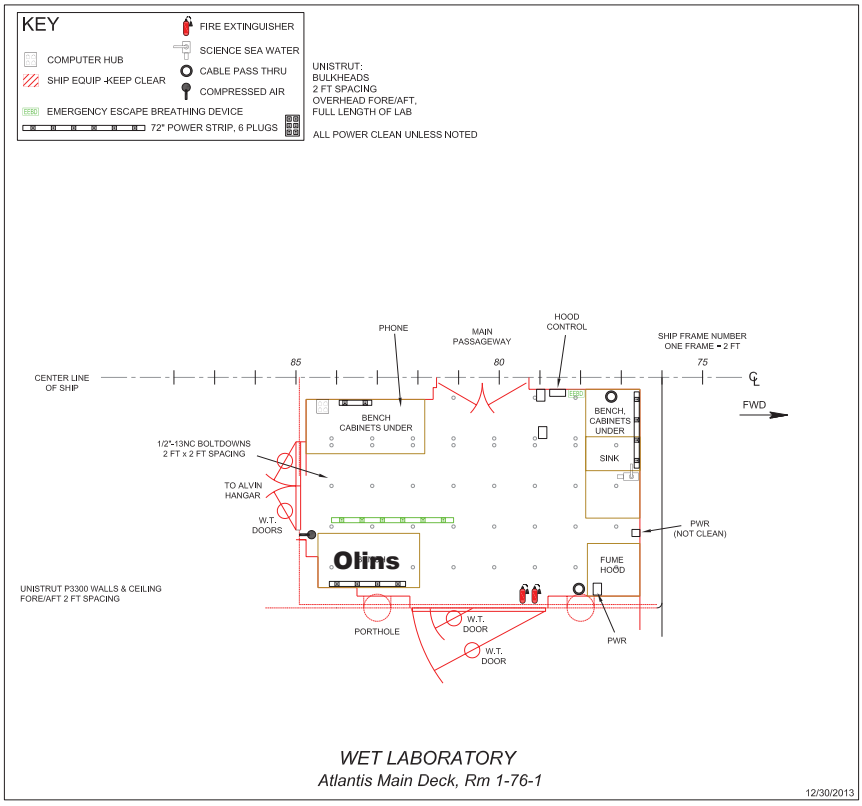




MAIN LABORATORY

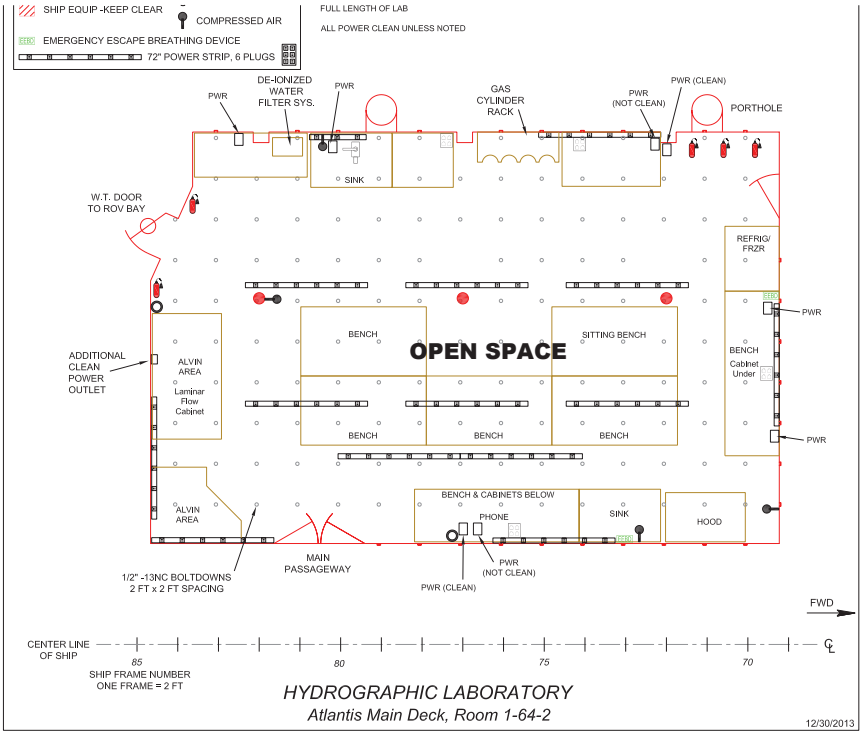
Atlantis Main Deck, Room 1-26-1

12/30/2013



WET LABORATORY
Atlantis Main Deck, Rm 1-76-1

12/30/2013



HYDROGRAPHIC LABORATORY
Atlantis Main Deck, Room 1-64-2

12/30/2013

Tentative dive plan

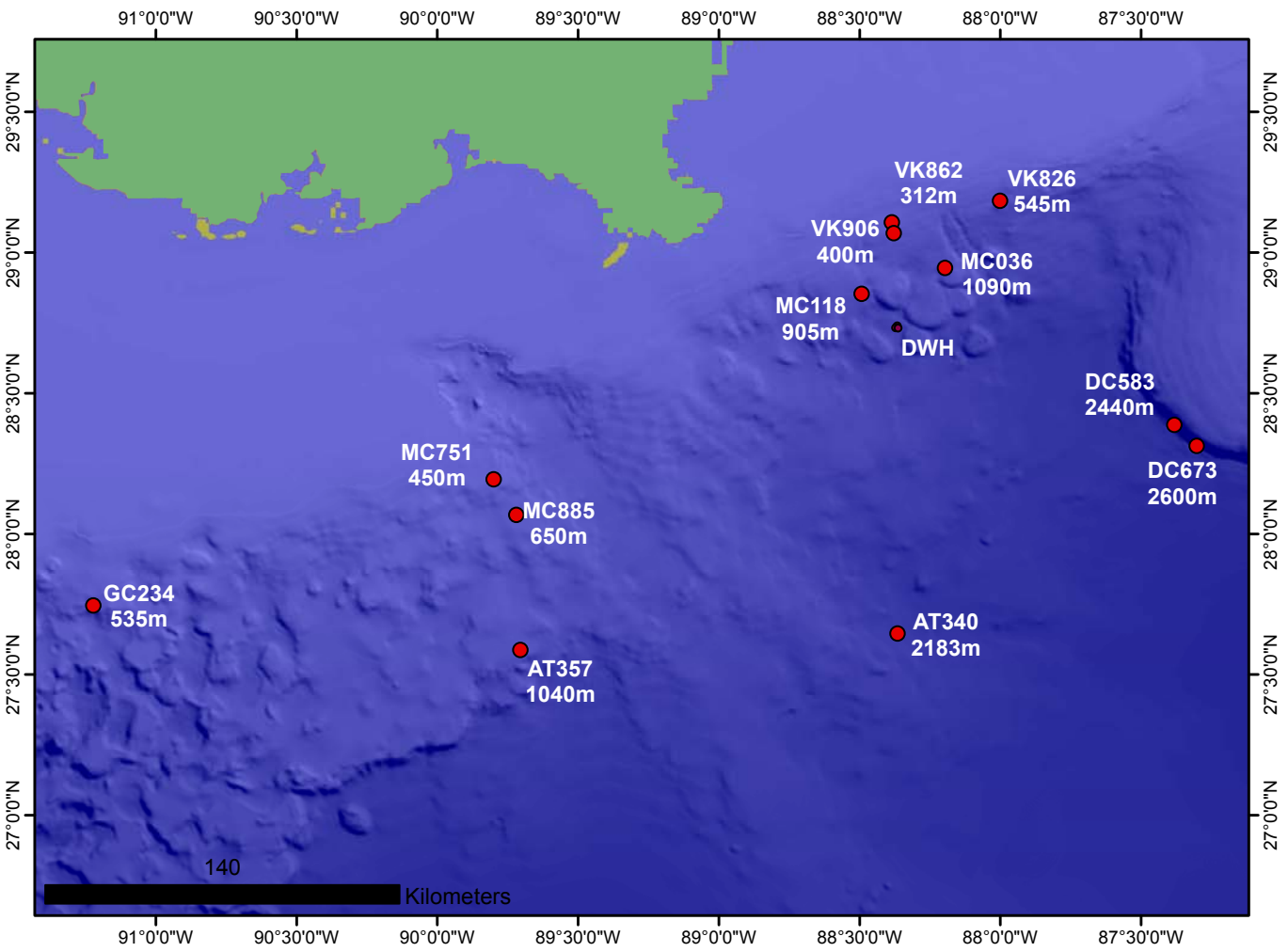
Date	Dive #	Lease block	time to next site	Lat.	Long.	depth (m)	Brief site desc.	~Dive activities	Basket config.
3/14	---	*transit*	16 hrs						
3/15	1A (short dive)	VK862	n/a	29.106732	-88.384274	312	A very nice coral site, with abundant grouper and anemones.	Vehicle attitude control; imaging and lighting assessment; Pushcores and manipulator ops; Modest (dead) coral sampling;	Pushcores; Scoops; Std. cameras; Reson SLURP
3/15	1B (short dive)	VK862	2 hrs	29.106732	-88.384274	312	A very nice coral site, with abundant grouper and anemones.	"Midwater" assessment Attitude control; imaging; slurping)	Pushcores; Scoops; Std. cameras; Reson SLURP
3/16	2	MC118	9 hrs	28.852167	-88.491833	905	The "hydrate observatory". Excellent maps and geophysics. Good seeps and corals. Mussels, tubeworms and various corals. Good maps available.	Sediment pushcores; Manipulators; Video; Mapping !! Deploying hardware	Pushcores; Scoops; Std. cameras; DING onboard sensors; Reson; Deploy DING *in situ* experiment
3/17	3	AT357	6 hrs	27.5865	-89.7045	1040	Seeps with microbial mats	Sediment pushcores;	Pushcores; Scoops;

							and mussels; biggest deep water coral site with gorgonians and Madropora sp. A high-res? USM AUV map available.	Manipulators; Video; Mapping !!	Std. cameras; Methane isotope analyzer (Ethernet comms); Luther ISEA; Reson
3/18	4	AT340	n/a	27.644833	-88.364833	2183	Big and diverse seep site with mussels, clams, and tube worms in several areas. Fisher/Girguis Chemo III site. A Hugin AUV map available.	Sediment pushcores; Manipulators; Video; Mapping !!	Pushcores; Scoops; Std. cameras; Methane isotope analyzer; Luther ISEA; Reson
3/19	5	AT340 Eng. dive	n/a	27.644833	-88.364833	2183	??	??	??
3/20	6	AT340	7 hrs	27.644833	-88.364833	2183	Big and diverse seep site with mussels, clams, and tube worms in several areas. Fisher/Girguis Chemo III site. A Hugin AUV map available.	Sediment pushcores; Manipulators; Video; Mapping !!	Pushcores; Scoops; Std. cameras; Methane isotope analyzer; Luther ISEA; Reson
3/21	7	MC118	2 hrs	28.852167	-88.491833	905	The “hydrate observatory”. Excellent maps	Sediment pushcores; Manipulators;	Pushcores; Scoops; Std. cameras;

							and geophysics. Good seeps and corals. Mussels, tubeworms and various corals. Good maps available.	Video; Mapping !! Deploying hardware	Methane isotope analyzer DING onboard sensors; Reson; RECOVER DING *in situ* experiment
3/22	8	MC036	5 hrs	28.944167	-88.195833	1090	A site near the DWH with "potentially impacted" corals. There are also seeps at this site. Have a sentry map.	Sediment pushcores; Manipulators; Video; Mapping !!	Pushcores; Scoops; Std. cameras; DING onboard sensors; Reson
3/23	9	DC673	5 hrs	28.3125	-87.3015	2600	On the N extent of the FL Esc. Has seeps at the base with mussels and tubeworms (new species of mussel) and coral along the wall above.	some pushcores; Manipulators; Video with OPTIMAL lighting; Vertical traverses with the vehicle; Carbonate sampling?	Pushcores; Scoops; Std. cameras; Methane isotope analyzer; Luther ISEA; Reson
3/24	10 ?	MC036	5 hrs	28.944167	-88.195833	1090	A site near the DWH with "potentially impacted" corals. There are also seeps	Sediment pushcores; Manipulators; Video; Mapping !!	Pushcores; Scoops; Std. cameras; DING onboard sensors; Reson

							at this site. Have a sentry map.		
3/25	11 ?	DC673	9 hrs	28.3125	-87.3015	2600	On the N extent of the FL Esc. Has seeps at the base with mussels and tubeworms (new species of mussel) and coral along the wall above.	some pushcores; Manipulators; Video with OPTIMAL lighting; Vertical traverses with the vehicle; Carbonate sampling?	Pushcores; Scoops; Std. cameras; Methane isotope analyzer; Luther ISEA; Reson
3/26	---	Gulfprt							

Overview map



Brief site descriptions and photos

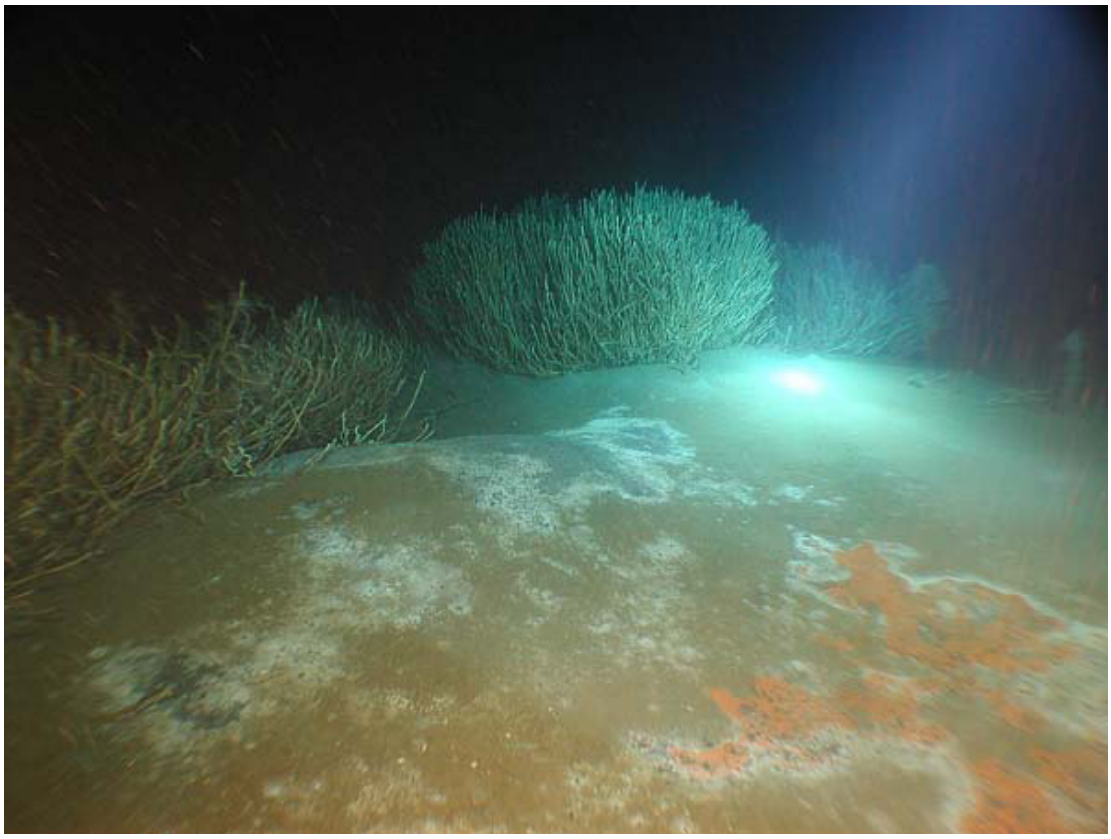
VK826 and VK862

Biological Summary

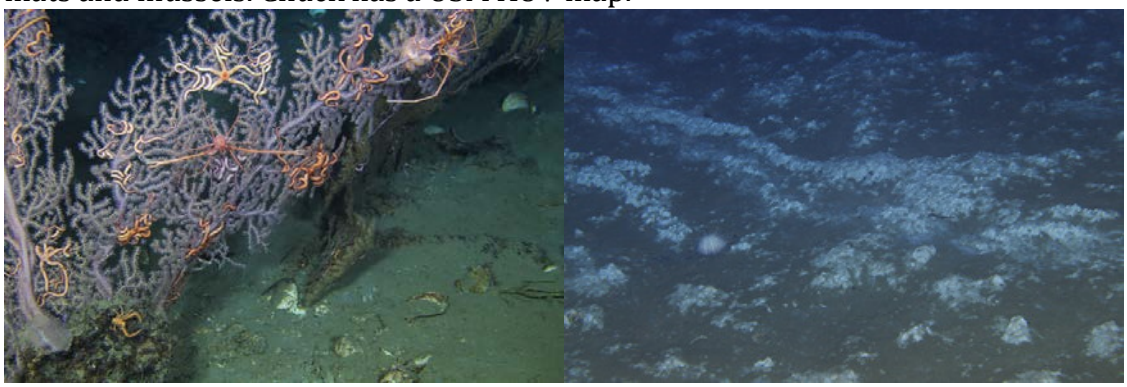
Viosca Knoll 826 is an incredibly complex site from a biological perspective (**Figure 7-65**). There has been a great deal of research completed on both the chemosynthetic and deep coral habitats at this site. The chemosynthetic communities are concentrated on the SW flank of the mound. These are dominated by small tubeworm aggregations on the edges of carbonate blocks and areas of vesicomyid shell hash. The carbonates are also colonized by a few coral species, mainly Callogorgia and a few antipatharian and *Lophelia* colonies. The SW facing slope of the mound progresses from this seep area to higher abundances of *Lophelia* on similar terrain of carbonate blocks and low-lying areas of shell hash. The E facing slope has more extensive development of *Lophelia* reef structures that tend to be on the steeper slopes on this side of the mound. The coverage of authigenic carbonate increases towards to crest of the mound with occasional areas of dense *Lophelia* coverage, but also an abundance of uncolonized hard substrate. There are also occasional tubeworm aggregations down in the cracks in the carbonates as well as shell hash and occasional bacterial mats on soft sediments on the S and W sides of the mound near the crest. Much of the NW corner of the mound remains to be surveyed. The NE corner of the mound is similar to the crest, with abundant carbonates and scattered *Lophelia* thickets interspersed with a few tubeworms.

Figure 7-65. A large shark at Viosca Knoll 826.

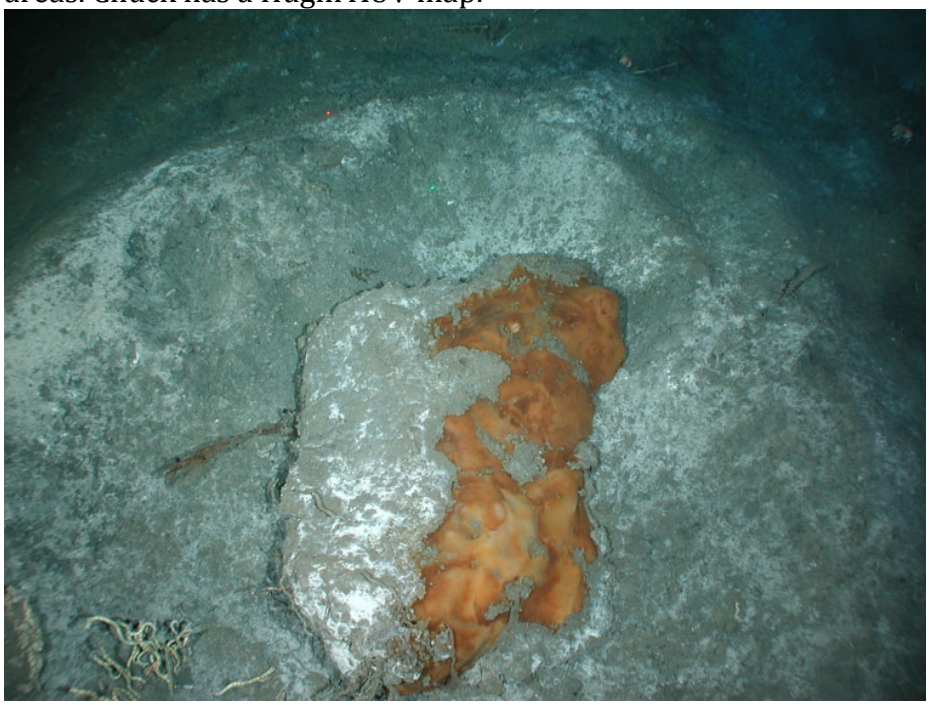
MC118: The “hydrate observatory” is an intensively studied site that is the focus of the Gulf of Mexico Gas Hydrates Research Consortium (GOM-HRC, which is managed through the University of Mississippi). Excellent maps and geophysics. Good seeps and corals. Mussels, tubeworms and various corals.



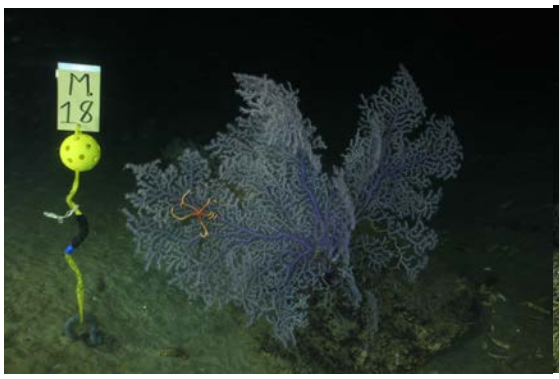
AT357: Biggest deep water coral site (>1000 m) I know of in N Gulf. Amazing stands of Gorgonians and also madropora (a hard coral). Also has seep activity with mats and mussels. Chuck has a USM AUV map.

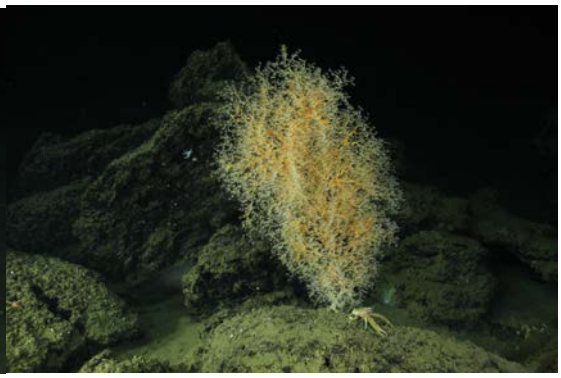


AT340: Big and diverse seep site with mussels, clams, and tube worms in several areas. Chuck has a Hugin AUV map.



MC036: A site near the DWH with "potentially impacted" corals. We will aim for targets where there are likely more corals. There are also seeps at this site, and we can point you to those as well. Have a sentry map.





DC673: On the N extent of the FL Esc. Has seeps at the base with mussels and tubeworms (new species of mussel) and coral along the wall above. *No pics available.*

DIVE LOG

-focus on "in sphere" assessments

Name: _____

Date: _____

Dive #:_____

Pilot:_____

Position (Port or starboard):_____

(poor) 1 to 5 (great)

Ergonomics

-Comfort on transits
-seating, temperature, "size"

-Comfort in observation
-seating, controls, lighting, still and video camera operations,

-Accessories
-existing accessories

-future accessories…do you want laptops/pen and paper/tablets for notetaking?, Livescribe or equivalent. (Samsung??…bring info)

Access to contextual data
-Conveying information, is it easy to read info on screens?, time, pressure, heading, etc …is it the right font size, easy to see, etc…

POST-DIVE LOG
-focus on "outside sphere" activities

-

Integrated assessments

In addition to the assessment you provide from your dive or your "shipboard sphere experience", each of you has been assigned to focus on a particular aspect of our assessment. This assignment is based on your expertise in the particular area. I am asking that you coordinate with others who have expertise in that area to write a 1-3 page summary of these systems or attributes. The goal here is to provide documentation to the broader scientific community that helps them to A) better understand how this new ALVIN compares in performance and efficacy to the old ALVIN, and B) how to develop their plans and design their experiments accordingly.

Note there are THREE digital cameras and one video camera on board for use in taking photos to go with your written assessment. They are your to use, but they are all Girguis lab cameras so please return accordingly.

The table below shows your assignment. This is subject to change based on your feedback, and we'll likely refine this during our pre-cruise meeting.

Task					
Sphere ergonomics	**Girguis**	Humphris	Van Dover	Marlow	
Cameras and lighting	**German**	Fisher	Demopoulos	Baums	Linder
Instrument interface, manipulators	**Luther**	Ding	Nuzzio	Wu	Tan
Basket attributes	**Wankel**	Borque	Cohen	MacDonald	
Propulsion, handling	**Humphris**	Frank	Van Dover		
Mapping	**Soule**	German	Wanless		
Post-cruise activities (data passage)	**Howland**	McCue	Soule	Olins	

Summary of Data/Samples collected by each participant

To assist with the final report, and to ensure that any and all samples are available to the broader community if needed, please report on the samples/data you've collected during this expedition. I would ask that you be clear on the nature and quantity of the samples/data, and provide a thorough description on where and

when they were collected, including LATs and LONGs, dive #, time of day, name of dive site, etc. Please indicate where these samples/data will reside, including any appropriate hyperlinks.

Here's an example that you might find useful

Sample/ data name	Sample type	Quant.	Collection info	LAT,LONG, depth	Purpose	Location
Carbonate AB-123	Carbonate	1	Collected at MC118	12.345 x 67.890, 1100 m depth	DNA extraction	Caltech (contact Jeff Marlowe for samples)

Providing biological sub-samples for the Ocean Genome Legacy

Finally, those of you collecting animal and sediment samples are expected to sub-sample your materials for inclusion in the Ocean Genome Legacy archives (www.oglf.org). The OGL aims to archive the DNA of every marine species, and make them available to any investigator who would like access to those materials. There is an OGL "subsampling kit" and logbook on board**. Jenny Delaney (Harvard) will be in charge of dealing with these sub-samples**. As you collect specimens, please coordinate with her to provide a small tissue subsample for the OGL.

Target Articles and lead authors

To be determined.

Outreach Activities

Coordinators: Lonny Lippsett, Chris Linder, Jeff Marlowe, Heather Olins

OBJECTIVES

• To provide objective reports and timely updates from the field to the scientific community of the capabilities and operation of the upgraded *Alvin* during initial field testing.
• To generate enthusiasm for *Alvin* and oceanography among the science community, students, funders, and the broader public.
• To capture new videography and still photography of the newly configured *Alvin* to be archived by NDSF for use by the scientific community and for outreach purposes.

1) A dynamic, multi-author website will serve as the "official" and definitive site for the SVC, sponsored by DESCC, NSF, NDSF, and all the institutions participating in the SVC. It will feature a blog with daily updates, potential contributions from scientists, pilots, and engineers, and multimedia features such as video interviews and photos galleries. The site will be keyword-tagged and searchable. The site will also include information about the cruise/team and provide links to resources about *Alvin* and its upgrade. The content will be directed at multiple audiences: *Alvin* users, scientists, funding agencies, students, teachers, and the general public. The WHOI Communications Group will develop, host, and maintain the site. Post cruise the site will be hosted by UNOLS/DeSSC.

2) An editorial/visual team enlisted for the cruise (Lonny Lippsett and Chris Linder) will report, conduct interviews, produce editorial multimedia content, and capture on-the-ship videography and still photography of the newly configured *Alvin*. Additional editorial content will come from Heather Olins, a graduate student in Peter Girguis's Harvard lab, and other interested cruise participants to provide a rich diversity of voices.

3) The SVC chief scientist will act as editor-in-chief facilitating participation by the science party and evaluating content to be published on the SVC website. He will convene daily meetings to evaluate editorial and visual content and assure that it is accurate, provides full context, and represents the scientific team participating on the cruise.

ADDITIONAL PRODUCTS
1) The editorial/visual team will seek to capture spontaneous events, quotes, and reactions from this historic cruise. They will also conduct videotaped interviews with SVC participating scientists focused on the upgraded *Alvin* and gather "B-roll"—shots of the sub close-up, establishing shots and other work on board the ship and small boat, which helps to give the footage context.

This footage will be available to the scientific community and their home institutions for assorted post-cruise uses, including media and posting on their own websites. The editorial team will also use it immediately to produce content for the SVC website and perhaps to create a video news release timed for the end of the cruise.

2) Coordinating with the *Alvin* Group, the editorial team plans to gather shallow underwater videography and still photography from the small boat and/or working with *Alvin* swimmers equipped with GoPros.

In addition, WHOI has raised internal funds to use the MISO camera to try to capture images of the new *Alvin* at the seafloor, working with Dan Fornari, Adam Soule, Bruce Strickrott, Peter Girguis and others.

MEDIA OUTREACH
We hope to engender a collaborative approach to media outreach during and immediately following this cruise. Because the cruise's purpose is to test the capabilities of the new sub, we plan to refrain from contact with the media so we may conduct our work away from the media spotlight. The SVC chief scientist will determine the point at which a coordinated effort to contact the media could be initiated.

We are making plans for a news conference timed for the end of the SVC cruise, with the help of the WHOI Media Relations Group coordinating with PIOs from the participating institutions. While detailed logistics still need to be determined, the idea is to prepare and issue a video news release from DESCC on behalf of all of the participating institutions; organize a remote conference via Skype or Zoom that allows the chief scientist to summarize cruise results and then allows a Q and A between media calling in and SVC scientists, engineers, and crew; and coordinate post-cruise interviews.

Our goal is to provide each participant's home institutions with material, including all of the interviews and "B-roll" recorded during the cruise, to use for their own media and outreach related to the cruise.

The footage and imagery is being acquired for the scientific and non-commercial uses of the deep-sea community. The footage will be archived and copyrighted in accordance with NDSF policy. Requests for commercial purposes should be directed to media@whoi.edu.

Other outreach activities by SVC participants

1) ***From Stace Beaulieu and Dorsey Wanless***

"Hi, Pete, If possible, I would like to do a 15-min Skype (ship-to-shore) with Dorsey Wanless on the evening of March 20, 6:30PM EDT. The Skype will be to a public audience at the New Bedford Ocean Explorium, in association with a deep-sea exhibit that I have as part of an NSF-funded Geoscience Education project (http://www.nsf.gov/awardsearch/showAward?AWD_ID=1202977). Please let me know if this could be possible on your SVC cruise schedule. If you agree, then I would like to contact SSSG and see if it is possible on the technical end, too."

1) ***From Jeff Marlowe***

"Listed below are five potential outreach products, across a range of feasibility levels and immediacy. For all items, I am willing to run the copy by any relevant parties prior to publication.

1 – Periodic blogging for Wired.com's *The Extremo Files*

Several ~500 word blog posts (perhaps 4-6) would be published during leg 1 of the cruise, focusing on a range of topics, from the logistics of *Alvin* use to the research interests of other researchers to life at sea. These would be similar in tone and subject matter to the blog entries I have previously written for the NYT's Scientist at Work: http://scientistatwork.blogs.nytimes.com/author/jeffrey-marlow/

Feasibility: 100%
Timeline: Preferably day-after-ish; could be delayed a few days.

2 – Front-of-book featurette on the revamped *Alvin* for *Wired* print edition

This would likely be a few-hundred word, photo-heavy 1- or 2-pager, highlighting the new features of *Alvin*.

Feasibility: 50%
Timeline: July issue, at earliest

3 – Field Report(s) for *National Geographic* website

The format of this potential contribution is uncertain. It would likely be a ~1000 word post-cruise report, featuring both first-person and reportorial elements.

Feasibility: 20%
Timeline: Unknown, probably within a week or so after the cruise.

4 – *New York Times* Science Section

See the description of item 3 above. I would work with a news division editor to format the piece according to the paper's requirements.

Feasibility: 30%
Timeline: Unknown, probably within a week or so after the cruise.

5 – Slate Online Magazine

This contribution would be a part reportorial, part op-ed type article published under the Future Tense series (see here for a sense of what they publish: http://www.slate.com/articles/technology/future_tense/2013/09/the_biggest_risk_of_exploration_today_is_carpal_tunnel.html). Under the umbrella of "the future of exploration,"

this would likely be a forward-looking piece discussing *Alvin*'s new capabilities and its role in oceanographic discovery.

Feasibility: 60%
Timeline: Not particularly stringent; probably within a few weeks after the cruise.

Notes from Jeff:

1 – Some of these opportunities would likely be mutually exclusive due to media outlets' preference for exclusivity.
2 – To whatever extent copyright and time allows, I would love to incorporate visual elements from Lonny and Chris, with full credit of course.
3 – I believe any and all of the venues listed above would result in beneficial visibility for *Alvin*/WHOI. There would probably be no commitment to publish; i.e., if something were to not go according to plan, I would not be required to cover it. I am also happy to run drafts by any interested parties; inaccuracies are in no one's interest."

2) ***From George Luther, Jonathan Cohen and Teresa Messmore at Univ of Delaware***

"George Luther, Jonathan Cohen and I here at the University of Delaware are interested in supporting outreach you might be planning related to the cruise, specifically:
-sharing content, esp. any generated by Drs. Luther and Cohen, from the cruise website on UD's Facebook and Twitter accounts -an advance article on UD's UDaily news service to about the project encouraging readers to follow along on the cruise website
-a live teleconference with Dr. Luther and/or Cohen with UD students -- is there a recommended forum for that such as Skype or Google Hangout?
Please let me know if you have any questions or would like to discuss further. Thank you!"

3) ***From Heather Olins and Pete Girguis***

"Heather Olins from the Girguis lab will be coming to sea for the last four days or so, and will organize a ship-to-shore Skype call to the Cambrdge Rindge and Latin School, a public high school in Cambrdige, MA. She and the SVC scientists who are interested would come on and tell the students about what we do, show HD Video from the seafloor and do a Q&A. This is slated for March 24th at around 11 AM."

Reimbursement forms

The protocols and forms for reimbursement are all found on the SVC website (http://www.oeb.harvard.edu/faculty/girguis/SVC.html). In addition, Jenny Delaney will have hardcopies available for you during the expedition if that's your preference.