L-DEO Office of Marine Operations:

2013 MLSOC AGU Meeting
San Francisco, December 8, 2013

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Outline:

1. 2013 Cruise Update
2. Update on 2014 Shipyard/ Maintenance/ Modifications/Tech Projects
3. 2011-13 SSSE and Instrumentation Updates
4. Long Core Study/Ship Stability update
5. 2014 SSSE and Instrumentation Proposals
6. Barovane 46 Trade Proposal
7. Seismic Equipment Update
8. 2014 Ship Schedule

Hey et al.- MB Survey – Bight Reorganization S. Reykjanes Ridge, N. Atlantic

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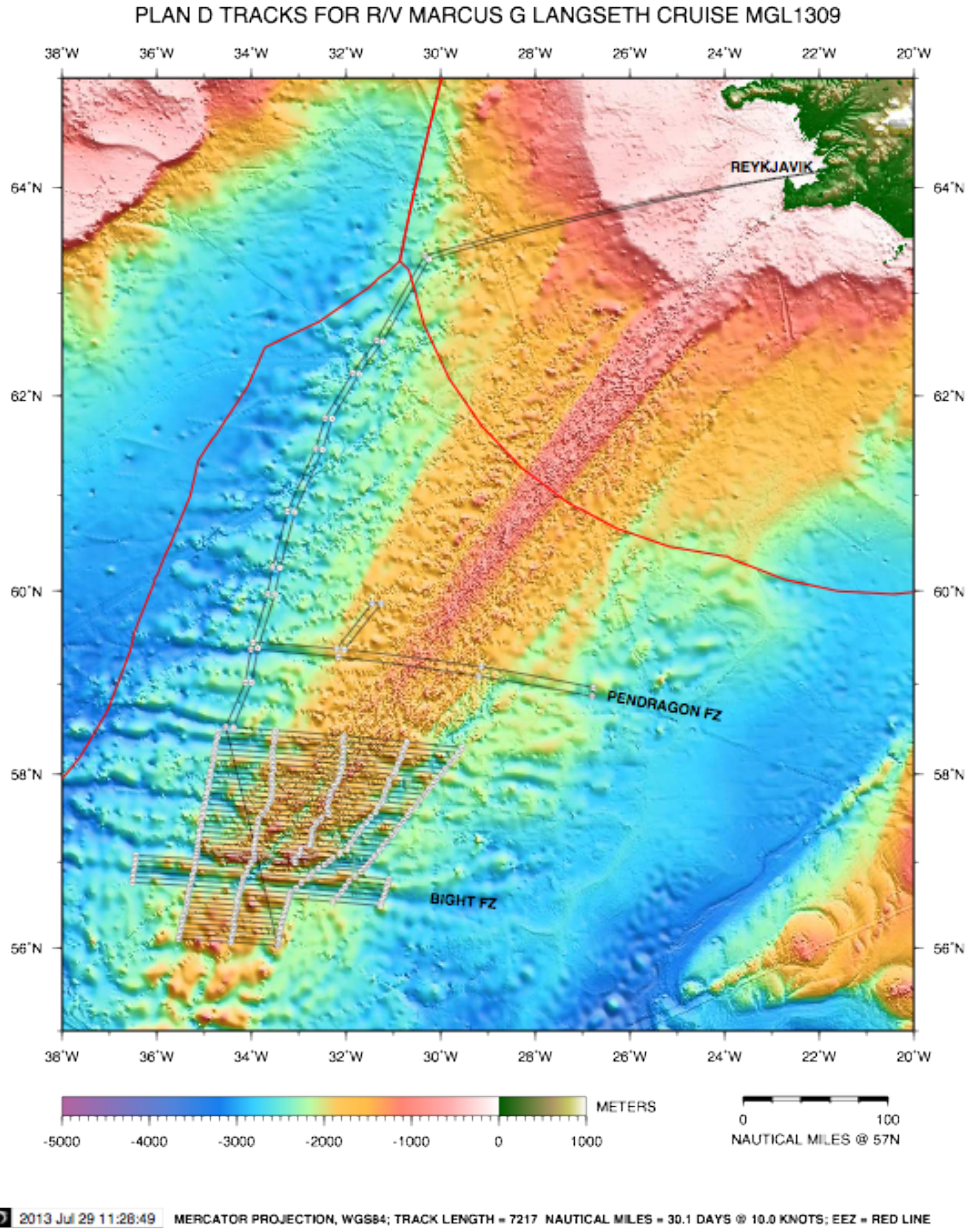
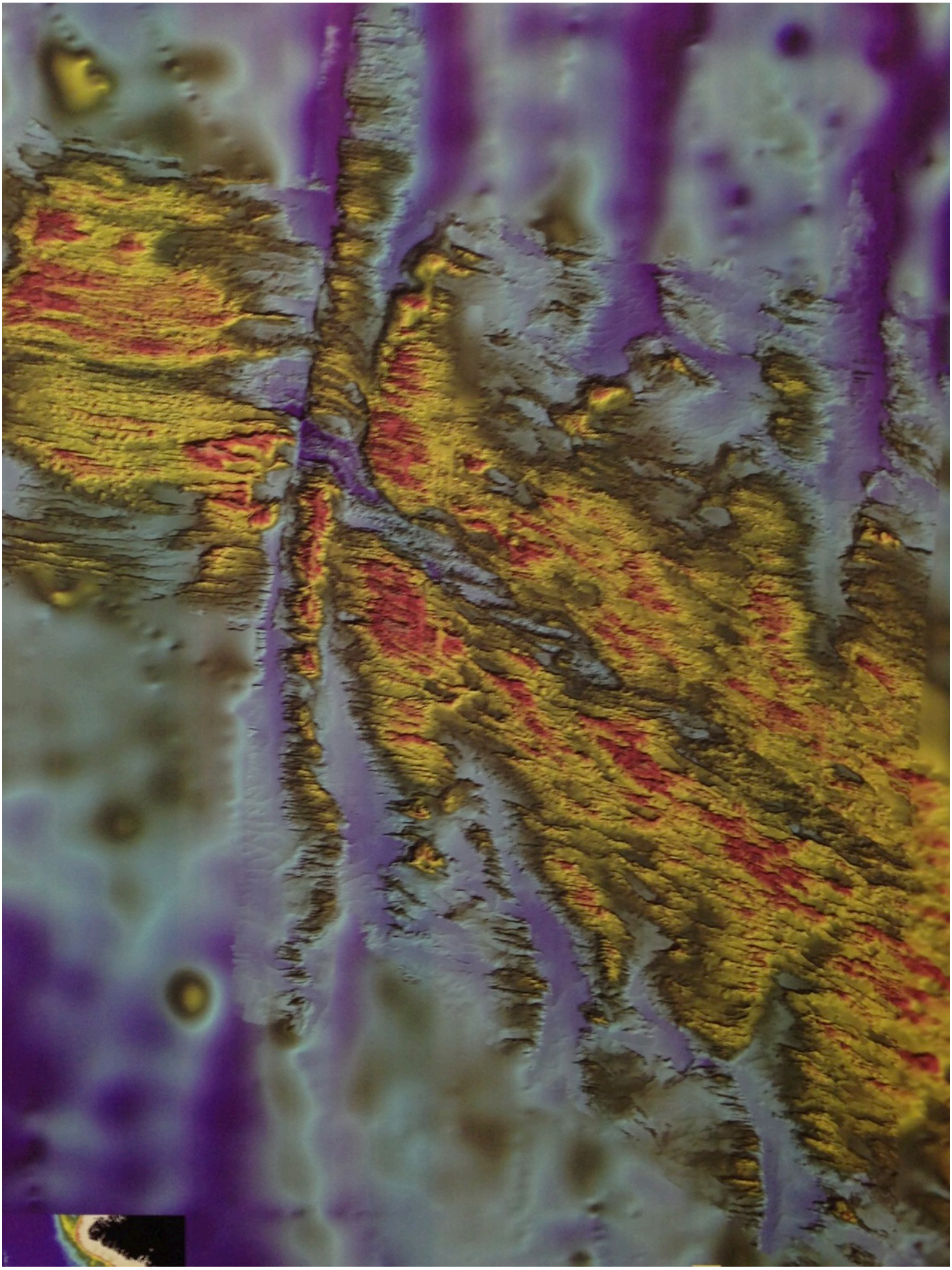


- Track Plan for MB Survey of Bight FZ Area of S. Reykjanes Ridge.
- Cruise: Aug.13-Sept. 15 Fernando Martinez as Chief Scientist
- First MB only cruise for Langseth.



Shipyard/Maintenance Priorities

Langseth scheduled for January 2014 Shipyard. Projects below contains both shipyard and maintenance projects to be addressed in shipyard and dockside in 2014. Complete list encompasses about 50 projects with estimated value of $2.3M.

PRIORITY PROJECTS:

*Propeller/ Hub Overhaul	*Rudders/ Steering	Vent preservation
Compressor room supply fans	Vent fan dampers	*Engine Overhaul
Anchor windlass	Galley sink	*PA System
Aft Capstan controls	Interior floor covering	Dish sanitizer
Life raft service support	Markey Winch installation	Sewage Tank
A-frame Wireless Controls	Winch Control booth	Bilge preservation
Wet lab mods	A-Frame repairs	MG sets Overhaul
*Hull and topside paint	ABS Surveys	*Fwd. Ballast tank preservation
Hull and sea chest zincs	Anchor Windlass	*Replacement of Gun Rails
Sea bay and BHD 58 Piping	Spare streamer winch structural support and controls	
*Shaft seal repairs		

*** Denotes Major Projects**

Technical Services Maintenance Projects

PRIORITY PROJECTS:

*** Shipyard Items**

Source, Towing & Handling

* Modify -16 vanes for greatest flexibility into 3 x -16s, 3 x 15s & 3 x 2m "mini"-vanes.
* Overhaul 4 x BARO-vane launch/recovery booms
* Service 4 x source sub-arrays (hang plates, hoses, sausage buoys, cluster bars, etc.)
* Service 2 x MPD wide tow winches
* Service 4 x streamer winches
* Service 4 x source winches
* Replace I-beams for Gun Rails (sub-array handling)
* Get 50% doors rigged & running for source arrays

IT/Lab spaces

* Meraki training for tech staff-- this is the new network system installed on vessel
* Server re-tasking- *Partially Complete*
* Main lab console maintenance (replace bad monitors, etc.)-*Mostly Complete*.

Other science systems

* Fix 3.5 (Knudsen) bad transducers
* Fix ADCP
* Service pod
* Rewire pCO2 computer system into main lab

Update on Glosten "Winch Plan":

Completed:

- Smith Berger Blocks and Sheaves
- Engineering for winch install, winch booth install, coring equip. integration, gun rails
- A-Frame reinforcement
- MF/HF radio and watch receiver installed
- New Science Workboat

Pending: (~ $400K Available)

- Structural modifications to support installation of two new winches in 2014
- Refurbished CTD and traction winches from R/V Wecoma to be installed in 2014. Markey CTD winch to be installed in shipyard. Dynacon Traction winch –Fall 2014
- Mid-ship's crane to Langseth. Scheduled for Fall 2014
- New winch control house to be installed in new mid-ship location following final equipment layout design in Jan/Feb. 2014
- New Gun Rail I-Beams to be installed in 2014 shipyard
- Next phase of Glosten Stability Studies

Transitioning of Long Core Facility

Update on Long Core Conceptual Design Study:

- NSF funded preliminary study as part of 2011 SSSE with Glosten naval architects. Provided estimate of costs to UNOLS FIC/Council on installation of Long Core on Langseth

- NSF requested OMO to provide engineering estimate to carry out next phase of study on sponson design to support Long Core and improve overall vessel stability. Summary of Glosten proposal and OMO review provided to NSF.

2012 SSSE:

Completed:

- Wireless controls and control valves to support operation
- Paravane wide tow winches and associated Paravane booms and winches.
- Line Islands Coring Cruise Adaptor Plates, Outrigger arms Lab tables, Safety hand rails
- MG Set Upgrade for clean power
- Commercial label maker
- Mobilization Supplement- Jason ROV Cruise

Pending:

Uninterrupted Power System Upgrade (~$55K available)- OMO proposal in preparation

2013 SSSE Projects:

OMO Priority:	Available Funding:
• New PA System (3 quotes just received)	$210,000
• New Workboat Davit (Available –Nov.12)	$129,000
• Noise Mitigation (NCE Engineering Complete)	$ 20,000
• Complete Wireless Controls- (Quote Pending)	$ 90,000

SSSE 2013 Group Purchase: Moved to ONR as a Request for 2014

Tempus IC Telemedical Device (6 Units @ $40k each) $240,000

LDEO, U. Hawaii, Oregon St., U. Washington, WHOI, and SIO Deferred

Other Projects

Potential Other Projects :

- Bridge modification to be able to see down the side of he ship to waterline by extending bridge wings, water closet on the bridge, and addition of new mammal observation booth on flying bridge. (Glosten Engineering Est. $125K – 2nd quote pending)

- Replacement of midships crane with Allied crane from Wecoma. (Glosten Engineering Estimate Quote $ 25K – 2nd quote pending)

- Glosten Long Core/Stability Study

- Reduction Gear Overhaul/Upgrade – Pending RR plan and quote. Possible shipyard late 2014/early 2015. Complex project to remove and machine equipment.

2011-13 Ocean Instrumentation

Completed Projects:

EM122 Water Column Logger upgrade	$ 8K
Mitigation Small Volume Source	$ 22K
Trade-in of Barovane 15 for Barovane 16 set (3)	$ 21K
50%-Diverter Doors for Towing Airgun Arrays (3)	$ 25K
Associated Barovane Gear Outfitting	$ 40K
**********	
Western Geco- Purchase of 40km SYNTRAK streamer & associated electronics/parts	$400K
OMO obtained 6 New Lead-In's for Streamers	$ 0

Proposed 2014 SSSE Projects:

Quotes Pending:

- Dynacon trawl winch overhaul and install- (quote pending)
- Power synchronizing module – $ 40K
- System to prevent biological fouling $100K)

Proposed 2014 Ocean Instrumentation Projects:

- Two new 32-channel slip rings: $ 48K
- Replacement Geometrics 882 magnetometer: $ 21K
- Meraki Networking upgrades: $ 35K

OMO "TRADE": Background

Background

- 2 x BARO-46 vanes (diverters) came as part of the *Western Legend* purchase package. During the conversion to *Marcus G Langseth*, these vanes were put into storage & have never been used since.
- BARO-46s are designed for 8 to 12 streamer towing schemes with up to ~ 1000M separation between the 2 outermost cables. The *Langseth* is set at a maximum towing scheme of 4 cables. With the current BARO-16s on the vessel, the *Langseth* achieved the 4-cable spread as seen on the recent Sawyer/Galicia Basin mission (200M between cables) with the ability to do wider cable separations (~300M to ~800M) if needed.
- If the BARO-46's were to be put into operation on *Langseth*, none of the current towing equipment will meet load criteria. Everything from the vane tow ropes to the hardware (shackles, harnesses, etc.) would have to be replaced. Estimated costs for that changeover are in the $400K + range. The Technical Services group foresee no reason for rigging the -46's
- GeoVentures (a branch of ION Geophysical) needs a set of BARO-46s and has approached OMO when they became aware we had a set of 3 in storage

OMO "TRADE": Proposed Deal

Proposed Deal

- GeoVentures obtains the BARO-46s "where is/as is" and will pay shipping costs to Houston. Estimated purchase price of new BARO-46s is in the ~$370,000 range.
- GeoVentures would (through CONCEPT Systems, another ION subsidiary) purchase for LDEO/OMO- 2 new Power rTNU(s) (~$125,000) + 25% of a 3rd unit (~$15,600) as a line of credit to be used as determined by Technical staff LDEO. The total cost to GeoVentures (~$140,600) represents ~38% of new BARO-46 purchase price.
- The BARO 46's do not have mounting hardware and do require some repairs before being put into operation. But GeoVentures is not concerned with any of the damages as described/shown and will take "as is/where is".
- In return, OMO will receive the hardware required to upgrade the navigational system on the *Langseth* from the aged SPECTRA platform to the latest version of ORCA used in Industry.

OMO "TRADE": Advantages

- Replacement/upgrade of the current rTNU(s) (real –time navigation units) as these units have been out of production for over ten years and are no longer supported or repairable.
- Orca software will provide "Near Real Time" (NRT) processing of the raw data and produces a fully processed P190 at end of line. These P190s are quality processed over 70% of the time automatically during the acquisition of the line. This ability removes the need for one to two full time processer technicians during 3D projects (and one full time processer technician on 2D projects)
- Quality control ability is greatly enhanced with the NRT processing.
- Orca 3D incorporates Reflex (binning system) and Sprint (processing system) into the operating package (Reflex & Sprint are included in the 3D rate).
- Setup and configuration for 3D projects is greatly simplified as Orca sets up the real-time binning and thereby configures the offline attributes of Reflex as well. It currently takes two to three days to get Spectra and Reflex to play nice for 3D. You also gain the advantage of configuring one system (Orca), instead of three (Spectra, Sprint, Reflex).
- The micro-power rtnu (which replaces the rtnu) is compatible with Spectra, which allows us to run offline (unlicensed) Spectra applications to aid in positioning and logging during non-MCS projects.

OMO "TRADE": Recommendation

OMO Recommendation:

OMO highly recommends making this trade:

- There is no foreseeable demand for the BARO-46 vanes as the *Langseth*'s towing capabilities are maxed out at 4 cables. The BARO-46 vanes are for much wider & numerous cable spreads.
- The rTNU(s) currently on *Langseth* are obsolete and unsupported. These are a single point of failure for any MCS mission. Being able to decommission these units and replace with current Industry standard units.
- Being able to deploy ORCA (current industry standard) is a tremendous move forward for the facility.

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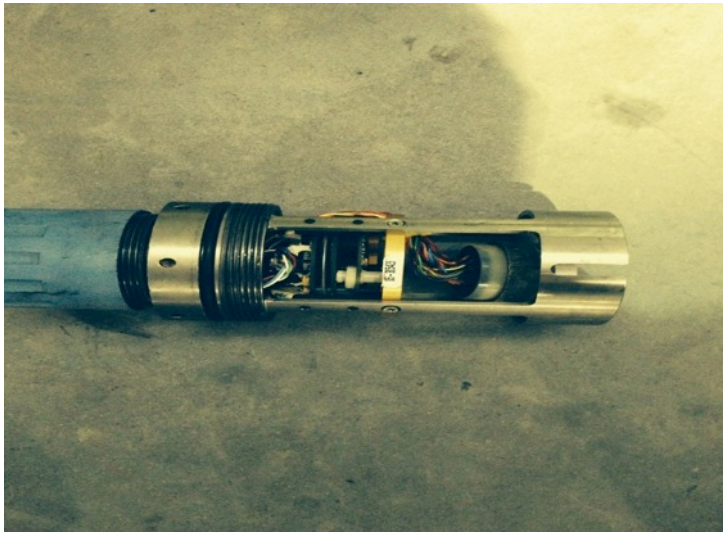
Weak Link: Status of Lead-In Terminations

- Parts are no longer available
- 4 good ones remain with 1 spare



2014 Projected Schedule

Shipyard

Jan-Feb- Drydock and maintenance – Southeast US yard

Atlantic MCS Projects for 2014- ~150 days

1) May/June- Mountain, et al - 3D Project – New Jersey Margin

2) July-Aug– USGS ECS Cruise or possible NSF substituted 2D MCS

3) Sept- GeoPrisms- Eastern North American Margin (ENAM) – SE Coastal US (onshore and offshore experiment)

USGS Cruises

2 Extended Continental Shelf (ECS) Mapping Projects possible on Atlantic Coast with one in 2014 (July) and/or 2015 (Each 21-28 days)

ShellTechWorks/WHOI Project: March/April 2014?

Using WHOI Sentry AUV and *Langseth* MB in GOM

Future of *Langseth and MCS*

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Increasing Ship Utilization

OMO has actively performed work and pursued other non-NSF work:

1) TAIGER – Joint International Project (Completed 2009)
2) PG&E and SONGS – GeoHazard Surveys for Nuclear Power Plants (California)
3) USGS ECS Surveys- Two to date (Gulf of Alaska- Bering Sea)
4) BGR- German Geological Survey – Svalbard Margin 2D MCS
5) Canadian Geological Survey –Hudson Bay 2D MCS (Pending Review)
6) IFREMER – GOLD Project (2D and 3D MCS) –(Deferred)
7) ShellTechWorks/WHOI – GOM Project (On Hold- March 2014?)

NSF CRITERIA for Non-NSF Funded Work

NSF CRITERIA for "other work" :

Must Satisfactorily answer the following:

1) Proposed Scope of Work ?
2) Permitting Requirements?
3) Competing with industry?
4) Meet NSF data policy requirements?

Obstacles to Overcome

1) Environmental Compliance
2) Market survey to ensure non-competition for a specific project if “commercial”
3) Timing of work –ability to respond quickly
4) Vetting projects through both NSF and CU on a “one-off basis”
5) Contract Development
6) Insurance/Liability/Risk Management
7) Overhead ($$) and time for pursuing work
8) HSE Requirements