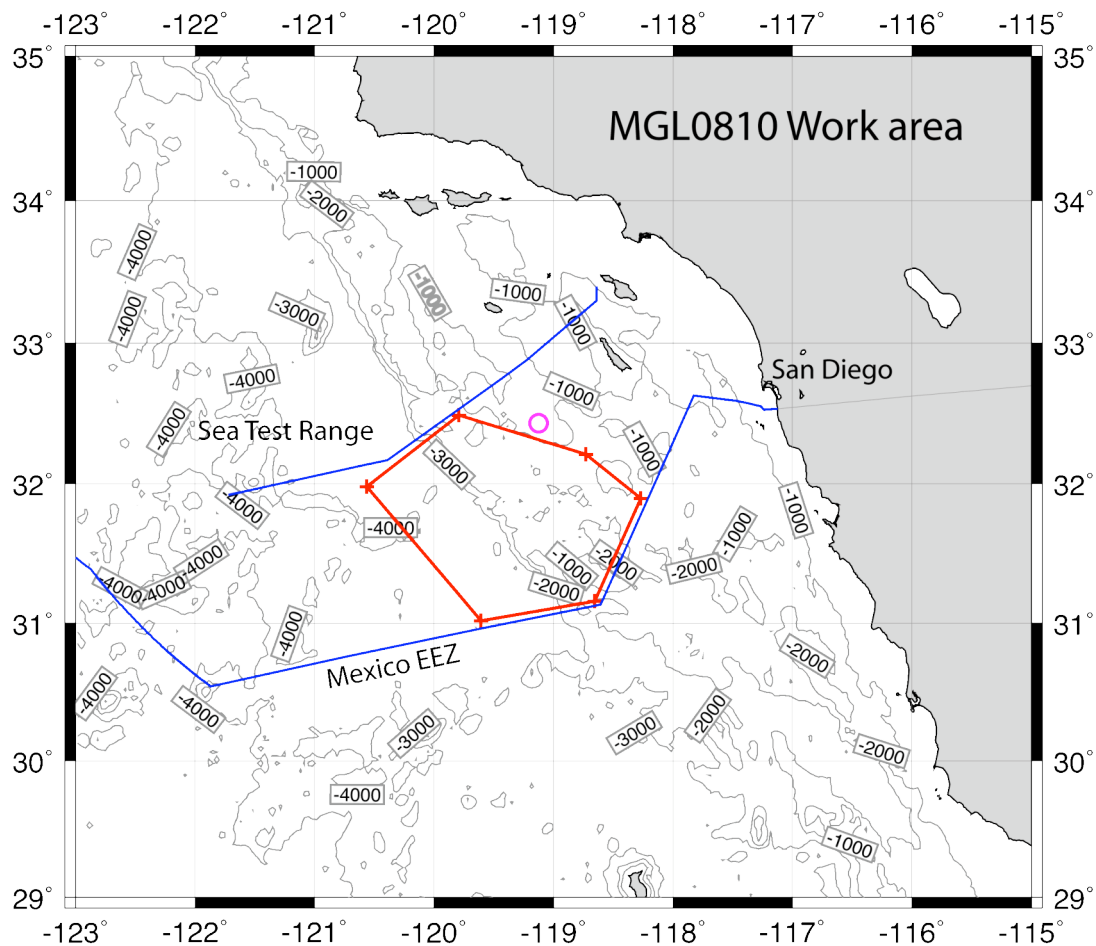


## **MGL0810 – R/V Langseth Seismic Shakedown III**

The five days between the UNOLS MLSOC meeting hosted by Scripps' MARFAC and the beginning of the final Langseth seismic shakedown leg were spent productively. Visitors included Paul Henkart, who succeeded in setting up a real-time CDP gather and brute-stack process on the Langseth MCS computers; Suzanne O'Hara, who reviewed facilities and procedures for Multibeam data acquisition, processing and archiving; and James Warren, of Arete, who carried out a site survey for the future installation of a marine mammal radar detection system which is under development by Arete. A series of projects, aimed at improving shipboard habitability in a number of areas, was begun. These efforts have continued during and since MGL0810, and are beginning to make significant improvement in the quality of life aboard ship.

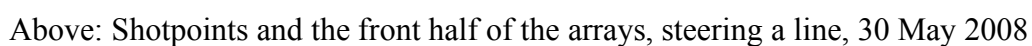
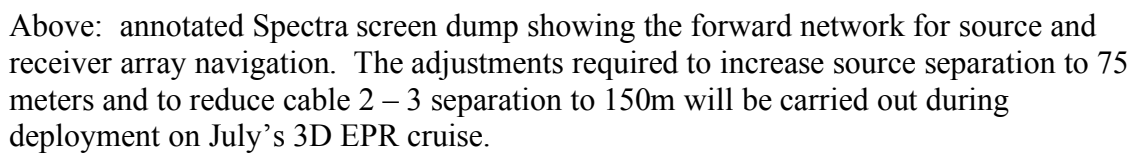


MGL0810 left the Scripps' dock at 14:30 local time, 27 May 2008. While steaming to the work area [above] an hour or so was lost to emergency main engine maintenance. MCS equipment deployment began at 01:30 local time on the 28<sup>th</sup>, and went very smoothly. Initial deployment was completed by 12:50 (L) on 30 May, total elapsed time a bit over 2 days, 11 hours.



Above: a Spectra helmsman display of the 3D network on the morning of 30 May. Red lines show missing telemetry segments – Tailbuoy GPS and one acoustic module are not present on cable #1 [rightmost] GPS is missing from source strings 1 and 2. The source array GPS units are crucial to completion of the forward array navigation network. The relative positions of the front ends of the receiving arrays with respect to the source arrays are determined from the acoustic network, but absolute position is determined from the GPS pods on the four source arrays. The #2 source string GPS pod was made operational after the time of this screenshot.

The next 24 hours were spent trouble-shooting problems with the source string #2 GPS pod, adjusting source array spreader ropes, steering onto an acquisition line, and recording noise data. An important part of this exercise was that it showed that the 3D lines can be steered using the Kongsberg autopilot. Although it will be eventually useful and convenient to have waypoints and turn specifications passed on directly from the Spectra system [our original intention] this has proved not to be essential.



A very important set of single-engine tow tests was also carried out, which showed that if propulsion fails on either the port or starboard side, the ship can maintain speed through the water long enough for retrieval of the inner source array strings, an act which will reduce drag sufficiently that wide towing can be safely continued.

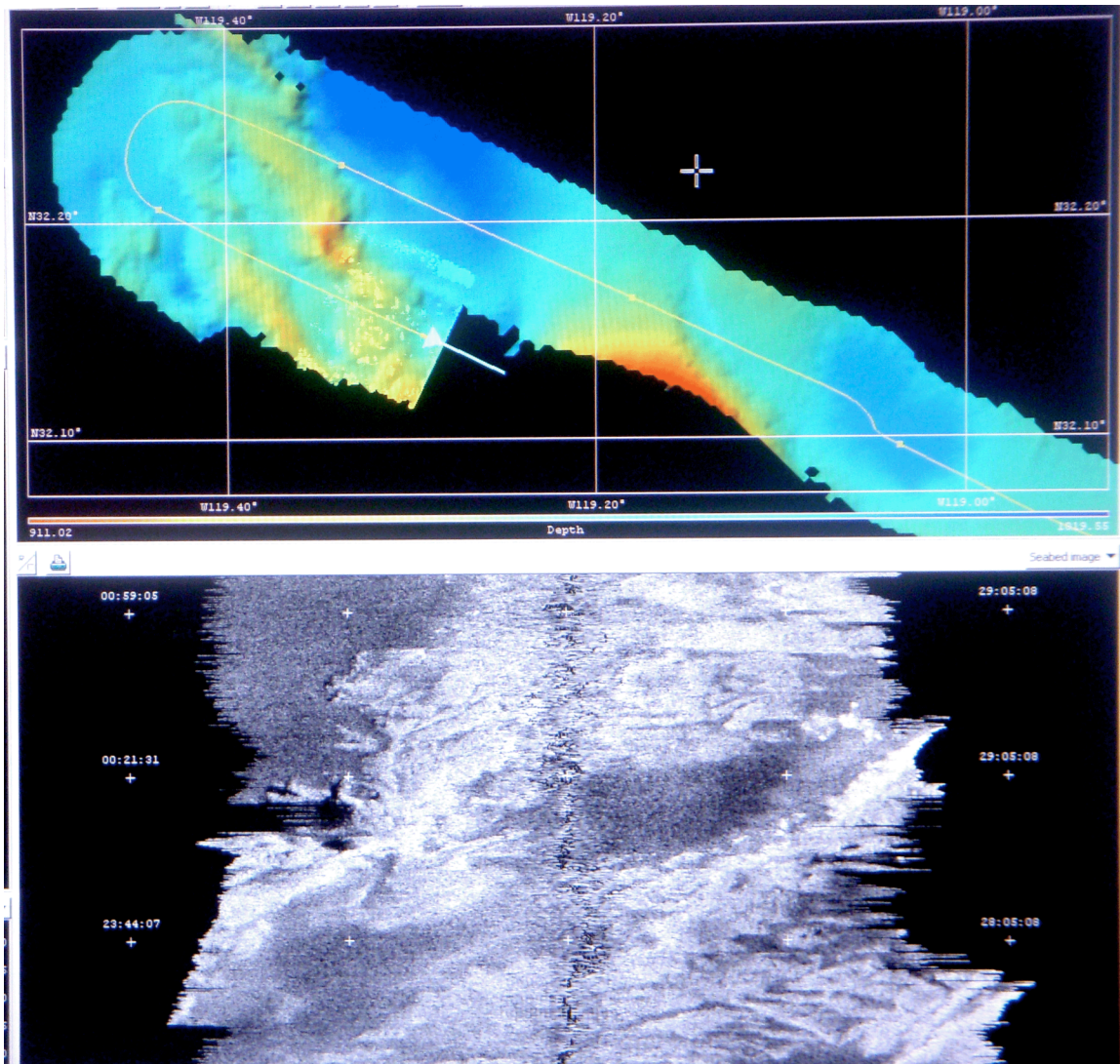
By Midday 31 May all of the tests described above had been carried out, and the NOAA weather reports predicted high winds and increasing wave and swell heights for the coming 72 hours. Therefore at this stage, the decision was made to recover the gear and end the shakedown. Although an additional half-day could have been productively used in fine-tuning the towing arrangements, both Robert Steinhaus (senior science officer with extensive 3D offshore experience) and Al Hise (senior NCS Subsea contract employee) felt that the in-water gear could best be protected by recovering it at this point, and that the final towing adjustments could be predicted and easily applied during deployment at the EPR. Recovery of the gear went very smoothly – one hour for all four source strings, and 13 hours for everything else – a total of 14 hours. In the end, the 5 – 6 days spent on this exercise matches my original prediction and request, expressed at the Dec 2007 MLSOC meeting. Up to 12 days had been allocated, allowing for contingency that we did not need. In the end, I think the correct choice was made – to end the shakedown effort with maximum results for the time spent, and giving back an invaluable 6 days to maintenance work.

In addition to 3 non-operational GPS pods, a few important deficiencies remained at the end of MGL0810, and these are being corrected presently, or will be during deployment for the EPR 3D acquisition: Problems remain with the performance and output of the DigiShot source array controller. As I write three ION field representatives are aboard Langseth, to upgrade the software in the controlling computer and the firmware in the remote source control modules. They will then tweak setup parameters as necessary so that source performance data are passed properly to Spectra and the acquisition system. A second, and smaller but still crucial issue is that there was during MGL0810 no system for real time determination of near-surface sound velocity, which is essential for both the acoustic positioning network and the EM120 multibeam. Finally, the source array and inner cable positioning errors illustrated in the annotated figure above will be corrected during deployment of the system at the start of the EPR 3D cruise.



## **EM120**

The artifacts in the backscatter images that were noted during the multibeam shakedown MGL0704 appear to have been removed via the board swap recommended by Kongsberg:



We did not have any opportunity to update the sound velocity profile, and the result can be clearly seen where swaths overlap. In the upper screen (it does show, however, an example of a nearly-perfect turn driven by the Kongsberg autopilot.) More important, however, is that the backscatter image in the lower screen shows no evidence at all for the original artifacts.

## **Personnel & Performance**

The ship's crew and technical staff worked cooperatively and efficiently during this exercise. In addition to managing the ship, the ship's crew continued to make great strides in improving cleanliness and habitability on board. The technical complement was well fleshed out with the exception of the gear handling component, but this lack was made up for with the gear handling experience of Robert Steinhaus and Al Hise. We were also fortunate to have Jay Ardai aboard as a contractor. Jay worked not only on the back deck, but as a consultant in the engine department from time to time. The combination of Al Hise and Robert Steinhaus was essential for this leg, as Mr. Hise had been the senior manager during the previous 3D shakedown effort, and he passed on the benefits of that experience to Robert Steinhaus and the rest of the group.

Departure: San Diego, CA.

DATE: May 27, 2008

Voyage # ML 08-10

|    |                         |                       |
|----|-------------------------|-----------------------|
| 1  | O'Loughlin, James E.    | Master                |
| 2  | Zeigler, Stanley P. Jr. | Chief Mate            |
| 3  | Wolford, David H.       | 2 <sup>nd</sup> Mate  |
| 4  | Sullivan, Conor J.      | 3 <sup>rd</sup> Mate  |
| 5  | Woronowicz, Jason J.    | AB/debarked           |
| 6  | Cereno, George G.       | AB                    |
| 7  | Redito, Ricardo M.      | AB                    |
| 8  | Sutton, Christopher H.  | AB                    |
| 9  | Applewhite, Nicky, R.   | OS/Utility            |
| 10 | Karlyn, Albert D.       | Chief Engr.           |
| 11 | Tucke, Matthew S.       | 1 <sup>st</sup> Engr. |
| 12 | Kanoute, Thidiane       | 2 <sup>nd</sup> Engr. |
| 13 | Gallant, Zachary K.     | 3 <sup>rd</sup> Engr. |
| 14 | Antoine, Ian M.         | 3 <sup>rd</sup> Engr. |
| 15 | Singletary, John A.     | Oiler                 |
| 16 | Neis, Philip D.         | Electrician           |
| 17 | Fuller, Hervin M.       | Steward               |
| 18 | Cannon, Jeffrey J.      | Cook                  |

## **SCIENCE LIST**

| # | NAME             | POSITION      |
|---|------------------|---------------|
| 1 | Diebold, John B. | Ch/Scientist  |
| 2 | Aguilar, Elliot  | Science Tech  |
| 3 | Ardai, Jose      | Science Tech. |

|    |                      |               |
|----|----------------------|---------------|
| 4  | Conrad, Paul L.      | Science Tech  |
| 5  | Eaton, Ryan S.       | Science Tech. |
| 6  | Gutierrez, Carlos D. | Science Tech  |
| 7  | Hise, Alfred L.      | Science Tech  |
| 8  | Johnson, Anthony     | Science Tech  |
| 9  | Martello, Michael C. | Science Tech  |
| 10 | Martinson, David     | Science Tech  |
| 11 | Steinhaus, Robert J. | Science Tech  |
| 12 | Tatro, Michael P.    | Science Tech  |

TOTAL CREW & SCIENTISTS – 30