Company : LDEO  
Vessel : Marcus G. Langseth 
Client : NSF 

Project : MGL1004  
Area : Shatsky Rise 
Start Date : 19 July 2010 

Vessel Sensor Offsets  
Towing Offsets  
Acoustic Offsets  
Gun Array Offsets  
Gun Configuration  
Streamer Front End  
Tailbuoy Offsets  
Timing Langseth  
Timing Spectra
### Offsets used for acquisition

<table>
<thead>
<tr>
<th><strong>NRP-Stern</strong></th>
<th>4.20 m</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>NRP-COS</strong></td>
<td>198.00 m</td>
</tr>
<tr>
<td><strong>COS-CNG</strong></td>
<td>370.00 m</td>
</tr>
<tr>
<td><strong>COS-CMP</strong></td>
<td>172.00 m</td>
</tr>
<tr>
<td><strong>NRP-CMP</strong></td>
<td>284.00 m</td>
</tr>
</tbody>
</table>

**NRP** = Near Reference Point  
**COS** = Centre of Source  
**CNG** = Centre of Near Group (Trace # 468)  
**CMP** = Common Mid-Point  
**MSL** = Mean Sea Level

All measurements in meters.
### R/V Marcus G. Langseth "tow" configuration

#### NOT to Scale

| R/V Marcus Langseth | 1 x 6000 | 4 Gunstrings |

#### ***Offsets used for acquisition***

<table>
<thead>
<tr>
<th>NRP</th>
<th>4.20 m</th>
<th>NRP</th>
<th>4.20 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRP</td>
<td>198.00 m</td>
<td>COS</td>
<td>Centre of Source</td>
</tr>
<tr>
<td>NRP-CNG</td>
<td>370.00 m</td>
<td>NRP-CMP</td>
<td>Layback</td>
</tr>
<tr>
<td>NRP-MAG</td>
<td>150 m</td>
<td>NRP-PAM</td>
<td>30 m</td>
</tr>
<tr>
<td>NRP-MAG</td>
<td>X = 20 m</td>
<td>NRP-PAM</td>
<td>X = 20 m</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>COS</th>
<th>Centre of Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRP</td>
<td>Nav Reference Point</td>
</tr>
<tr>
<td>COS</td>
<td>Centre of Source</td>
</tr>
<tr>
<td>CNG</td>
<td>Centre of Near Group (Trace # 468)</td>
</tr>
<tr>
<td>CMP</td>
<td>Common Mid-Point</td>
</tr>
<tr>
<td>MSL</td>
<td>Mean Sea Level</td>
</tr>
</tbody>
</table>

---

**Diagram:**
- R/V Marcus Langseth "tow" configuration
- Key offsets used for acquisition:
  - NRP: 4.20 m
  - NRP-CNG: 370.00 m
  - NRP-CMP: 284 m
  - NRP-MAG: 150 m
  - NRP-PAM: 30 m
- MSL: Mean Sea Level
- Trace # 468
- 6m magnetometers
- 198m, 172m, 370m offsets
Sonardyne HGPS Transceiver 7887
Pressure Sensor
Depth Sensor

8m

Guns 1-2
Gun 3 40 cu in.
Guns 4-5 180 cu in. each
Gun 6 90 cu in.
Gun 7 120 cu in.
Gun 8 60 cu in.
Gun 9-10 220 cu in. each

Array total volume (without spares) is 6600 cubic inches. Total volume per string (without spare) 1650 cubic inches.

String 1 has guns 9 & 10 in a horizontal cluster; Strings 2, 3, 4, have all clusters hanging vertically.

NOTE: drawing not to scale

Gun clusters have 0.75m between guns and hang 0.95m from center of hanger. Single guns hang from hanger 1.15m.

All measurements in meters.

All gun volumes, numbering, locations, and offsets were inspected and verified by Chief Source Mechanic.
All measurements in meters

<table>
<thead>
<tr>
<th>Sensor</th>
<th>Model</th>
<th>STBD/PORT (X)</th>
<th>FORE/AFT (Y)</th>
<th>UP/DOWN (Z)</th>
</tr>
</thead>
<tbody>
<tr>
<td>NRP</td>
<td>NAVIGATION REFERENCE POINT</td>
<td>0.00</td>
<td>4.20</td>
<td>0.00</td>
</tr>
<tr>
<td>V1G1</td>
<td>C-Nav 3050</td>
<td>0.00</td>
<td>23.40</td>
<td>16.90</td>
</tr>
<tr>
<td>V1G2</td>
<td>SeaPath 200</td>
<td>0.00</td>
<td>22.30</td>
<td>16.90</td>
</tr>
<tr>
<td>V1G3</td>
<td>C-Nav 2000</td>
<td>4.87</td>
<td>8.06</td>
<td>14.50</td>
</tr>
<tr>
<td>V1G4</td>
<td>Pos MV</td>
<td>-1.50</td>
<td>25.30</td>
<td>16.90</td>
</tr>
<tr>
<td>V1R1</td>
<td>PosNet</td>
<td>-2.00</td>
<td>23.40</td>
<td>16.90</td>
</tr>
<tr>
<td>EM122</td>
<td>Multibeam</td>
<td>8.50</td>
<td>49.70</td>
<td>-6.60</td>
</tr>
<tr>
<td>BGM</td>
<td>Bell Gravity Meter</td>
<td>4.40</td>
<td>12.20</td>
<td>-3.49</td>
</tr>
</tbody>
</table>

Note: All Echosounders are used in Spectra with 6.6m ship’s draft correction applied.
R/V Marcus G. Langseth - Acoustic Offsets

Sonardyne SIPS 1

- HGPS Transceiver 7887 & Shock Mounted Transducer 7660
- XRS 8005 Acoustic Transceiver (Longlife Battery)

All measurements in meters
Cluster Guns are mounted 1m apart
String 1 cluster 9 & 10 mounted horizontally
String 2, 3, & 4 all clusters mounted vertically.

All measurements in meters
Lead-in:
Outer = 505m
Inner = 465m

R/V Marcus G. Langseth - Streamer Front End

Radial Head Stretch RVIM  STU  Active Cable Section # 40

30 m  3.4 m  37.5 m  75 m  37.5 m

CNG is 75m from head of section
Spectra timing for r/v Marcus G. Langseth