RV Langseth
Data Reduction Summary

MGL0908

Kaohsiung, Taiwan – Kaohsiung, Taiwan

PRELIMINARY

Mon June 23 00:00:00 2009

Date	Julian Date	Time	Port
2009-06-16	2009-167	0000 UTC, 0800L	Kaohsiung, Taiwan
2009-07-25	2009-206	0000 UTC, 0800L	Kaohsiung, Taiwan

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Please refer to the Langseth Data Report Supplement for information regarding data formats.

Cruise Track Version 2
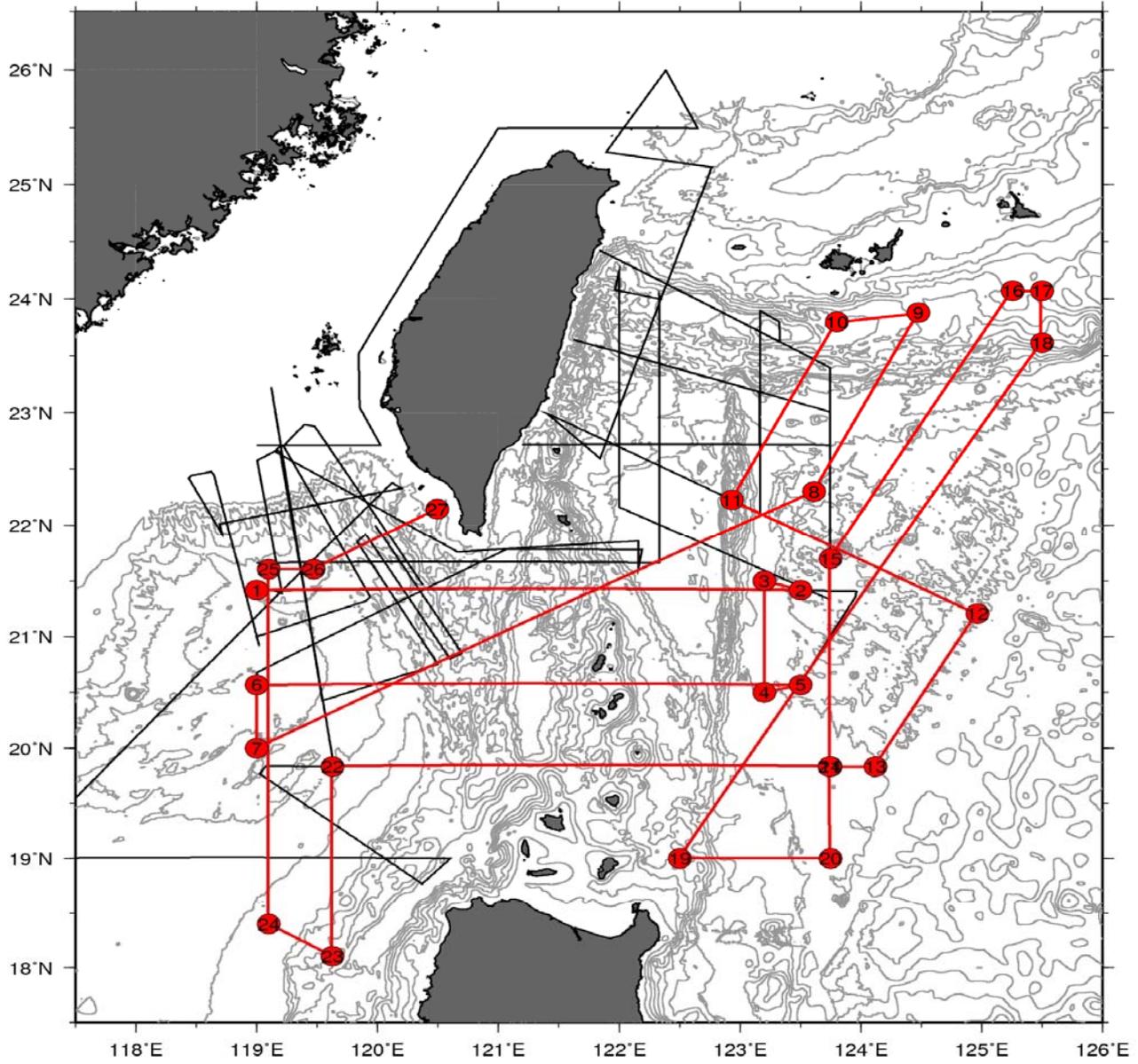
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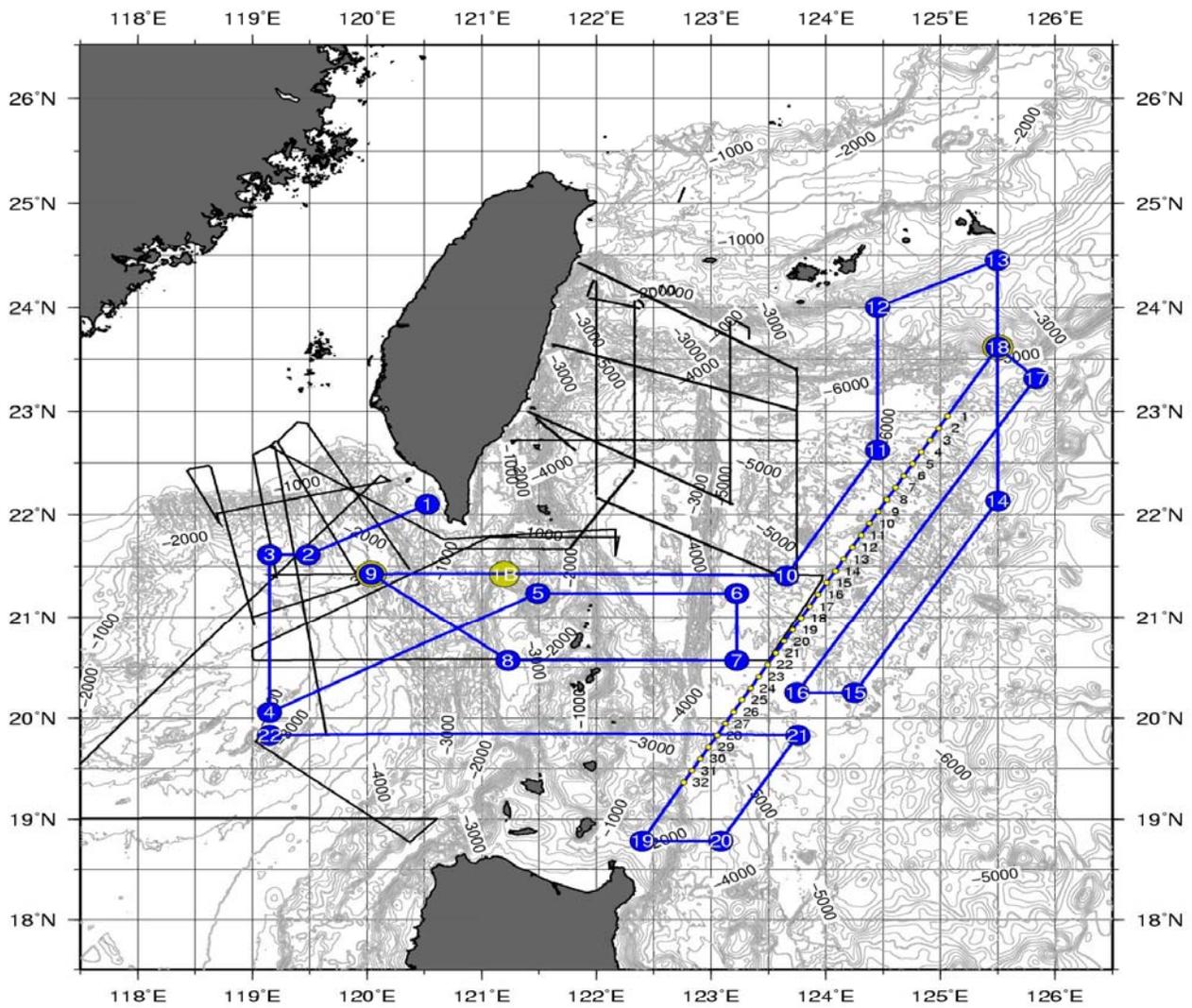
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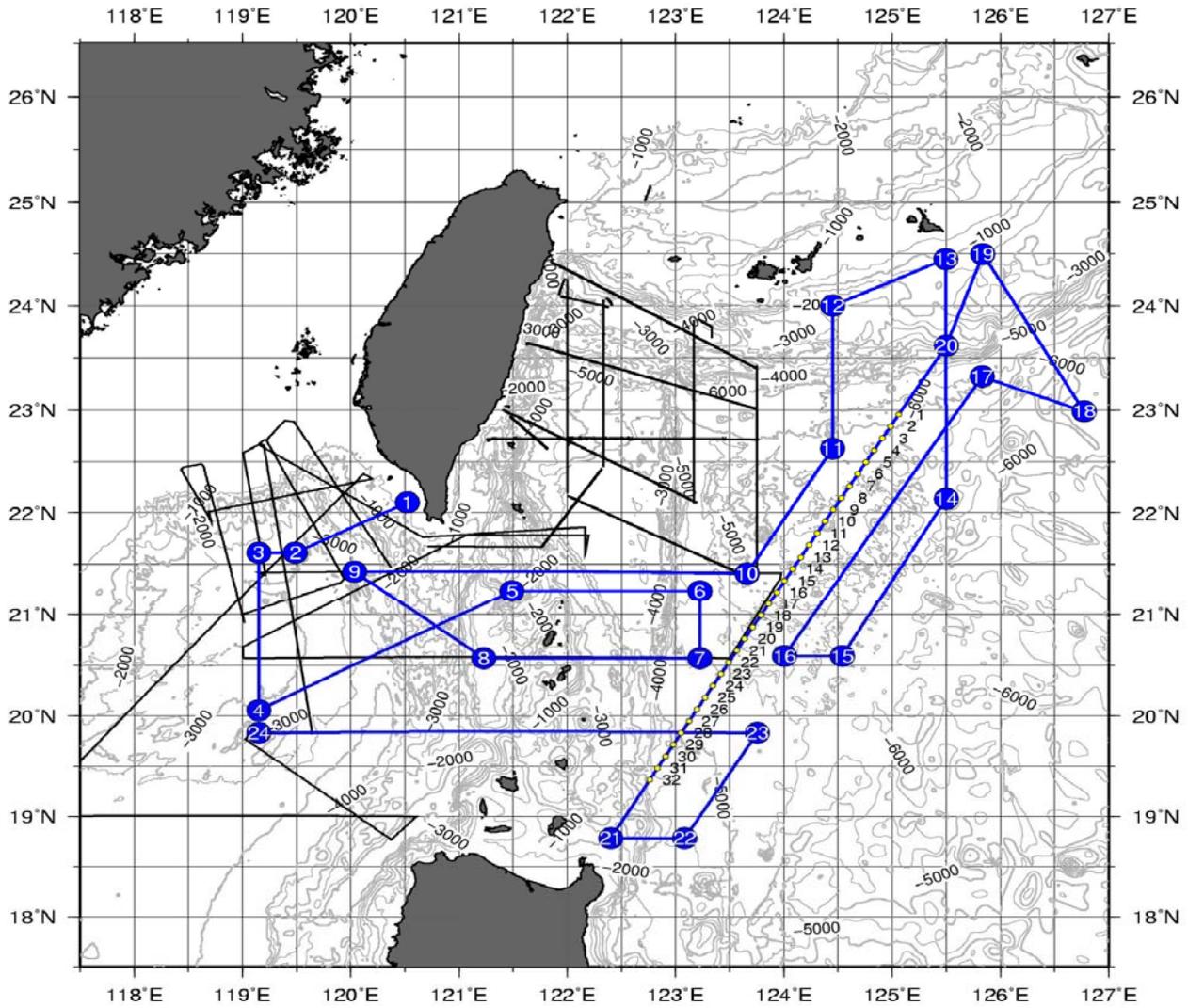
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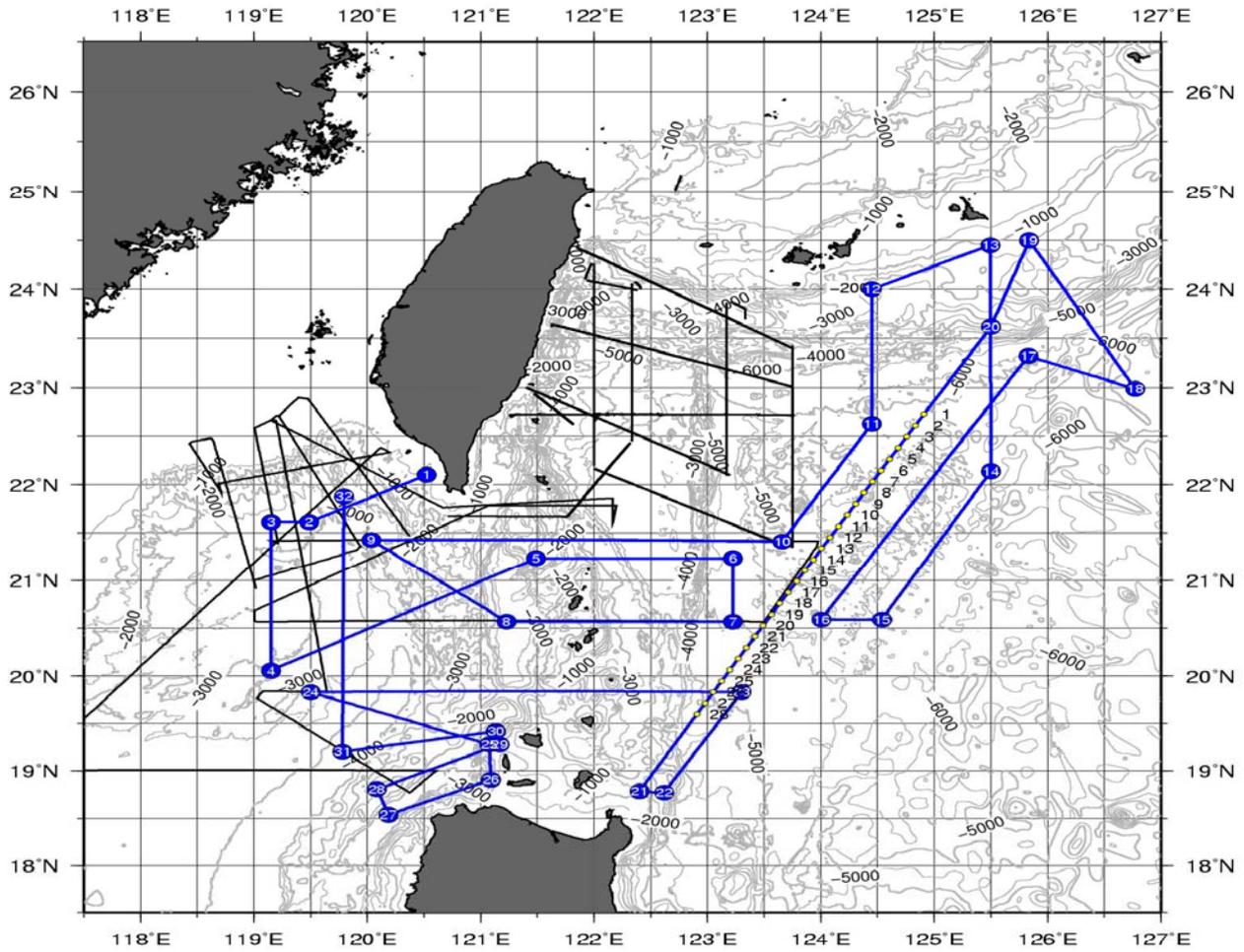
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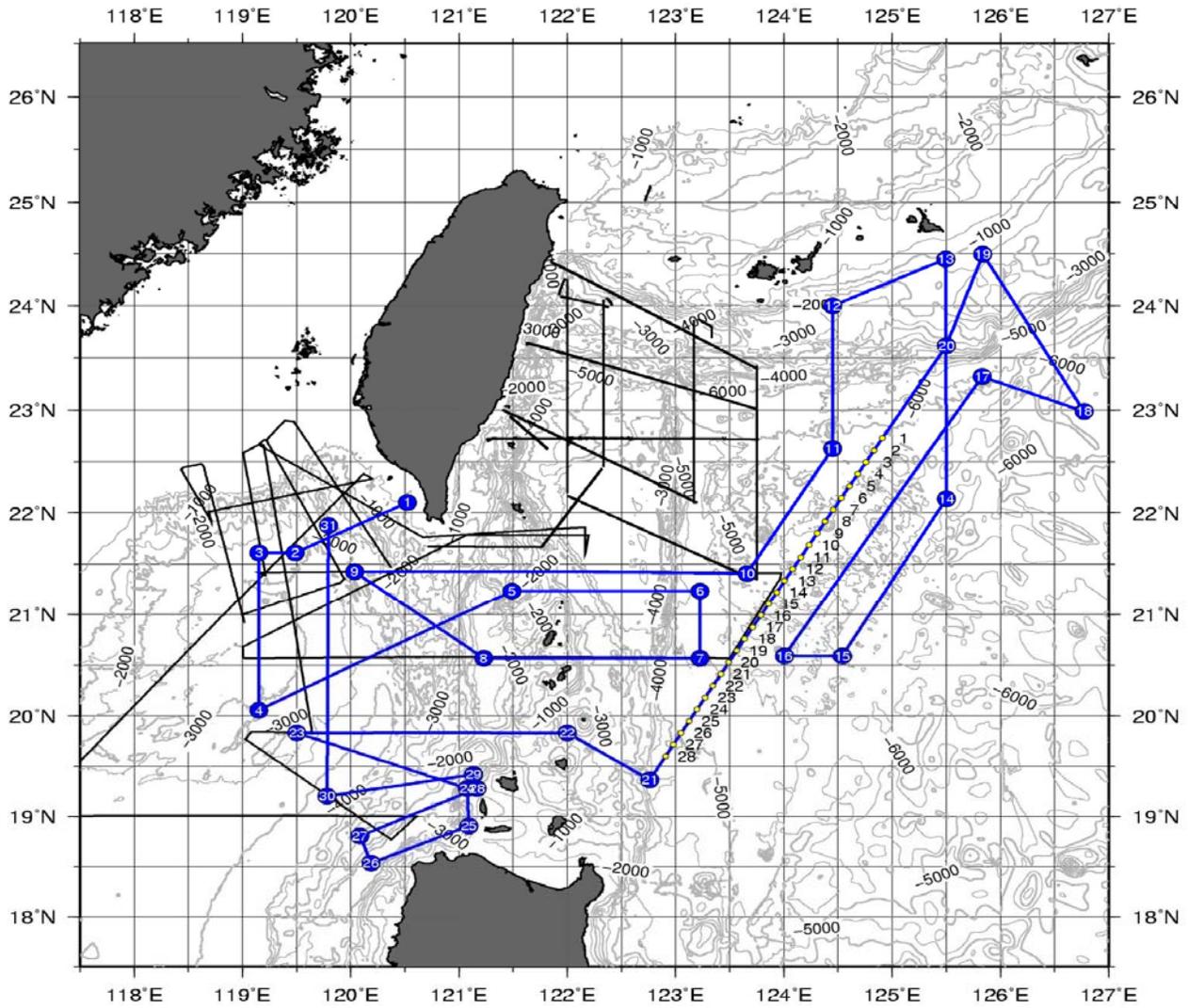
Cruise Track Version 24
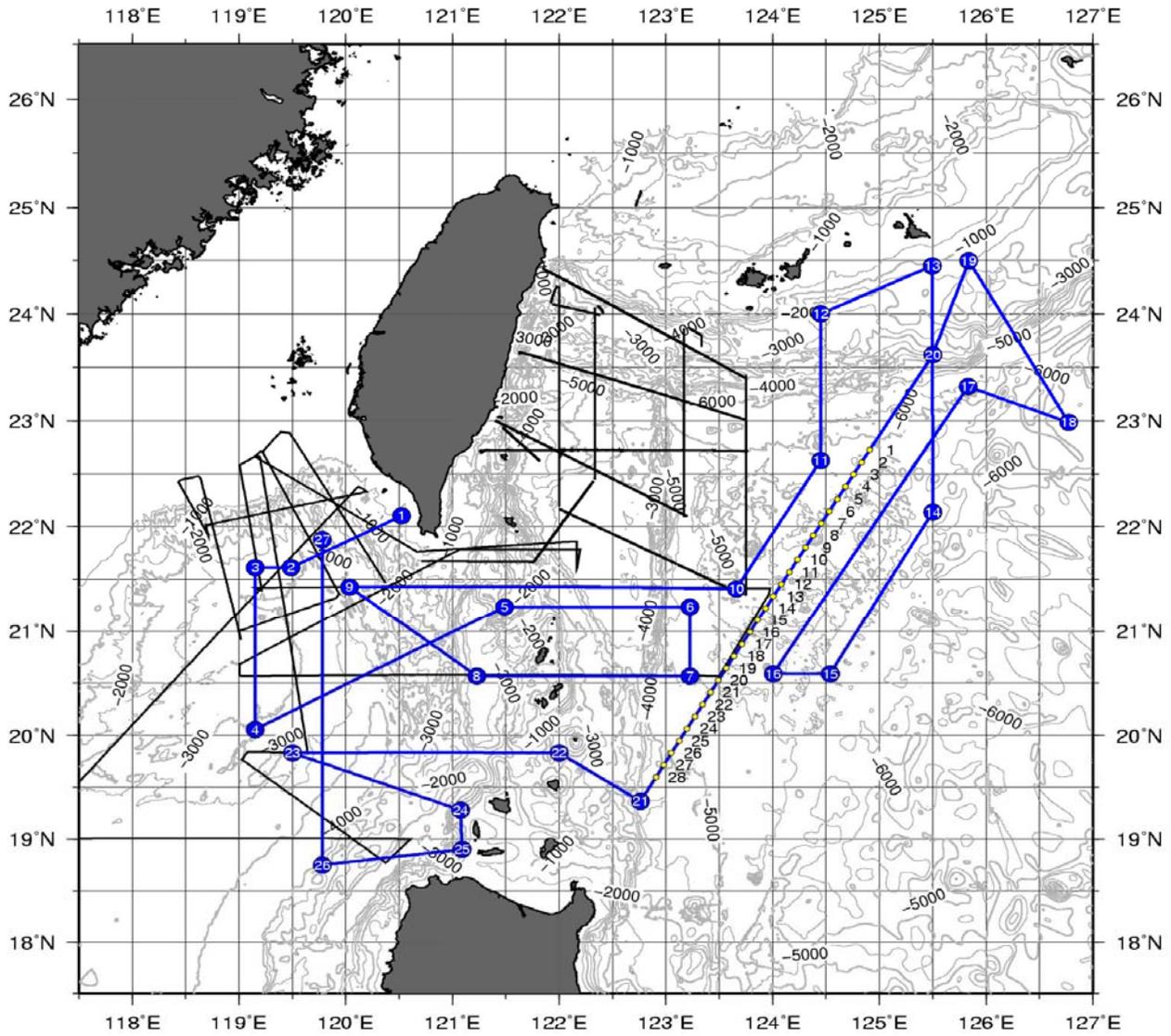
I. Background and Scientific Objectives

The TAIGER is an US-Taiwan collaboration research project jointed by scientists from France to investigate the mountain building processes, plate boundary dynamics, and seismogenic processes on and around Taiwan. Both natural earthquakes and large airgun array will be used as sources for seismic imaging of the interior of the deep crust and upper mantle. On land seismographs and broadband ocean bottom seismometers will be deployed for a longer period of time (up to one year) to observe the natural earthquake activities (passive source experiment), while large multichannel seismic system of the new US seismic research vessel R/V Marcus Langseth and short-period ocean bottom seismometers will be used to image crustal transects during the active source experiment. Taking the opportunity of having a modern multichannel seismic vessel coming to Taiwan, the marine geosciences community in Taiwan has obtained additional funds from several agencies in Taiwan to carry out an expanded TAIGER survey. The R/V Langseth is scheduled to conduct the TAIGER active source survey in the areas around Taiwan, in the northern South China Sea and in the western Philippine Sea from March 31 to July 20, 2009.

The purpose of this expanded TAIGER survey is to have a complete investigation on the Taiwan arc-continental collision system and its adjacent continental margins and marginal seas, thus to have a better understanding on the structural characters and tectonic evolution of the region. There are several important scientific issues as well as issues having societal impacts can be addressed by conducting additional marine seismic survey, as described below:

1. The subduction system south of Taiwan to northern Luzon Island: The area south of Taiwan is a transition zone from subduction to arc-continent collision. Two E-W trending profiles across the Luzon subduction system have already been planned in the TAIGER survey, however, we would like to lengthen these two profiles to cover the northern South China Sea Basin and the Western Philippine Basin, and to add couple more transects southward to the Luzon Island. From a recent USGS report on the potential risk of large Tsunami hazard zones around the Pacific region, the subduction system from North Luzon to Taiwan is ranked among the highest. Additional seismic profiles across this region will help to understand the tectonic processes, and provide critical information for earthquake and tsunami hazards investigation.

2. Structure and evolution of the northern South China Sea continental margin: The early evolution of the South China Sea Basin and its relationship to the Huatung Basin/West Philippine Basin is still unclear. It has been suggested that there may exist a fossil plate boundary in the most northeastern corner of the South China Sea Basin. We would like to collect several long MCS/OBS profiles across the continental margin of the northern South China Sea to better constrain the structural and tectonic evolution of this region.

3. Seismogenic processes and earthquake hazards off eastern Taiwan: There is a highly active seismic zone off eastern Taiwan in the western Ryukyu forearc region where the Ryukyu subduction system transforms into Taiwan collision system westward. Earthquakes of magnitude 7 or larger occur frequently, and the risk of tsunamigenic large earthquakes (magnitude > 8) is very high. Two of the planned TAIGER onshore-offshore transects will pass through this region roughly in E-W trending, we propose to collect additional two N-S trending MCS/OBS transects in this region. One of the added transects will pass through the center of the most densely distributed earthquake zone. This profile is the key profile of the Taiwan-France cooperative ACTS project, and French OBSs will participate in this part of the investigation.

4. The nature of the Gagua Ridge and evolution of the western Philippine Sea Plate: The Gagua Ridge is a N-S trending linear volcanic ridge separating the Huatung Basin and the West Philippine Basin. This ridge has been suggested to be a fossil plate boundary, but the nature of it is still unclear. We suggest to lengthen the planned E-W trending TAIGER profiles and to add additional MCS/OBS transects across the Gagua Ridge so that this series of transects from north to south could provide insights on the nature of the Gagua Ridge and tectonic evolution of the western Philippine Sea Plate.

5. Gas hydrates on different tectonic settings: Marine geophysical and geochemical data have shown that gas hydrates are present both in the passive northern South China Sea continental margin and the accretionary wedge environment southwest of Taiwan. The area SW of Taiwan thus provides a rare opportunity to compare the formation, migration and accumulation of gas hydrates in both active and passive tectonic settings. The Central Geological Survey of the Ministry of Economic Affairs, Taiwan, has funded 12 days of MCS/OBS surveys off SW Taiwan for the purpose of imaging the deep crustal structures of this region where the accretionary wedge of the Luzon subduction system meets with the passive continental margin of the South China Sea.

Taiwan will also provide additional ships during the TAIGER active source experiment to deploy and retrieve OBSs, thus reducing the time spent for handling OBSs onboard R/V Langseth to a minimum. We expect R/V Langseth will be used to collect 2-D MCS data during most of her survey time, and the seismic data collected will greatly enhance the understanding of the regional tectonics, crustal structures and seismogenic processes of the region.

**Figure 1A - Source & Streamer Survey, track and shot log**
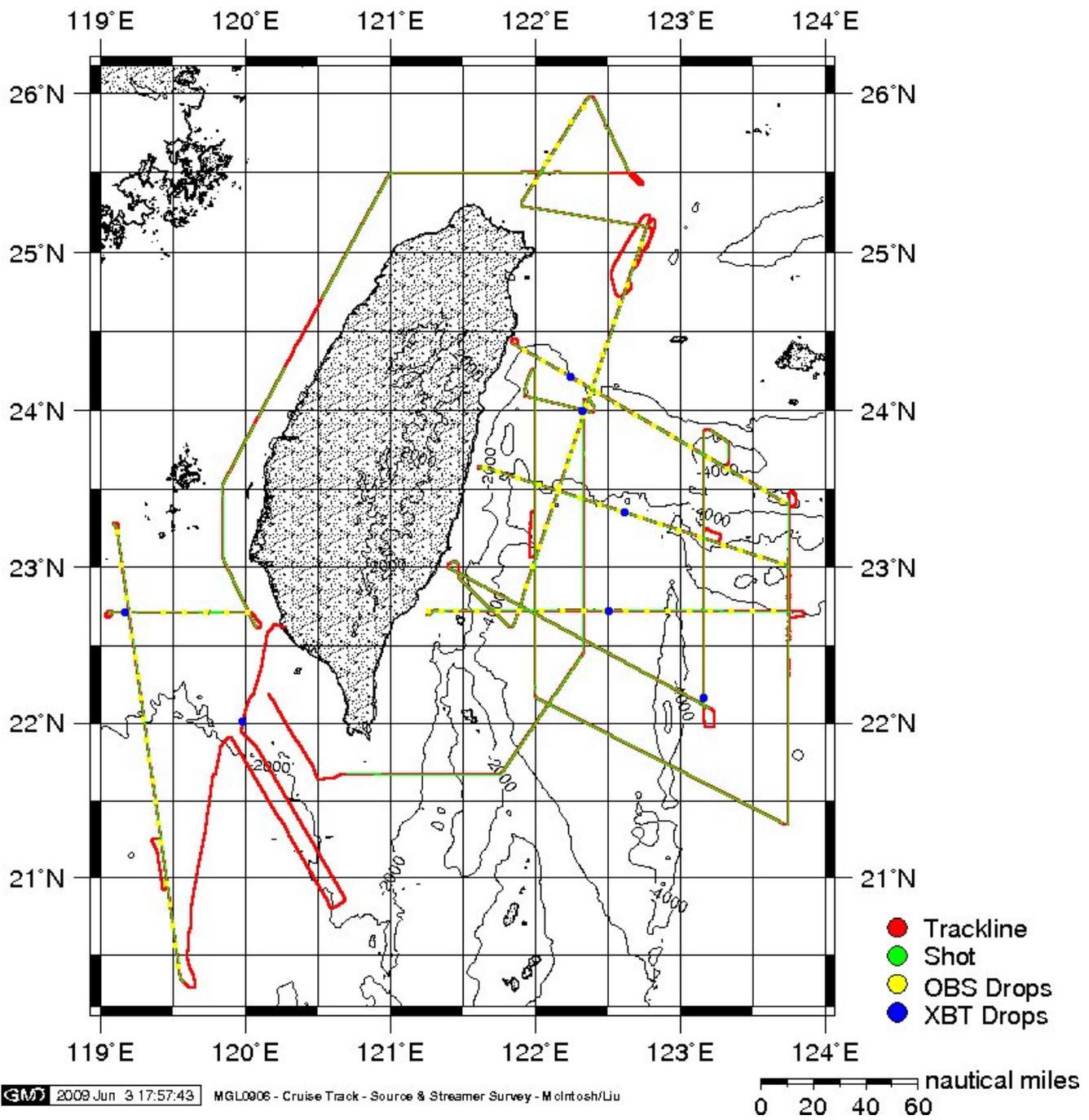
Figure 1B – Taiwan Topography & Bathymetry
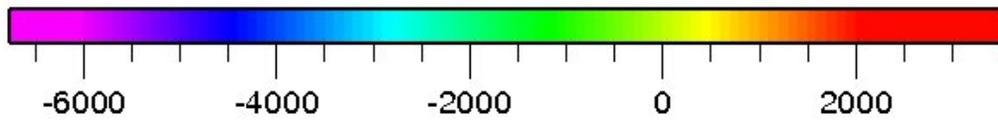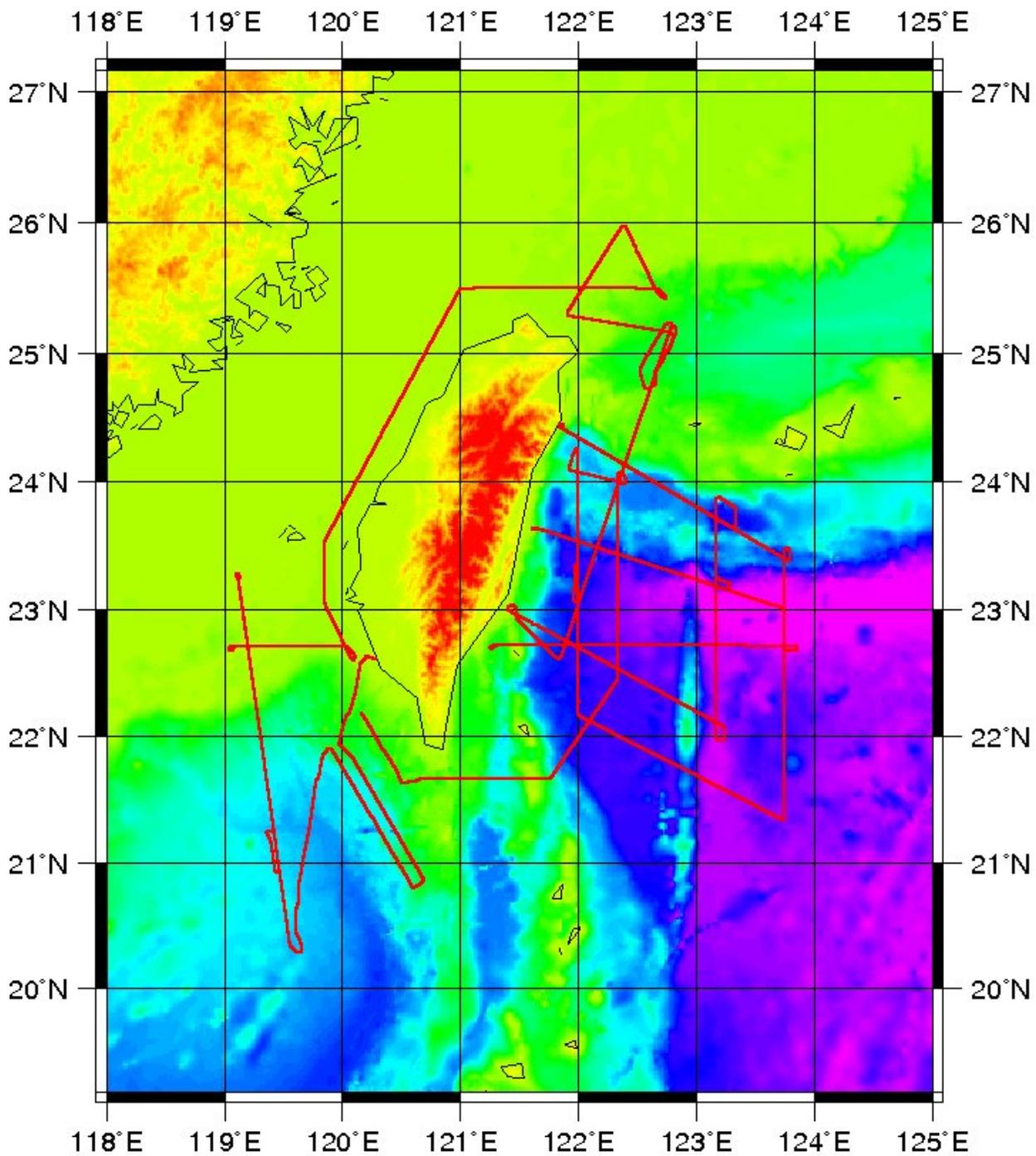
MGL0906 - Taiwan Topography & Bathymetry

II. Personnel

Science Party

1	Kirk McIntosh	Co-Chief Scientist	Univ. Texas at Austin
2	Shu-Kun Hsu	Co-Chief Scientist	National Taiwan Univ.
3	Jean Claude Sibuet	Research Scientist	College de Frances
4	Yi-Ching Yeh	PostDoc Associate	National Taiwan Univ.
5	Ching-Hui Tsai	PostDoc Associate	National Taiwan Univ.
6	Robert Reece	Ph. D. Student	Univ. Texas at Austin
7	Daniel Eakin	M.S. Student	Univ. Texas at Austin
8	Estephanie Ramos	M.S. Student	University of the Philippines
9	Jillian Gabo	M.S. Student	University of the Philippines
10	Leo Armada	M.S. Student	University of the Philippines
11	Edanjarlo Marquez	Professor	University of the Philippines
12	Wei-Chih Lien	Military Observer	National Defense Univ.
13	Chia-Yen Ku	Ph. D. Student	National Taiwan Univ.
14	Wen-Bin Doo	Ph. D. Student	National Taiwan Univ.
15			

Shipboard Technical Staff

1	Robert Steinhaus	Technician-in-charge
2	David Martinson	Watch Leader, Nav/IT
3	Ryan Eaton	Acquisition Leader, Nav/IT
4	Mike Tatro	Acquisition Leader
5	Mike Martello	NCS Nav
6	Robert Gunn	Chief Sound Source/Handling
7	Thomas Carson	Watch Leader, Sound Source Mechanic
8	Carlos Gutierrez	Watch Leader, Sound Source Mechanic
9	Josef Keuhanst	Sound Source Mechanic
10	Walter Maxwell	Sound Source Mechanic
11		

Marine Mammal Observers

1	Joseph Beland	Lead Marine Mammal Observer
2	Giovanni Caltavuturo	Marine Mammal Observer
3	Bradley Dawe	Marine Mammal Observer
4	John Nicolaus	Marine Mammal Observer
5	Diana Antochiw	Marine Mammal Observer

Ship's Crew

1	James O'Loughlin	Captain
2	Stan Zeigler	Chief Mate
3	Chris Zimmerman	2nd Mate

4	Nick Gasper	3rd Mate

4	Nick Gasper	3rd Mate
5	Ricardo Redito	AB
6	George Cereno	AB
7	Petrino Paragas	AB
8	Ethan Bell	AB
9	Ben Nadler	OS
10	Nicky Applewhite	OS
11	Al Karlyn	Chief Engineer
12	Peter Chizmar	1st Asst. Engineer
13	Michael Caseria	2nd Asst. Engineer
14	Ryan Vetting	3rd Asst. Engineer
15	Jack Schwartz	Electrician
16	Fernando Uribe	Oiler
17	Stephen Collier	Oiler
18	Charlie Billips	Oiler
19	Ricardo Rios	Steward
20	Gary Brodock	Cook

III. Instrumentation Summary

All science instruments aboard the Langseth are listed in the science_sensors spreadsheet in the docs section of the cruise archive. Summary notes on operation during this cruise are listed below. Seismic equipment is not listed here, refer to Part IV for the seismic summary. Other instruments not listed were not in operation.

For details on the data formats and interpretation notes, see Appendix A, Data Formats, included on the cruise archive.

Instrument Data Files

Instrument	Description	Data Set	Data Outputs	Files	Interval
FE700	Furuno FE700 Echosounder	N/A	serial logs	MGL-bath01.*	1s
EM122	Kongsberg EM122 Multibeam Sonar	Full	raw output to file	See below	variable
			centerbeam serial logs	MGL-bath02.*	variable
DS50	Furuno DS50 Doppler Speedlog	Full	serial logs	MGL-slog01.*	1s
XBT	Sippican MK21 XBT Launcher		raw output to file	See below	n/a
			converted output to file	See below	
WX1	RM Young 5103 Weather Bird and Translator	Full	serial logs	MGL-wx01.*	1s
			mwv conversion	MGL-mwv01.*	
TSG	SeaBird SBE23 Thermosalinograph	Partial	raw serial logs	MGL-tsg.*	1s
			converted data	MGL-tsgconv.*	
CNAV	C&C Tech. CNAV DGPS Receiver	Full	serial logs	MGL-cnav.*	1s
MAG01	GeoMetrics 882 Magnetometer	Partial	serial logs	MGL-mag01.*	1s
BGM	Bell Aerospace BGM-3 Gravimeter	Full	serial logs	MGL-vc01.*	1s
GYRO	Simrad GC80 Gyrocompass/AD100	Full	serial logs	MGL-gy01.*	1s
POSMV	Applanix POSMV Integrated Nav System	Full	serial logs	MGL-posmv.*	1s
SEAPATH	Konsberg SeaPath Integrated Nav System	Full	serial logs	MGL-seapath.*	1s
STU	Sercel Streamer Tension	None	serial logs	MGL-stu1.*	10s
TAGGER	Spectrum Instruments intelligent reference TM-4	Full	serial logs	MGL-tagger01.*	shot
			filtered logs	MGL-shot01.*	shot

All timestamps in this report are presented using UTC time and day of year in order to avoid confusion with local time changes.

Science Navigation Instrumentation

FE700

Logging interval: 1 second

File id: bath01

The FE700 only operated to 800m depth. The echosounder is normally switched off before the unit goes out of depth. The unit was not logged during this cruise.

Interruptions greater than twenty seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.3443		Logging officially started
2009:151:18:51:41.3319 – 2009:151:19:09:54.1110	Missing data	Power failure
2009:151:19:10:25.2902 – 2009:151:19:54:30.2854	Missing data	Restoring power to equipment
2009:154:17:18:56.5545		Logging officially ended

bath01 data sample:

```
bath01      2008:220:13:45:42.0681   $SDDBT,,,,,,
bath01      2008:220:13:45:42.0690   $SDDBS,,,,,,
bath01      2008:220:13:45:42.0691   $SDDPT,,0006.6*49
bath01      2008:220:13:45:42.1482   $PFEC,Alarm,0,0*6F
bath01      2008:220:13:45:42.1483   $PFEC,xdr,FORE,050*79
```

EM-122 Mutibeam

The EM122 multibeam sonar was operated throughout the cruise. The system is designed for deeper water, and does not track ground well in less than 50m of water.

EM122 swath data is saved to the cruise archive under MGL0903/multibeam. Center beam depth is recorded separately to serial log. MicroSV sound velocity was used up through Feb 28. TSG sound velocity was used beginning 0900 on Feb 28.

Logging interval: variable with water depth

File id: bath02

Interruptions greater than sixty seconds are displayed in the following table.

Log Date	Event	Comment
2009:124:05:36:39.1162		Logging officially started
2009:124:05:52:59.9366 – 2009:124:05:56:11.7458	Missing data	Instrument turned off
2009:124:05:57:12.7121 – 2009:124:06:03:38.6729	Missing data	Instrument turned off
2009:124:06:03:38.6729 – 2009:124:06:13:33.0506	Missing data	Instrument turned off
2009:124:06:31:57.6361 – 2009:124:06:38:02.6112	Missing data	Instrument turned off
2009:124:15:42:00.2500 – 2009:124:15:44:12.5599	Missing data	Restarted SIS
2009:138:19:13:03.5835 – 2009:138:19:16:38.7335	Missing data	Seabed image not functioning properly; restarted SIS
2009:138:19:25:30.1001 – 2009:138:19:36:15.8203	Missing data	Seabed image corrupted;

		restarted SIS
2009:141:12:10:58.6571 – 2009:141:12:19:31.9737	Missing data	Restarted SIS for BIST test
2009:146:02:09:20.5136 – 2009:146:02:13:04.9775	Missing data	Ramping up source
2009:151:18:51:39.1436 – 2009:151:19:50:16.4757	Missing data	Power failure
2009:154:17:18:51.3975		Logging officially ended

Bath02 data format

```
bath02      2008:192:00:00:12.6663   $KGDPT,2938.25,0.0,12000.0*4a
bath02      2008:192:00:00:30.3301   $KGDPT,2954.08,0.0,12000.0*4f
bath02      2008:192:00:00:46.5831   $KGDPT,2958.32,0.0,12000.0*4a
bath02      2008:192:00:01:03.0606   $KGDPT,2954.18,0.0,12000.0*4e
```

DS50 Speedlog

File id: slog01
Logging interval: 1 second

The Furuno DS-50 is a Doppler speed log. It was in operation for the length of the cruise.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.6528		Logging officially started
2009:151:18:51:40.1376 – 2009:151:19:10:18.6614	Missing data	Power failure
2009:151:19:10:24.7392 – 2009:151:19:31:21.4926	Missing data	Restoring power to equipment
2009:154:17:19:12.4166		Logging officially ended

Slog01 data format:

```
slog01      2008:231:00:00:00.0744   $VDVHW,,T,,M,09.68,N,17.93,K*4C
slog01      2008:231:00:00:00.1906   $VDVBW,009.68,000.09,A,009.68,000.09,V*46
slog01      2008:231:00:00:00.1908   $VDVLW,0005960.30,N,0005960.30,N*5F
```

RMYoung Integrated Weather

File id: wx01
Logging interval: 1 second

The weather station is used to log wind speed, direction, air temperature, and barometric pressure. The unit was functioning during the cruise. See also mwv01 below.

Log Date	Event	Comment
2009:120:00:00:00.7341		Logging officially started
2009:151:18:51:40.5833 – 2009:151:19:09:55.3272	Missing data	Power failure
2009:151:19:10:25.8702 – 2009:151:19:49:55.0362	Missing data	Restoring power to equipment
2009:154:17:19:25.5078		Logging officially ended

File id: mwv01
Logging interval: 1 second

The weather station is used to log wind speed, direction, air temperature, and barometric pressure. The wx01 strings are converted in real-time to produce mwv strings for the DP. The mwv output is strictly a derivative of the w01 output. See also the wx01 description above.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.7341		Logging officially started
2009:151:18:51:40.5833 – 2009:151:19:09:55.3272	Missing data	Power failure
2009:151:19:10:25.8702 – 2009:151:20:28:49.0930	Missing data	Restoring power to equipment
2009:154:17:19:02.5619		Logging officially ended

Mwv01 data sample:

```
mwv01 2008:231:00:00:00.5173  6.1   6.6   6.6   8.8 354 321   5   0.0   0.0   0.0   0.0
355 355   0 ***** ***** ***** *****  8  8  8 1009.7
mwv01 2008:231:00:00:01.5172  5.9   6.6   6.6   8.8 353 321   5   0.0   0.0   0.0   0.0
355 355   0 ***** ***** ***** *****  8  8  8 1009.6
mwv01 2008:231:00:00:02.5190  6.3   6.6   6.6   8.8 354 321   5   0.0   0.0   0.0   0.0
355 355   0 ***** ***** ***** *****  8  8  8 1009.8
```

CNAV
Logging interval: 1 second

File id: cnav

The C-NAV is a global satellite-based differential receiver. This is the best individual receiver currently on the ship. This system was operational during the cruise.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment

2009:120:00:00:00.6380		Logging officially started
2009:138:09:26:42.8729 – 2009:138:09:27:06.4831	Missing data	Restarting CNAV
2009:151:19:06:15.8894 – 2009:151:19:43:14.6550	Missing data	Power failure
2009:154:17:18:57.0023		Logging officially ended

Cnav data format:

```
cnav  2008:231:00:00:00.6936
$GPGGA,000000.00,1434.94372,N,10444.85748,W,2,8,1.1,15.52,M,-20.60,M,9,0108*65
cnav  2008:231:00:00:00.7137  $GPVTG,006.5,T,,M,9.64,N,17.85,K*53
```

GC80 Gyrocompass

The GC80 gyrocompass is installed on the bridge and used for ship and seismic navigation.

File id: gy01
Logging interval: 1 second

The GC80 gyrocompass operated normally.

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.2830		Logging officially started
2009:151:19:10:18.1607 – 2009:151:19:49:43.6427	Missing data	Power failure
2009:154:17:19:01.3869		Logging officially ended

Gy01 data format:

```
gy01  2008:231:00:00:00.4110  $PTKM,HEALM,0000,0,G1*09
gy01  2008:231:00:00:00.6395  $HEHDT,005.8,T*22
gy01  2008:231:00:00:00.6396  $HEROT,-005.25,A*34
gy01  2008:231:00:00:01.6394  $HEHDT,005.7,T*2D
gy01  2008:231:00:00:01.6395  $HEROT,-004.53,A*34
```

POSMV Integrated Nav

The POS/MV is a receiver that uses CNAV input in addition to its own antennae, an inertial sensor and optional RTG, WTC, or WAAS corrections and a Kalman filter to produce a smooth navigation output and very accurate heading.

The PosMV operated normally during the cruise.

File id: posmv
Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.2018		Logging officially started
2009:151:19:10:26.0575 – 2009:151:19:52:31.9847	Missing data	Power failure
2009:154:17:19:04.5327		Logging officially ended

Posmv data format:

```
posmv 2008:231:00:00:00.0885
      $INGGA,235959.842,1434.95002,N,10444.85734,W,2,,1.1,12.71,M,,,9.0,0108*2E
posmv 2008:231:00:00:00.0889  $INHDT,15.0,T*11
posmv 2008:231:00:00:00.2047  $INVTG,7.0,T,,M,9.7,N,17.9,K*46
posmv 2008:231:00:00:00.3208  $INGST,235959.842,,0.9,0.9,0.0,0.9,0.9,2.5*51
posmv 2008:231:00:00:00.4411  $PASHR,235959.842,15.05,T,-
0.58,0.48,0.15,0.069,0.069,0.045,2,0*05
posmv 2008:231:00:00:00.4412  $INZDA,235959.0000,17,08,2008,,*73
```

SeaPath Integrated Nav

The Kongsberg Seapath is an integrated navigation system. It was in operation for the length of the cruise.

Logging interval: 1 second

File id: seapath

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.2309		Logging officially started
2009:147:12:23:02.3819 – 2009:147:12:23:51.1934	Missing data	Equipment problem; Restarted Seapath
2009:151:19:10:25.8022 – 2009:151:19:31:53.7789	Missing data	Power failure
2009:154:00:05:28.0690		Logging officially ended

Seapath data format:

```
seapath    2008:231:00:00:00.0504  $INZDA,235959.99,17,08,2008,,*73
seapath    2008:231:00:00:00.1686
      $INGGA,235959.99,1434.953109,N,10444.859147,W,2,08,1.1,-16.30,M,,M,1.0,0291*70
seapath    2008:231:00:00:00.1687  $INVTG,5.97,T,,M,9.7,N,,K,D*03
seapath    2008:231:00:00:00.1688  $INHDT,5.82,T*1A
```

Spectrum Instruments TDM-4 Event Logger

The Event logger time stamps time-break triggers from DigiShot in all fire modes.

File id: tagger1

Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:120:00:00:00.0305		Logging officially started
2009:151:18:51:38.8620 – 2009:151:19:32:17.6083	Missing data	Power failure
2009:154:10:54:07.4804		Logging officially ended

Tagger1 data format:

```
tagger1     2008:231:00:00:00.0383   #51,08182008,000001
tagger1     2008:231:00:00:00.2027   #79,00000000
tagger1     2008:231:00:00:00.2948   #68,2
tagger1     2008:231:00:00:00.3689   #70,0
tagger1     2008:231:00:00:00.4010   #56,-00000
tagger1     2008:231:00:00:00.4210   #72,FF
```

Geometrics 882 Magnetometer

The Geometrics 882 magnetometer is towed behind the ship. Raw serial output is logged using LDS. Deployment is dependent upon seismic operations. See the deployment notes below. Except where noted, the source was not deployed when the magnetometer was at 300m, and the source was deployed when the magnetometer was at 100m.

Magnetometer Deployment Notes

Time	Event
2009:124:09:21:03.9619	Maggie deployed at 100 m
2009:125:01:55:50.4179	Recovered due to loss of vessel steerage
2009:125:17:31:52.3944	Deployed at 100 m
2009:128:04:43:58.2583	Stopped logging data inside 24 nmi zone
2009:128:05:38:36.1541	Started logging data outside 24 nmi zone
2009:128:14:03:00.0000	Maggie recovered; sensor misoriented
2009:131:09:35:00.0000	Deployed at 100 m
2009:132:10:33:00.0000	Recovered
2009:132:20:10:00.0000	Deployed at 100 m
2009:133:01:32:00.0000	Recovered
2009:134:13:55:00.0000	Deployed at 100 m
2009:136:19:06:00.0000	Recovered
2009:137:14:23:00.0000	Deployed at 100 m
2009:150:00:12:33.9565	Recovered
2009:150:12:47:03.0107	Deployed at 100 m
2009:151:19:10:25.3715	Power failure; recovered
2009:151:19:50:50.2773	Power back up
2009:151:22:53:00.0000	Deployed at 100 m

2009:153:21:19:00.0000	Recovered

Logging interval: 1 second

File id: mag01

Interruptions greater than ten seconds are displayed in the following table.

Log Date	Event	Comment
2009:124:09:21:03.9619		Logging officially started
2009:125:01:55:50.4179 – 2009:125:17:31:52.3944	Missing data	Instrument recovered due to loss of vessel steerage
2009:128:04:43:58.2583 – 2009:128:05:38:36.1541	Missing data	Instrument turned off inside 24 nmi zone
2009:150:00:12:33.9565 – 2009:150:12:47:03.0107	Missing data	Instrument recovered
2009:151:19:10:25.3715 – 2009:151:19:50:50.2773	Missing data	Power failure
2009:153:04:43:35.2753		Logging officially ended

Mag01 data sample:

```
mag01 2008:185:09:45:58.1820  $107714.673,0042,0024,0110,3533,1143
mag01 2008:185:09:46:01.0333  $ 63703.933,0042,0024,0110,3533,1143
mag01 2008:185:09:46:04.0330  $ 44031.029,0042,0027,0110,3533,1143
```

SBE-23 Thermosalinograph

The Seabird TSG output is logged by LDS to the "tsg" set. Output is also converted in real-time and recorded to the "tsgconv" data set.

File id: tsg

Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

2009:023:19:52:43.0749		Logging officially started
2009:127:00:23:20.3430 – 2009:127:00:31:13.1588	Missing data	Data overflow on wet lab laptop
2009:127:00:31:13.3852 – 2009:127:00:31:45.4945	Missing data	Data overflow on wet lab laptop
2009:127:00:31:45.6891 – 2009:127:00:33:02.4977	Missing data	Data overflow on wet lab laptop
2009:127:00:33:02.7160 – 2009:127:00:53:04.8689	Missing data	Data overflow on wet lab

		laptop
2009:127:00:53:14.5787 – 2009:127:01:11:45.4241	Missing data	Data overflow on wet lab laptop
2009:127:01:11:45.6514 – 2009:127:04:21:33.6613	Missing data	Data overflow on wet lab laptop
2009:127:04:21:38.1610 – 2009:127:04:22:18.6208	Missing data	Data overflow on wet lab laptop
2009:127:04:22:36.6087 – 2009:127:04:27:18.9170	Missing data	Data overflow on wet lab laptop
2009:127:07:54:03.7149 – 2009:127:07:55:10.7401	Missing data	Data overflow on wet lab laptop
2009:127:09:47:38.0226 – 2009:127:09:48:59.6862	Missing data	Data overflow on wet lab laptop
2009:127:09:51:58.6322 – 2009:127:09:54:23.6463	Missing data	Data overflow on wet lab laptop
2009:127:09:55:16.6883 – 2009:127:09:56:46.1845	Missing data	Data overflow on wet lab laptop
2009:127:09:56:49.3746 – 2009:127:09:57:37.1483	Missing data	Data overflow on wet lab laptop
2009:127:09:59:03.1150 – 2009:127:09:59:43.6938	Missing data	Data overflow on wet lab laptop
2009:127:10:03:05.7708 – 2009:127:10:08:16.6780	Missing data	Data overflow on wet lab laptop
2009:127:10:08:18.9515 – 2009:127:10:08:49.5908	Missing data	Data overflow on wet lab laptop
2009:127:10:08:49.8596 – 2009:127:10:09:20.5008	Missing data	Data overflow on wet lab laptop
2009:127:10:09:20.8846 – 2009:127:10:09:51.4098	Missing data	Data overflow on wet lab laptop
2009:127:10:10:56.9891 – 2009:127:10:11:27.5265	Missing data	Data overflow on wet lab laptop
2009:127:10:14:09.5515 – 2009:127:10:15:57.8727	Missing data	Data overflow on wet lab laptop
2009:146:02:12:27.5496 – 2009:146:06:40:47.5256	Missing data	Inside 24 nmi zone; stopped logging hydrographical data
2009:151:19:05:16.8683 – 2009:151:19:54:14.8720	Missing data	Power failure
2009:155:00:00:00.0000		Logging officially ended

tsg data sample:

```
tsg    2008:231:00:00:01.9179   B479CB5528A6D6ABFB2D
tsg    2008:231:00:00:11.9187   B474CB5428A799ABBB2D
tsg    2008:231:00:00:21.9176   B46FCB5328A70CAB8B2D
```

File id: tsgconv

Logging interval: 1 second

2009:023:19:52:43.0749		Logging officially started
2009:127:00:23:20.3430 – 2009:127:00:31:13.1588	Missing data	Data overflow on wet lab laptop
2009:127:00:31:13.3852 – 2009:127:00:31:45.4945	Missing data	Data overflow on wet lab laptop
2009:127:00:31:45.6891 – 2009:127:00:33:02.4977	Missing data	Data overflow on wet lab laptop
2009:127:00:33:02.7160 – 2009:127:00:53:04.8689	Missing data	Data overflow on wet lab laptop
2009:127:00:53:14.5787 – 2009:127:01:11:45.4241	Missing data	Data overflow on wet lab laptop
2009:127:01:11:45.6514 – 2009:127:04:21:33.6613	Missing data	Data overflow on wet lab laptop
2009:127:04:21:38.1610 – 2009:127:04:22:18.6208	Missing data	Data overflow on wet lab laptop
2009:127:04:22:36.6087 – 2009:127:04:27:18.9170	Missing data	Data overflow on wet lab laptop
2009:127:07:54:03.7149 – 2009:127:07:55:10.7401	Missing data	Data overflow on wet lab laptop
2009:127:09:47:38.0226 – 2009:127:09:48:59.6862	Missing data	Data overflow on wet lab laptop
2009:127:09:51:58.6322 – 2009:127:09:54:23.6463	Missing data	Data overflow on wet lab laptop
2009:127:09:55:16.6883 – 2009:127:09:56:46.1845	Missing data	Data overflow on wet lab laptop
2009:127:09:56:49.3746 – 2009:127:09:57:37.1483	Missing data	Data overflow on wet lab laptop
2009:127:09:59:03.1150 – 2009:127:09:59:43.6938	Missing data	Data overflow on wet lab laptop
2009:127:10:03:05.7708 – 2009:127:10:08:16.6780	Missing data	Data overflow on wet lab laptop
2009:127:10:08:18.9515 – 2009:127:10:08:49.5908	Missing data	Data overflow on wet lab laptop
2009:127:10:08:49.8596 – 2009:127:10:09:20.5008	Missing data	Data overflow on wet lab

		laptop
2009:127:10:09:20.8846 – 2009:127:10:09:51.4098	Missing data	Data overflow on wet lab laptop
2009:127:10:10:56.9891 – 2009:127:10:11:27.5265	Missing data	Data overflow on wet lab laptop
2009:127:10:14:09.5515 – 2009:127:10:15:57.8727	Missing data	Data overflow on wet lab laptop
2009:146:02:12:27.5496 – 2009:146:06:40:47.5256	Missing data	Inside 24 nmi zone; stopped logging hydrographical data
2009:151:19:05:16.8683 – 2009:151:19:54:14.8720	Missing data	Power failure
2009:155:00:00:00.0000		Logging officially ended

tsgconv data sample:

```
tsgconv    2008:231:00:00:01.9179  B479CB5528A6D6ABFB2D 1531.59 28.85 24.35 5.53 33.74
tsgconv    2008:231:00:00:11.9187  B474CB5428A799ABBB2D 1531.61 28.85 24.36 5.53 33.74
tsgconv    2008:231:00:00:21.9176  B46FCB5328A70CAB8B2D 1531.60 28.85 24.35 5.53 33.74
```

BGM-3 Gravimeter

File id: vc01
Logging interval: 1 second

Interruptions greater than ten seconds are displayed in the following table.

2009:123:04:41:08.2610		Logging officially started
2009:124:02:53:00.3011 – 2009:124:06:17:44.3078	Missing data	Inside 24 nmi zone; instrument turned off
2009:151:19:10:25.4716 – 2009:151:19:32:03.4759	Missing data	Power failure
2009:153:04:43:32.5293		Logging officially ended

Mk21 XBT System

Files: *.RDF,*.EDF

Many XBT drops were made during this cruise. Refer to the Expendable_Drops spreadsheet in the operations directory of the cruise archive.

IV. Seismic Summary

A. Acquisition Parameter Table

Acquisition Parameter Table	
AcquisitionParameterID	MGL0908_ACQ01
FieldActivityID	MGL0908
ReceiverType	Source & Streamer/Ocean-Bottom Seismometer
SourceType	Airgun
Acquisition System Name	SIO, WHOI OBS
Acquisition System Type	OBS
Seismic_Nav_System	C-Nav primary
Survey_datum	WGS84
Navigation Reference Point	Fore/Aft+4.87 m, Stb/pt +8.055 m, vertical +14.5 m
NRP_to_Antennae	4.87 m
NRP to source	165 m
Antenna_to_Source	
Source_to_Near_Channel	200 m
Number _of_channels_recorded	0
Number _of_cables	1
Number_of_channels_each_cable	468
Channel_length	N/A
Cable_length	6km
Cable_spacing	N/A
Near_Channel_Number	N/A
Cable_depth	9m
Number_source_arrays	1
Alternate_Shooting	No
Source_array_separation	N/A
Source_volume	6600 cu in
Source_pressure	2000 psi nominal
Source_make,model	Bolt
Source_number	36
Source_depth	8m
Shot_control	Distance
Shot_Interval	50m, 75m, 100m, 125m, 150m
Sample_interval	2ms
Record_length	15s, 16s, 20s
Compass_birds	N/A
Tail_buoy_Positioning	N/A
Recording_delay	N/A

B. Seismic Overview

The primary objectives of the cruise were survey lines in a 2D survey block using four gun strings set up and one 6 km streamers deployed by Lamont-Doherty Earth Observatory.

Physical Configuration
The towing configuration for the air guns and streamers is detailed in the document titled *MGL0908_TowConfig.doc*.

Offsets
All antenna and in-water offset drawings are in the file *MGL0908_OffsetConfig.xls*

Spectra
Spectra was used for all timing and navigation during the cruise. Shotlogs were generated from spectra P190 and P294 files using shotlog processing code contained on the archive in /supplemental/code/shotlog

V. Client Instrumentation

Multi OBS sites were passing which were deployed by client

VI. RV Langseth Gravity Tie Information

Not available.

VII. Archive Contents

Key files are bolded.

MGL0908/docs	Cruise documents and logs
MGL0908/docs/elog	Cruise elog
MGL0908/docs/map	Cruise maps, track map
MGL0908/docs/Operations/	Operations documents
MGL0908/docs/Operations/TIC Daily Reports	Cruise Daily Reports from Tech-in-charge
MGL0908/docs/Operations/ Issued Clearances	Clearance Documents
MGL0908/docs/Operations/Nav_Logs	Seismic navigation logs (spectra)
MGL0908/docs/Operations/Observer_Logs	Seismic acquisition logs (gun controller)
MGL0908/docs/Operations/MGL0908_B15_line_log_multi_channel_seismics.xls	**Master line log table**
MGL0908/docs/Operations/ShipmentDocuments	Shipment logs/invoices
MGL0908/docs/Operations/StreamerSheets	Streamer logs (deploy/recovery, ballast)
MGL0908/docs/Operations/Waypoints	Waypoint files
MGL0908/docs/Personnel	Personnel rosters, org chart, bunk and phone lists
MGL0908/docs/Report	Cruise Report and supplemental docs
MGL0908/docs/Report/MGL0908_NavReport.doc	**Seismic navigation report**
MGL0908/docs/Report/MGL0908_DataReport.doc	**This file**
CruiseData/MGL0908/docs/Report/MGL0908_TowOffset.xls	**Seismic tow drawings**
MGL0908/docs/Report/ Taiger Final Report	Job Book with Nav & Technical Support Final Report
MGL0908/docs/ScreenCaps	Screen captures
MGL0908/docs/tapelogs	Backup tape index / log files
MGL0908/processed	Processed data
MGL0908/processed/7 Decimal OBS Time	Original Spectra shot time files
MGL0908/processed/P190_Post_processed	P190 processed files
MGL0908/processed/shotlogs	Spectra shot log files in CSV format
MGL0908/processed/Spectra_P190	Original Spectra P190 fles
MGL0908/processed/Spectra_P294	Original Spectra P294 files
MGL0908/processed/svp	Sound velocity profiles
MGL0908/raw	Raw data
MGL0908/raw/knudsen	Raw Knudsen sub-bottom profiler data
MGL0908/raw/multibeam	Raw EM120 data
MGL0908/raw/serial	Underway data: gps, tsg, weather, etc.
MGL0908/raw/spectra/P1	Spectra underway p190
MGL0908/raw/spectra/P2	Raw seismic navigation, p294
MGL0908/raw/spectra/survey	Spectra configuration archive
MGL0908/raw/XBT	Raw XBT data