EN465 Cruise Report

Geophysical Imaging of Stratigraphic Controls on Freshwater Beneath the Continental Shelf

Vessel: *R/V Endeavor*

Dates: 12-25 August 2009

Ports: Narragansett, RI to Narragansett, RI

Science Party

Brandon Dugan (Rice), Dan Lizarralde (WHOI), Mark Person (NM Tech), Rob Evans (WHOI), Jake Siegel (Rice), Nathan Miller (WHOI), Whitney DeFoor (NM Tech), Matthew Gould (WHOI), Nancy Sills (Creekside School & ARMADA Project), Lee Ellett (UCSD/SIO), Brandi Murphy (UCSD/SIO), Jim Dorrance (UCSD/SIO), Emile Bergeron (USGS), Brent Taylor (USGS), Meike Holst (LGL Ltd.), Frances Robertson (LGL Ltd.), Gary Lee Sheppard (LGL Ltd.)

Summary

EN465 conducted a detailed, low-energy, high-resolution seismic survey over the continental shelf south Martha's Vineyard and Nantucket, MA within the U.S. Exclusive Economic Zone (EEZ) from 12-25 August 2009. On EN465 we deployed two low-energy Generator Injector (GI) guns or a sparker as the energy source; most data were collected with one active GI gun. The GI guns were configured in 45 in^3/105 in^3 mode. The sparker used an output power level of ~200 J. The streamer system consisted of one digital streamer varying in length from 0.6 to 1 km, towed at a depth of ~3 m. A Knudsen 3260 dual-frequency (3.5 and 12 kHz) echosounder was also used during most of the survey. A total of ~1150 km of seismic data were collected. In addition we also completed a small electromagnetic (EM) survey with a towed EM system. Water depths in the survey area ranged from ~25 to 200 m, but were typically <100 m. The purpose of the seismic and EM surveys was to image the stratigraphic architecture of the shelf which will be used to establish the distribution and amounts of freshwater sequestered within the continental shelf off New England. These geophysical surveys provided data integral to models that will be used to understand the emplacement mechanisms of this potentially large volume of sequestered freshwater. The program also provided site survey data for Integrated Ocean Drilling Program (IODP) proposal 637-Full2 to drill these freshwater resources for hydrogeochemical, biological, and climate studies. On a global scale, vast quantities of freshwater are sequestered in the continental shelf and may represent an increasingly valuable resource to humans, thus they warrant detailed characterization and quantification.

Introduction and Background

Drilling programs in the 1970s recovered freshwater in continental shelf sediments extending nearly 100km offshore of New Jersey, New York, and Massachusetts [*Hathaway et al., 1979*]. Deep sea dives and seafloor imagery showed seafloor weathering and erosion patterns that were indicative of freshwater and sediment interactions on the continental shelf and slope offshore New England [*Robb, 1984*]. The presence of this anomalous freshwater led to multiple hypotheses on its origin and to modeling studies of its emplacement. The proposed mechanisms for freshwater emplacement within continental shelf sediments include: (1) onshore recharge controlled by topographic gradients [*Meisler et al., 1984; Pope and Gordon, 1999*]; (2) meteoric recharge and local flow cells during sea-level lowstands [*Kooi and Groen, 2000*]; and (3)

glacially moderated recharged from subglacial meltwater or proglacial lakes [*Person et al., 2003; Uchupi et al., 2001; Marksamer et al., 2007*]. The models developed for each of these mechanisms have advanced our understanding of the conditions that control freshwater emplacement [e.g., *Person et al., 2003; Kooi and Groen, 2000*] and have provided estimates on the potential volumes of water that are stored in submarine freshwater aquifers [*Cohen et al., 2010*]. Sensitivity studies have documented that extent of glacial advance, permeability of aquifers and aquicludes, and connectivity of aquicludes are primary controls on the volume and offshore extent of these freshwaters (***Figure 1***).

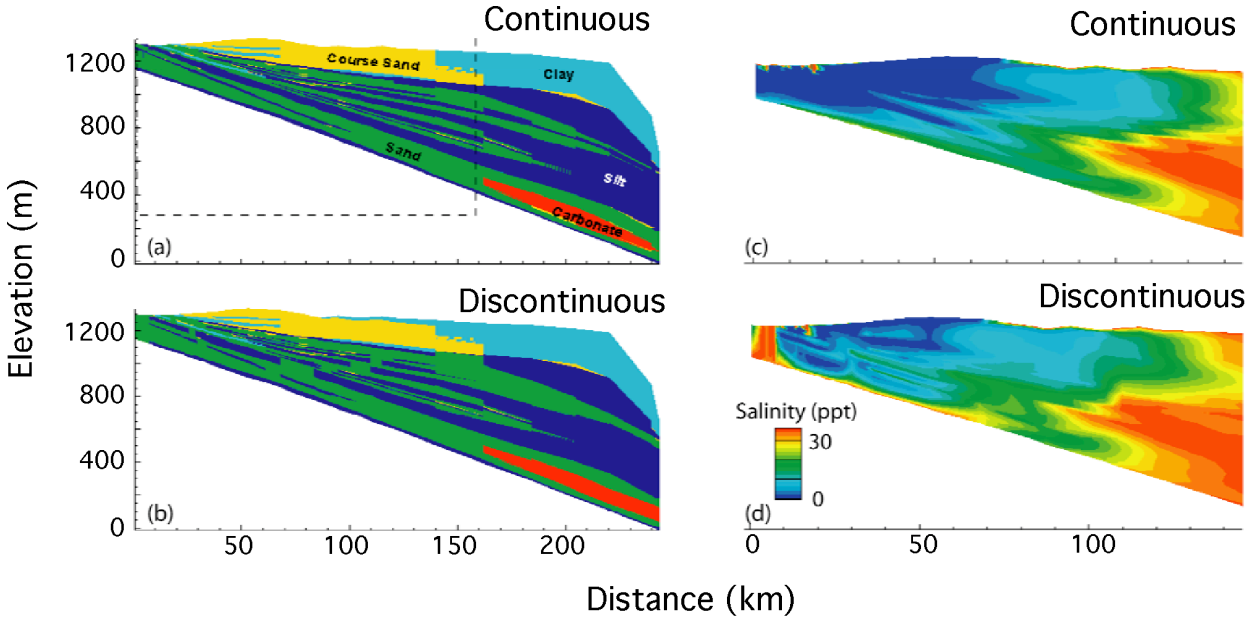


Figure 1. (a) Stratigraphic framework for the preliminary model with continuous silt aquicludes. (b) Stratigraphic framework for the preliminary model with discontinuous silt aquicludes. (c) Simulated salinity for the continuous-aquitard model a. (d) Simulated salinity for the discontinuous-aquitard model b.

Existing seismic data have resolution that is too low for accurate stratigraphic characterization (***Figure 2***). A detailed understanding of the stratigraphic architecture will constrain stratigraphic connectivity and will define locations where aquifers breach the seafloor. EN465 provides data for detailed stratigraphic characterization of the continental shelf south of Martha's Vineyard, MA, USA. The ultimate test of the freshwater volumes and emplacement mechanisms requires absolute measurements of the hydrogeologic properties of the sediments and detailed porewater chemistry, both of which are lacking in many locations where submarine freshwater exists. The data collected in EN465 support an Integrated Ocean Drilling Program proposal to make field measurements (IODP Proposal 637-Full2: New England Shelf

Hydrogeology) on physical properties, chemistry, and microbiology that will test the geophysical interpretations and numerical models.

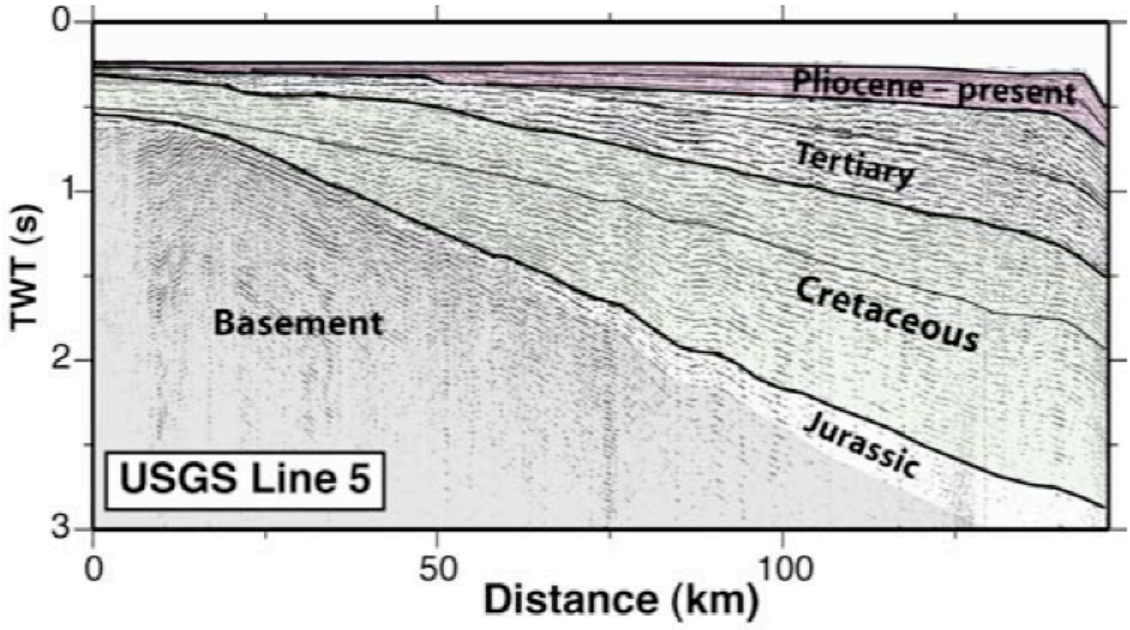


Figure 2. Smallest-offset (396m) channel from the USGS Line 5 pre-stack dataset, just south of Martha's Vineyard to the shelf break, processed with a high-pass filter and deconvolution. Interpretation is based on *Klitgord et al.* [*1994*]. The stratigraphy, with Cretaceous and Tertiary sediments unconformably capped by Pliocene and younger sediments, is simple and imageable, but these data are low resolution.

This geophysical, modeling, and drilling project will enhance our knowledge of coastal freshwater. In coastal settings worldwide, large freshwater volumes are sequestered in permeable continental shelf sediments. Freshwater storage and discharge have been documented off N. America, S. America, Europe, and Asia [*Hathaway et al., 1979; Kooi and Groen, 2000; Taniguchi et al., 2006; Weinstein et al., 2007*]. In Europe, the PALAEAUX collaboration characterized coastal freshwater to evaluate climatic fluctuations and to develop management strategies [*Edmunds and Milne, 2001*]. In other studies, submarine groundwater discharge has been evaluated as it impacts nutrient fluxes to the ocean [*Moore, 1996; Li et al., 1999; Michael et al., 2005*] and as an agent of erosion [*Robb, 1984*]. Using high-resolution mathematical models and existing well data, we estimate that ~1300 km^3 of freshwater is sequestered from New York to Maine, and up to $3x10^5$ km^3 may be sequestered along passive margins worldwide [*Cohen et al., 2010*]. These worldwide, vast quantities of freshwater represent a resource to urban coastal centers, if accurately characterized and managed [*Custodio et al., 2001*].

Science Objectives

The overall goals of the combined geophysical survey, modeling, and IODP drilling efforts across the New England shelf are to determine the distribution and chemistry of offshore freshwater, to fully understand the processes through which this water was emplaced, and to characterize the sensitivity of these processes to various forcing functions. The complete science plan calls for seismic work to constrain the stratigraphic history across the shelf, to delineate strata that are likely to represent aquifers and confining units, and to identify breaches in these units. This is the focus of EN465. These constraints will be used in numerical modeling efforts that will predict distributions, chemistry, and pressure of the groundwater beneath the shelf under varying conditions for a suite of relevant sediment parameters and emplacement mechanisms. These conditions will encompass the mechanisms proposed for the emplacement of freshwater beneath the shelf, including: (1) recent recharge of freshwater from areas above modern sea-level; (2) precipitation on the shelf during Pleistocene sea-level lowstands, with vertical recharge through breaches in confining units; and (3) sub-ice-sheet recharge of basal meltwater and/or infiltration from pro-glacial lakes from 21-14 ka [e.g., *Meisler et al., 1984; Kooi and Groen, 2000; Person et al., 2003*]. The seismic data will also serve as site survey data for IODP proposal 637-Full2. Scientific drilling will determine the actual distribution, chemistry, and pressure of the groundwater beneath the shelf, and will also ground-truth key hydrologic parameters (e.g. thickness and permeability of stratal units).

The seismic work of EN465 provides substantial tests for the hypothesized emplacement mechanisms. Existing well data from Martha's Vineyard and Nantucket provide strong constraints on the chemistry, pressure, and distribution of freshwater beneath the shelf. For a given stratigraphic history, inferred from high-quality seismic data, there are likely to be only a limited number of evolutionary scenarios that will result in the dramatically high fluid pressures (hydraulic heads) and low salinities observed in these existing wells.

The primary objectives of EN465 are thus to:

(A) seismically image the stratigraphy across the shelf offshore Martha's Vineyard at high resolution;

(B) infer the stratigraphic history across the shelf from interpretations of the new seismic data; and

(C) provide site-survey data that are essential for proposed IODP drilling (Proposal 637-Full2: New England Margin Hydrogeology).

The high-resolution seismic data will be used to interpret the seismic facies and connectivity of strata offshore Martha's Vineyard. These data will define the depositional patterns that affect stratigraphic continuity of aquifers and aquicludes. We will also identify locations where aquifers are eroded and incised. Forward hydrogeologic modeling will be based on this stratigraphic framework. The numerical modeling will integrate the interpreted stratigraphic history into process-oriented predictions that couple margin evolution (sedimentation and erosion), groundwater flow and solute transport.

Pre-Cruise Plan

We proposed a seismic grid of approximately 1400km of seismic data plus turns (***Figure 3***). This grid was developed to understand the seismic architecture of the New England continental shelf with primary, dip transects connected with a series of shorter strike lines. The grid was designed to allow characterization of important seismic features, such as aquifer and aquiclude terminations and sub-crops, that have an important control on the distribution of freshwater along the continental shelf and submarine groundwater discharge (***Figure 1***) [*Cohen et al., 2010*]. Our proposed plan was to complete one dip line coincident with vintage USGS Line 5 (***Figure 2***) and the final grid would provide crossing lines through proposed IODP sites. Two additional seismic lines were proposed in Nantucket Sound (***Figure 3***). These lines were to be collected, if time allowed, to evaluate deformation features in Nantucket Sound that may be related to glacial loading and fluid migration. Data collection was planned for an average speed of 4 kts. In parallel with the seismic acquisition we planned to collect Knudsen echosounder data at 3.5 kHz. Our primary seismic acquisition system was the multi-channel seismic (MCS) GI-gun system. In the event we had poor data with the GI-gun system, a possibility in shallow water, we would use a mini-sparker or chirp system to image the subsurface.

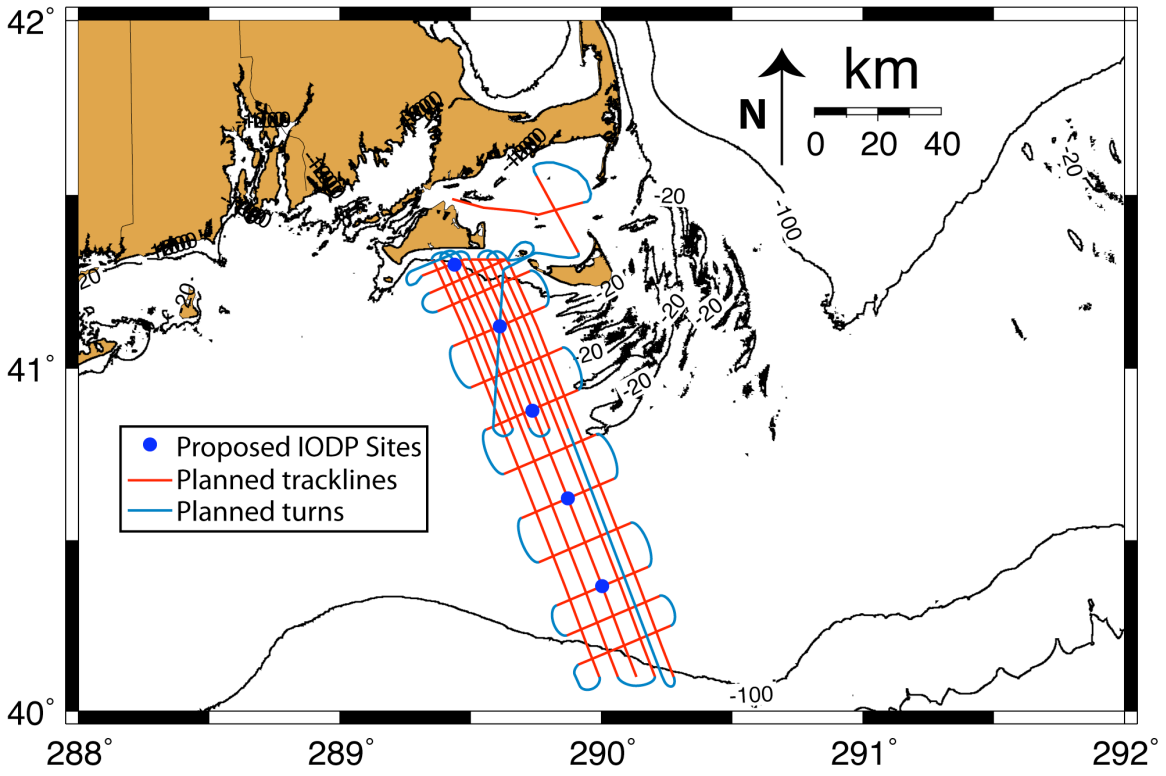


Figure 3. Proposed geophysical survey trackline map for operations on R/V Endeavor 12-25 August 2009. We proposed to collect geophysical data (chirp, mini-sparker, MCS) along the red tracklines providing cross lines at each proposed IODP site and multiple nearby line crossings to locate alternate sites.

MCS data was scheduled for real-time processing at sea. This would include making SEG-Y gathers with geometry and creating better-than-brute stacks. Velocities for real-time stacking had been constrained from our processing of USGS Line 5. Real-time quality control was to be employed to maximize data acquisition and ensure high-quality data at all proposed drill sites. This real-time processing would also help determine if we need to switch from MCS to sparker or chirp data acquisition.

After completing the seismic grid of the shelf, we planned a pilot electromagnetic (EM) survey. This would be completed with WHOI's towed, seabed electromagnetic system. The WHOI system is a frequency-domain magnetic dipole-dipole array with a transmitter and three receivers, which are spaced 4 m, 13 m and 40 m behind the transmitter. The EM survey would provide high-resolution resistivity profiles from 0-30m below seafloor (mbsf).

Equipment and Acquisition Parameters

We employed two separate streamer/GI-gun geometries during EN465 (***Appendix 1***). Geometry version 1 was the idealized geometry we used to start the project using two GI-guns and the high-resolution, MCS streamer (***Figures 4, 5***). Due to problems with the compressor, air guns, and streamer system, we modified the system to acquisition geometry version 2. Each acquisition geometry is summarized below. ***Table 1*** summarizes which geometry was used with each seismic line. All GI-gun data were recorded with a sample rate of 0.5ms for 4s.

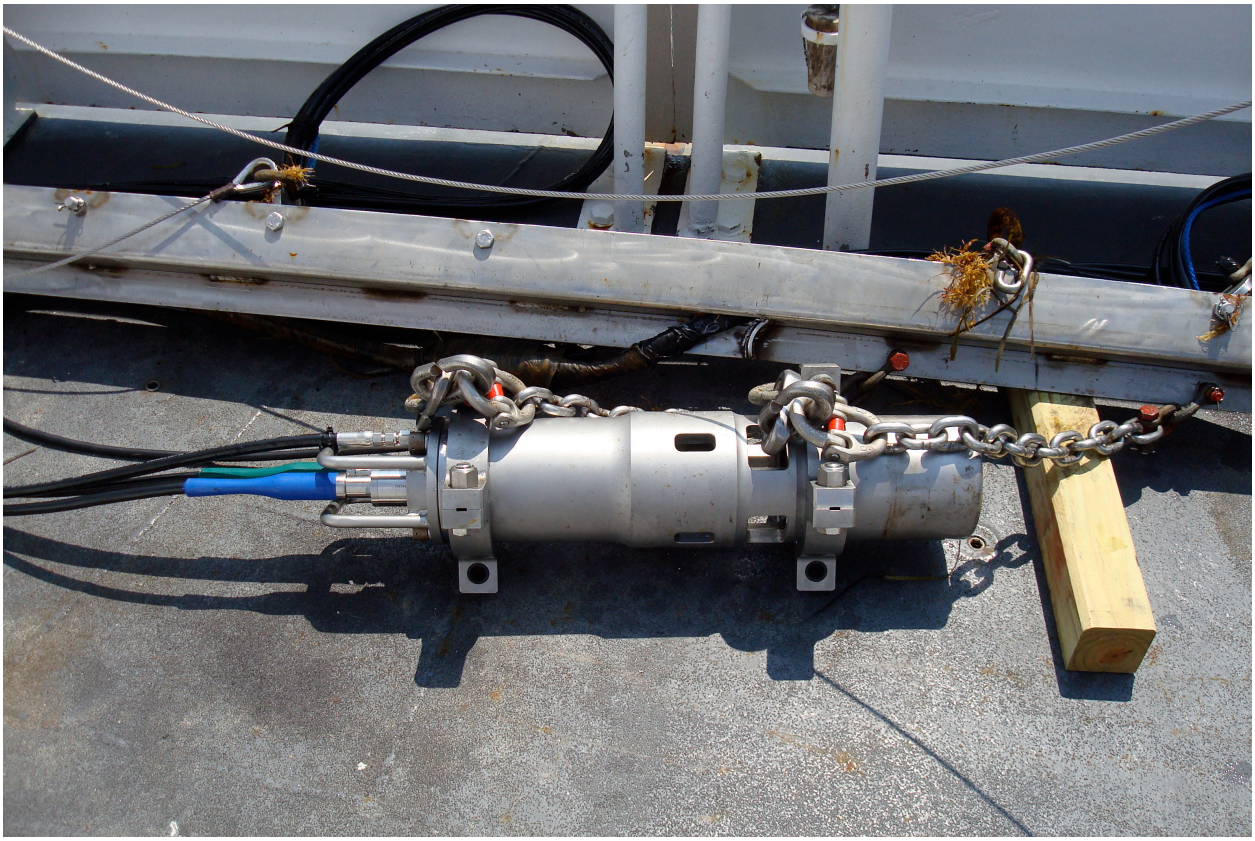


Figure 4. One of the 45/105 in^3 GI guns used as a seismic source.

Figure 5. Connecting one of the depth-control birds on the high-resolution, multi-channel streamer.

Geometry version 1 (***Appendix 1***) used 2 GI-guns in the 45/105 in^3 configuration fired every 5s. The airguns were towed together on one beam 2m port of the ship's centerline, 25 m behind the ship at 2m below sea surface. The streamer was towed 2m starboard of the centerline and was maintained at a depth of 3m with four depth-control birds along the streamer (***Figure 5***). The streamer had 72 total stations, each consisting of 16 channels. The first station was 101.25 m from the stern of the ship (76.25 m from the air guns). Stations 1-48 were spaced at 12.5 meters; stations 49-72 were spaced at 6.25m. The stations with 6.25m spacing were deployed to test gel and solid-state streamers supplied by Geometrics.

Geometry version 2 (***Appendix 1***) was used after the tow leader malfunctioned on geometry 1. We recovered the streamer system after we lost communication with the streamer. After establishing that the tow leader had failed, we reconfigured the streamer system without a tow leader and thus towed from the streamer spool using an extra stretch section and an extra active streamer section. We towed the streamer 1m starboard and towed the GI-guns 2m port relative to the centerline of the ship. The GI-guns were towed 26m behind the ship at a depth of

2m. Because of stretch and live sections used for securing the streamer, the near stations (1-9) were not fully submerged in the water. The remaining stations (9-64) were towed at a depth of 3m controlled by birds. Channels 1-56 were spaced at 12.5 meters and channels 57-64 were spaced at 6.25m. The offset from the stern of the ship to channel 9 was 81.25m (55.25m from source). During the use of geometry 2, we also extended the shot interval from 5s to 6s and eventually used only one GI gun (***Table 1***).

Table 1: Summary of seismic lines, source, time of acquisition, and geometry used.

Line	Source	Start Time (GMT)	End Time (GMT)	First Shot	Last Shot	Shot Spacing	Streamer Geometry
3	2 GI guns	8/12/09 21:55	8/13/09 16:32	1	10412	5s	1
1a	sparker	8/13/09 18:01		1001		1.5s	1
1b	sparker	8/13/09 21:00	8/13/09 21:49		10247	1.5s	1
3c	sparker	8/13/09 23:25	8/14/09 7:52	10248	28888	1.5s	1
Turn3_1	sparker	8/14/09 8:11	8/14/09 11:05	2889	35363	1.5s	1
1	2 GI guns	8/14/09 22:58	8/15/09 14:42	10413	19189	5s then 6s	2
21	2 GI guns	8/15/09 14:43	8/15/09 16:43	19189	20397	6s	2
12	2 GI guns	8/15/09 18:21	8/15/09 21:47	20398	22444	6s	2
5a	2 GI guns	8/15/09 22:03	8/15/09 22:36	24445	22776	6s	2
7	2 to 1 GI Guns	8/15/09 22:41	8/16/09 1:46	22777	24616	6s	2
13	1 GI Gun	8/16/09 1:49	8/16/09 6:57	24617	27687	6s	2
8	1 GI Gun	8/16/09 8:04	8/16/09 12:53	28326	31214	6s	2
14	1 GI Gun	8/16/09 12:55		31215		6s	2
14a	1 GI Gun		8/16/09 18:51		34249	6s	2
9	1 GI Gun	8/16/09 19:12	8/17/09 1:04	34250	37779	6s	2
15	1 GI Gun	8/17/09 1:05	8/17/09 7:24	37780	41530	6s	2
10	1 GI Gun	8/17/09 7:30	8/17/09 13:30	41530	45342	6s	2
16	1 GI Gun	8/17/09 13:51	8/17/09 20:11	45343	49113	6s	2
11	1 GI Gun	8/17/09 20:48		49114		6s	2
11a	1 GI Gun		8/18/09 0:16		50310	6s	2
4	sparker	8/18/09 0:20	8/18/09 2:25	1001	5966	1.5s	2
4a	1 GI Gun	8/18/09 2:36	8/18/09 16:35	50311	58689	6s	2
2	1 GI Gun	8/18/09 22:11	8/19/09 18:16	58690	70734	6s	2
5	1 GI Gun	8/19/09 20:17	8/20/09 15:13	70735	82083	6s	2
17	1 GI Gun	8/20/09 15:18	8/21/09 1:11	82084	87393	6s	2
20	1 GI Gun	8/21/09 1:16	8/21/09 9:20	87394	92774	6s	2
19	1 GI Gun	8/21/09 9:24	8/21/09 13:26	92775	95171	6s	2
24	1 GI Gun	8/21/09 17:06	8/21/09 22:29	95176	98393	6s	2
32	1 GI Gun	8/21/09 22:32	8/22/09 3:48	98394	101575	6s	2

The sparker source (***Figure 6***) was used with streamer geometry versions 1 and 2 (***Table 1; Appendix 1***). When in use with geometry version 1, the sparker was towed 40 m from the

stern of the ship, 3.5m port of the ship's centerline (***Appendix 1***). When used with geometry 2, the sparker was towed 30 m aft of the stern 3.5m starboard of the ship's centerline (***Appendix 1***). The sparker did not have any depth control but towed approximately at the sea surface. The sparker operated at 200 J and fired every 1.5s. Sparker data were recorded on the MCS streamer at 0.125ms for 1s.

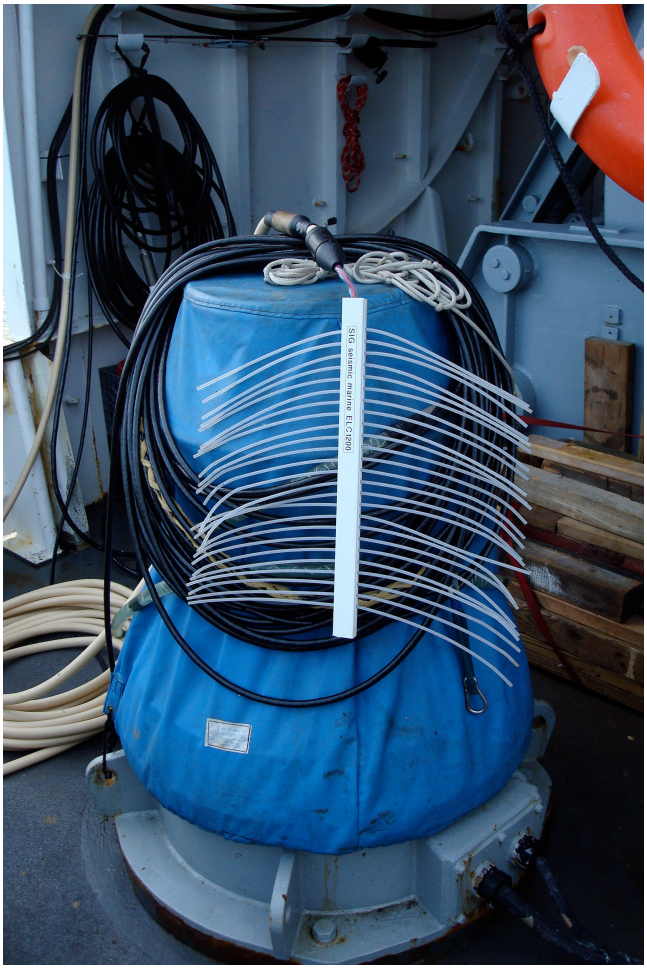


Figure 6. Photo of the USGS-Woods Hole mini-sparker system.

The EM system was towed aft of the centerline of the R/V Endeavor. The EM system consisted of the transmitter and three receivers (***Figure 7***). All equipment was towed along the seafloor with the receivers being spaced 4 m, 13 m, and 40 m aft of the transmitter. We maintained a seafloor speed of 1.5-2 kts during the EM operations.

Figure 7. A photograph of the WHOI towed EM system on deck. The system consists of a transmitter (large cylinder at right) connected to the ship by a 0.680 conducting cable. Three receivers (smaller cylinders) to behind the transmitter at separations of 4m, 13m and 40m and provide information to depths of about 20m subsurface.

The ship maintained GPS tracking directly fed to the recording system. The GPS antenna was located 28m forward from the ship's stern, 3.3m starboard from the centerline. We assumed constant shot spacing for field processing, but will use the recorded GPS data to process the final data with exact shot locations.

Operations

Operations throughout EN465 went smoothly and safely which resulted in collection of ~1150 km of seismic data (***Figure 8***). Here we summarize general operations, primarily explaining deviations from the idealized pre-cruise plan. Complete operational details are provided in the observers' log (***Appendix 2***) that was kept throughout the project using ELOG software (https://midas.psi.ch/elog/).

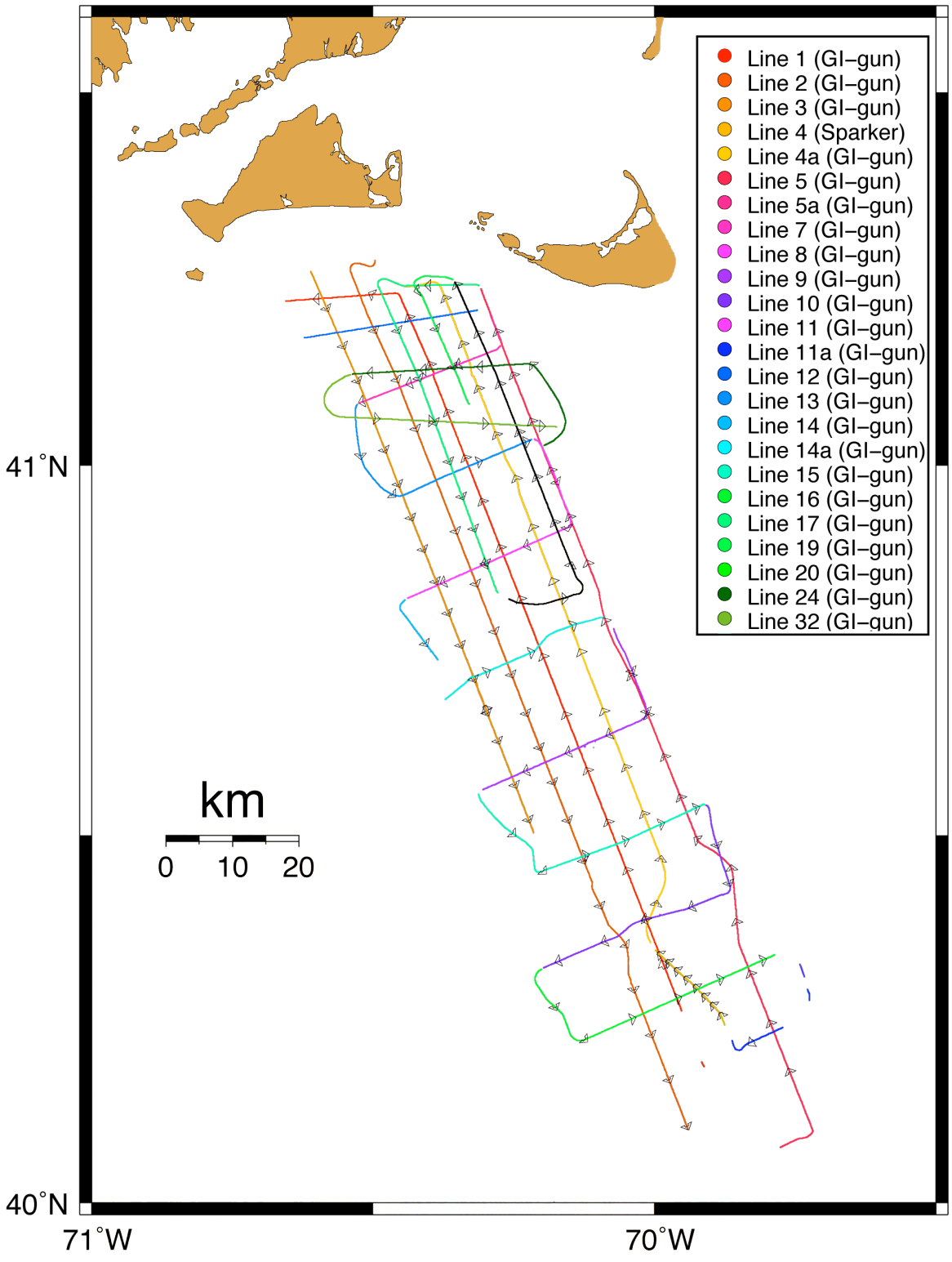


Figure 8. Seismic track map for EN465. Colors identify different seismic lines, and arrows indicate direction of ship during acquisition.

The first adjustment to the seismic plan was adjusting the northern and eastern boundaries of the shelf grid. To safely accommodate the draft of the R/V Endeavor (5.8 m) and to allow for turns, we shortened the northern and eastern extent of the proposed seismic grid (***Figure 3***). This occurred through constructive discussions between Dugan, Captain McMunn, and 2nd Mate Chase. A revised plan that met our scientific needs and facilitated safe operations was established prior to departing the dock. Discussions about shallow water and ship traffic in Nantucket Sound also occurred. Prior to leaving port, we established that the proposed Nantucket Sound lines would be very difficult to acquire, but we could re-evaluate the proposed tracklines if time allowed. This discussion was not revisited because time did not allow surveying in Nantucket Sound.

After adjusting the seismic grid, we began MCS seismic operations on Line 3 (***Table 1***). Initial data were of high quality (***Figure 9***), however, we quickly encountered problems with the compressor that controlled the GI guns. First, the compressor would only run about 12 hours before requiring refueling. This could be done during operations so it would not create any safety or acquisition issues. The primary problem was that there was significant oil overflow and leakage, thus we had concerns about how frequently we would have to add compressor oil and whether or not we had enough oil for the entire project.

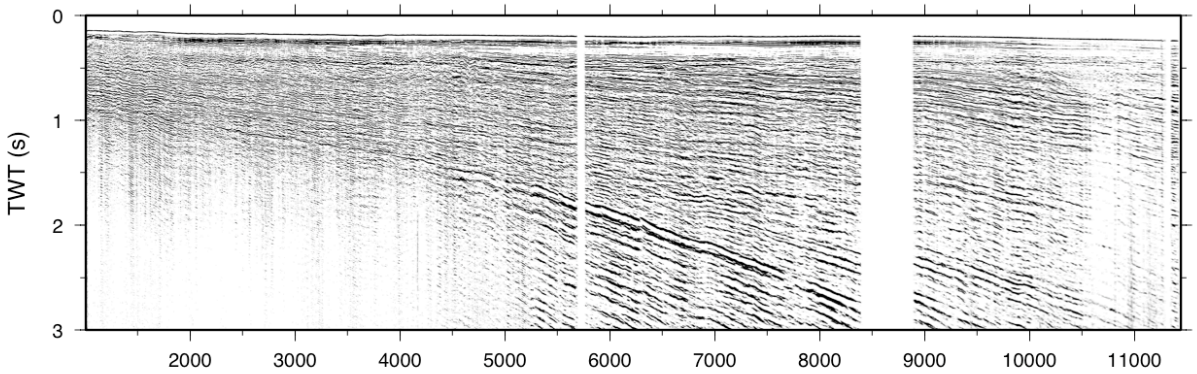


Figure 9. Shipboard brute stack of Line 3. Horizontal axis is CDP number; CDP spacing is 6.25m. All brute stacks are available in *Appendix 4*.

We then suffered a loss of guns because of a pressure drop (08/13/09). We had to halt operations and wait for daylight to begin firing the guns and see if they would reseat after being brought back to operational pressure. Near daylight the guns became crossed with the streamer

so we had to uncross the lines. Once this was accomplished, we began firing but GI-gun 2 was not firing correctly and we worked with GI-gun 1 only. The problem appeared to be leaking guns so we recovered them for a rebuild (8/13/09). We switched to mini-sparker operations using the mini-sparker geometry 1 and the MCS streamer geometry 1 (***Table 1; Appendix 1***).

After rebuilding the airguns and re-deployment (8/14/09), we noticed problems with the streamer and had to recover the streamer. We discovered that the tow leader had a voltage leak, so the streamer geometry was modified to acquisition geometry 2. In addition, the compressor was having trouble building enough pressure to fire at a 5s so we extended the shot interval to 6s. The GI-guns continued to lose pressure so we investigated the pressure lines and noticed clogging of the in-line filters. We then had repeated overheating issues with the compressor that we had to watch closely and eventually went to one airgun (Gun 2) to minimize the load on the compressor and minimize risk of overheating and having to shut down the guns (8/16/09).

Operations continued with moderate success until 8/18/09. Breaks in firing were short but routinely caused as a result of compressor overheating. The fuel filters were changed on the compressor and sparker operations occurred. We then resumed single GI-gun operations. GI-gun MCS operations continued until the arrival of a supply transfer (extra oil, pads, filters) on 8/18/09. For the equipment transfer, we met the WHOI small boat Mytilus, and a safe transfer was completed. All equipment (airguns, streamer) was recovered prior to the equipment exchange.

After the equipment transfer the R/V Endeavor was brought up to cruising speed to check the engines, then seismic acquisition resumed with the one-gun system and acquisition geometry 2. A new depth-bird had to be deployed due to a malfunction of the second bird, but this was a short down time. Operations continued with minimal interruption for compressor overheating and maintenance, until the end of line 32 (***Table 1***). Operations were halted (8/22/09) to pull streamer and guns and move to safety as Hurricane Bill was approaching the survey region. We steamed to Narragansett Bay to wait out Hurricane Bill. While in Narragansett Bay, we performed a personnel transfer (8/23/09). Dan Lizarralde and Nathan Miller left the Endeavor via the zodiac and were dropped off at the URI pier. The zodiac then returned with two new personnel, Rob Evans and Matt Gould, who were brought onboard to run the EM survey.

On 08/24/09 we moved from Narragansett Bay back to the survey area to begin the EM survey in the shallow water section. EM surveying continued for approximately 6.5 hours but

then was aborted as the EM lost communication with the ship. We recovered the EM system and moved back to mini-sparker operations with single channel recording. Sparker acquisition continued until 03:45 8/25/09. At that time, all gear was recovered and the transit was made to port at URI/GSO. The science operations concluded on 8/25/09 and demobilization begin at URI/GSO.

Cumulatively we had a very successful operation with the majority of our time consisting of science operations. In many instances when the MCS/air-guns were down we were able to run the mini-sparker. In total 2 days were lost to equipment malfunctions/failure and 2 days to weather.

Data Acquisition, Control, and Processing

With the success we had on EN465 collecting data, we were also able to observe acquisition parameters and data in real-time, which allowed us to maintain regular operations and minimize downtime. During all stages of seismic acquisition we had two watch-standers observing the data streams to check for quality and any anomalies. For seismic operations we observed the source signal, the depth-control bird locations, and the recorded signal along the streamer. This allowed us to trouble-shoot in real-time any problems with the seismic source or the streamer. The primary problem observed was with the source (***Appendix 2***), which usually required compressor and/or airgun maintenance. Less frequently we observed problems with the streamer, once requiring swapping out the tow leader (transition from geometry 1 to geometry 2) and occasionally readjustment of the depth-control birds. In all instances, real-time monitoring allowed us to minimize lost data and downtime. We also constructed real-time, near-channel stacks of the seismic data for quality control. This first-pass imaging confirmed the resolution capability of the data, which was very good. Because of the high quality of the real-time stacks, we did not alter the acquisition parameters. We also checked the frequency content of the data (***Figure 10***) for the GI guns and the mini-sparker during acquisition. These checks confirmed we were acquiring signals at the high frequency we desired for high-resolution imaging of the shallow subsurface.

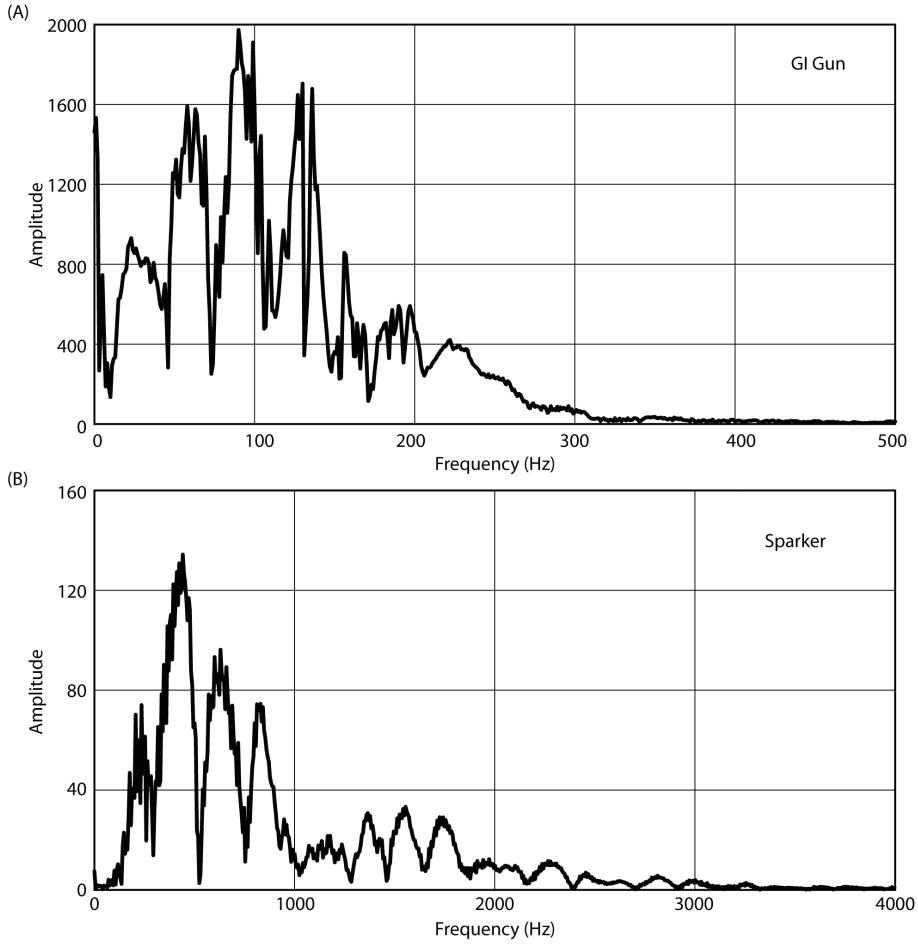


Figure 10. Example of frequency range of the (A) GI-gun source and (B) mini-sparker. Peak frequency for the GI-gun is just under 100 Hz and for the sparker is approximately 400 Hz.

In addition to real-time monitoring of the seismic data, we also conducted shipboard processing of each multi-channel seismic line. The processing consisted of four steps: (1) converting SEG-D data to single-shot SEG-Y gathers; (2) converting SEG-Y shot gathers into common-depth point (CDP) gathers; (3) making a CDP stack section using a 1D velocity function referenced to the seafloor; and (4) creating an archive SEG-Y stack section and hardcopy printout. All processing was done using SIOSEIS (http:// sioseis.ucsd.edu/) and plotted using GMT (http://gmt.soest.hawaii.edu/). Examples of the processing scripts are provided in ***Appendix 3*** and shipboard-generated stacked sections are provided in ***Appendix 4***.

Real-time monitoring of the electromagnetic data was also conducted during EM operations (***Figure 11***). This was similar to the seismic operations, but with one watch-stander. The watch-stander observed the response of the three receivers in real-time to ensure that a

signal was being recorded and that the data were being recorded by the shipboard system. This real-time observing went smoothly until we lost communication with the source and receivers, at which time the EM system had to be recovered (***Appendix 2***). The system was not redeployed due to time constraints.

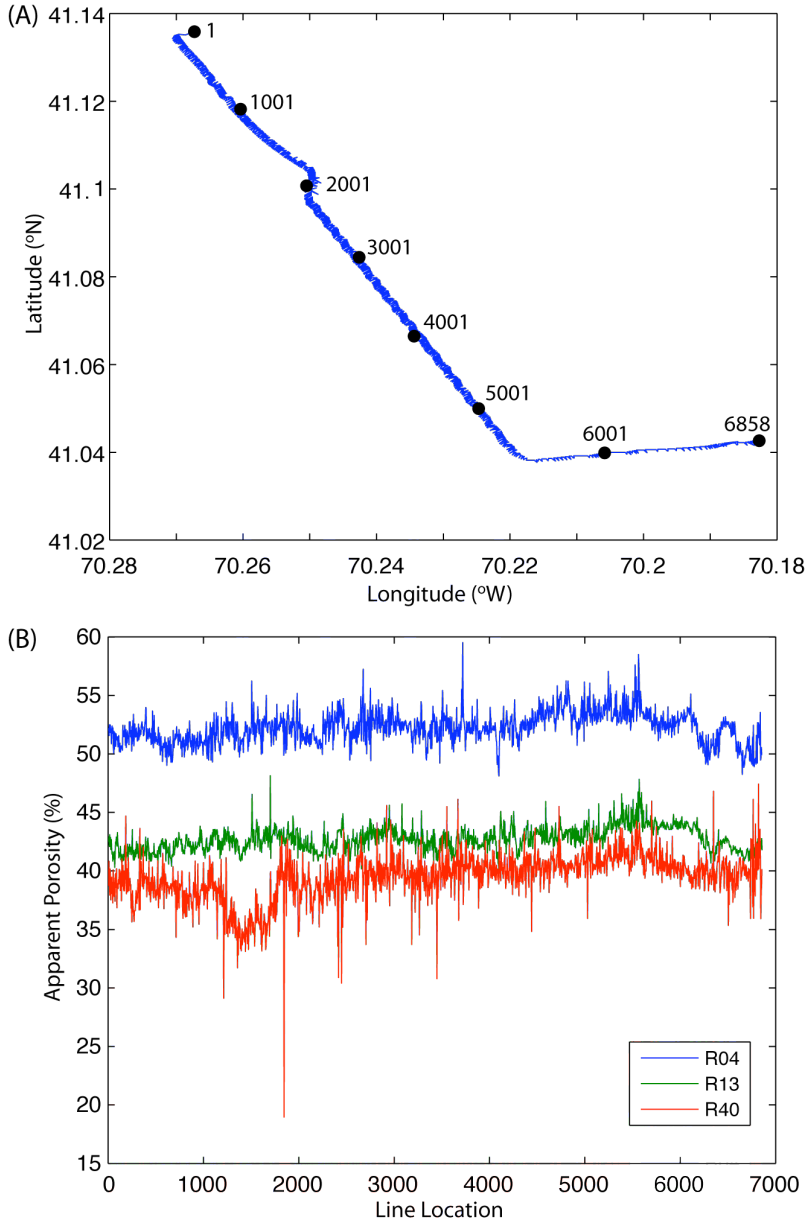


Figure 11. (A) Trackmap for the EM data acquisition. Labeled points are line location numbers. (B) Apparent porosity for the 4 m receiver (R04), 13 m receiver (R13), and the 40 m receiver (R40). Apparent porosity is calculated from the resistivity data based on Archie's Law [*Archie, 1942*]. Line locations are referenced to trackmap in (A).

Marine Mammal and Sea Turtle Observation

All seismic operations on EN465 followed the requirements specified in an Incidental Harassment Authorization (IHA) issued to Rice University by the National Marine Fisheries Service (NMFS) on 11 August 2009. The IHA (***Appendix 5***) authorized non-lethal takes of certain marine mammals incidental our seismic survey. Prior to leaving port, Dugan, Holst, and Ellett discussed the permit to clarify how operations would proceed in accordance with the IHA. This open discussion formalized our communication plan and ensured that all parties were interpreting the IHA in the same manner.

Three trained marine mammal and sea turtle observers (MMOs) participated in EN465. The primary purposes of the monitoring and mitigation effort were to:

(A) document the occurrence, numbers and behaviors of marine mammals and sea turtles near the seismic source;

(B) implement a shut down of the GI gun(s)/sparker when marine mammals or turtles were sighted near or within the designated safety radii; and

(C) monitor for marine mammals and sea turtles before start up and during ramp-up periods.

At least one MMO, but most often two MMOs, watched for marine mammals and sea turtles at all times while the GI gun(s)/sparker operated during daylight periods and whenever the vessel was underway in daytime. The MMOs used 7x50 binoculars and the naked eye to scan for marine mammals and sea turtles. The distance from the observer to the sighting was estimated using reticles in the binoculars or a clinometer.

Primary mitigation procedures, as required by the IHA, included:

(A) ramp ups of the operating GI guns, whenever the two GI guns were started after periods without GI gun operations; and

(B) immediate shut downs of GI gun(s)/sparker whenever marine mammals or sea turtles were detected within or about to enter the then-applicable safety radius.

During EN465, 143 h of visual observations occurred (***Table 2***). More than 99% of the visual effort occurred during daylight. Fourteen sightings of cetaceans totaling 601 individuals were recorded during the survey (***Table 3***). Two species of delphinids were identified; the majority of sightings involved short-beaked common dolphins, while the bottlenose dolphin constituted the rest of the delphinid sightings. One unidentified baleen whale was also seen.

Observed densities of cetaceans were higher during seismic compared with non-seismic periods. Eleven sightings of single sea turtles were also recorded. Two species of sea turtle were sighted; the leatherback turtle was the most frequently sighted species, and one loggerhead turtle was seen.

Table 2: Monitoring effort during 12-24 August 2009

	Visual effort (hrs)		
Date 2009	Seismic	No Activity	Sparker
12 August	3.0	4.0	0
13 August	4.0	3.3	5.2
14 August	2.2	11.5	1.0
15 August	12.3	1.8	0
16 August	12.3	1.8	0
17 August	12.3	1.8	0
18 August	8.7	5.5	0
19 August	12.2	2.0	0
20 August	14.2	0	0
21 August	10.2	4.0	0
24 August	0.0	0.0	1.0
Totals	91.4	35.7	7.2

The GI gun was shut down six times because of the presence of four cetacean groups (totaling 93 individuals) and two turtles within or near the designated safety zone (***Table 3***). The sparker was shut down once due to the presence of a group of 10 bottlenose dolphins near the designated safety zone. During the survey, there was no indication that cetaceans may have been avoiding the area around the seismic vessel. In fact, dolphins frequently approached the Endeavor, requiring mitigation action (shut down of the seismic source). Given the small size of the seismic source and that mitigation measures were implemented immediately for marine mammals and sea turtles sighted close to the source vessel, effects were very likely localized and transient, without significant impact on either individuals or their populations.

Table 3: Sightings during 12-21 August 2009

Date 2009	Sighting #	Species	Number of Animals	Activity	Mitigation[†]
14 August	1	Bottlenose dolphin	10	Sparker	SD
14 August	2	Bottlenose dolphin	2	None	NO
14 August	3	Unidentified baleen whale	1	None	NO
14 August	4	Leatherback turtle	1	None	NO
16 August	5	Short-beaked common dolphin	50	Seismic	NO
16 August	6	Short-beaked common dolphin	25	Seismic	SD
16 August	7	Leatherback turtle	1	Seismic	SD
16 August	8	Short-beaked common dolphin	40	Seismic	SD
16 August	9	Short-beaked common dolphin	10	Seismic	NO
16 August	10	Leatherback turtle	1	Seismic	NO
16 August	11	Short-beaked common dolphin	18	Seismic	SD
17 August	12	Short-beaked common dolphin	100	Seismic	NO
17 August	13	Short-beaked common dolphin	95	Seismic	NO
17 August	14	Leatherback turtle	1	Seismic	NO
17 August	15	Leatherback turtle	1	Seismic	NO
17 August	16	Leatherback turtle	1	Seismic	NO
17 August	17	Leatherback turtle	1	Seismic	NO
17 August	18	Leatherback turtle	1	Seismic	NO
17 August	19	Leatherback turtle	1	Seismic	NO
17 August	20	Leatherback turtle	1	Seismic	NO
17 August	21	Bottlenose dolphin	10	Seismic	SD
17 August	22	Bottlenose dolphin	10	None	NO
21 August	23	Probable loggerhead turtle	1	Seismic	SD
21 August	24	Short-beaked common dolphin	180	Seismic	NO
21 August	25	Short-beaked common dolphin	50	Seismic	NO

[†] SD = Shut down of sound source

Preliminary Results

Shipboard processing of the seismic data and inspection of the EM data indicated that EN465 was successful. The resolution of the seismic data approach 6 m and a majority of the proposed seismic grid was collected (***Figures 3, 8***). While most of the seismic acquisition was limited to one GI gun, the fidelity of the data was good to below 1s two-way travel time. This

penetration provides valuable information on the distribution and connectivity of shallow (<1 km sub-seafloor) aquifers and aquicludes. Within the brute stacks of the seismic data, a few key surfaces are apparent and easily identifiable on many sections: (1) acoustic basement structure on the inner shelf (***Appendix 4***); (2) erosion surfaces that may constrain the seaward extent of the last glaciation (***Appendix 4***); and (3) numerous key stratigraphic surfaces (e.g., on-laps, down-laps, clinoforms, truncations). This initial imaging together with the high vertical and horizontal resolution of the data indicate that we will be able to construct an excellent stratigraphic framework for the shelf and have high quality site survey data for the Integrated Ocean Drilling Program.

Future Research

Shore-based processing of the MCS data will be a combined effort between Rice and WHOI. Based on our work with USGS Line 5 (***Figure 2***), we believe that processing of shallow-target seismic data collected on EN465 will yield excellent images and velocity data of the continental shelf south of Martha's Vineyard, MA, USA. In addition we will be able to characterize the stratigraphy for all proposed IODP Sites. Siegel and Dugan will complete primary and advanced processing of the seismic data at Rice. This begins with coupling the GPS data with the seismic data to get exact shot locations. The next step is CDP processing and constructing stacked seismic sections. We will include top and bottom mutes, a bandpass filter, an F-K filter, true amplitude recovery, normal moveout correction based on a rigorous velocity analysis, and CDP stacking. This processing stream will focus on imaging the shallow stratigraphy. We will also map key stratigraphic horizons and make isochron/isopach maps. Additional processing will focus on multiple suppression for better near-seafloor imaging and velocity analysis for hazard assessment and depth migration of the profiles. Lizarralde will provide guidance on multiple suppression and velocity analysis. Final stacked sections will be used to define the three-dimensional stratigraphic architecture for numerical models of the study area. Person, Dugan, Siegel, and DeFoor will complete 2D and 3D hydrogeologic models of the shelf offshore New England. These models will provide estimates of in situ fluid chemistry and fluid age that will be tested by the drilling proposed in 637-Full2. Drilling IODP 637-Full2 will provide fluid and sediment properties and lithostratigraphy for completely characterizing and understanding this offshore freshwater resource.

Education and Outreach

Education and outreach activities included onboard training of three graduate students (DeFoor, Miller, and Siegel) and one middle school teacher (Sills). All were involved in watch-standing activities, discussions on the science driving the field activities, and the deployment/recovery of scientific equipment (***Figure 5***). Each participant also had a primary data processing task: Siegel and Miller worked on field processing of the MCS data (***Figure 9; Appendices 3 and 4***); DeFoor made trackline maps of our survey in real-time for comparison to idealized pre-cruise tracklines (***Figure 8***); and Sills looked at frequency content of data collected to confirm that we were at the desired frequency content (***Figure 10***). This provided all with a robust picture of the field program from original proposal and motivational science through initial processing and interpretation. Sills also compiled a journal for the ARMADA Project (http://www.armadaproject.org/) and for her students at Creekside School. As time and connectivity allowed, she also had phone/video discussions with administrators and students at the school. Thus, the activities helped provide experience and training to students that will enter the geoscience workforce and an educator who can bring real-world insight back to her middle school Earth science curriculum. Siegel continues to work on these data for part of his Ph.D. research.

Acknowledgements

This work would not have been possible without support and expertise of the R/V Endeavor crew: Rhett McMunn (Captain), Courtenay Barber (Chief Mate), Richard Chase III (2nd Mate), Pat Quigley (Bosun), Paul Roussell (AB), Steve Sission (AB), Randy Smith (AB), Tim Varney (Chief Engineer), Dan Alexander (Assistant Engineer), Bruce Bannick (Assistant Engineer), Dave Nelson (GSO Tech), Amanda Wright (Chief Steward), Michael Brennan (Messman). This work was supported by the National Science Foundation (NSF-OCE-0824368; NSF-OCE-0824497; NSF-OCE-0824263).

References

Archie, G.E., 1942, The electrical resistivity log as an aid in determining some reservoir characteristics. J. Pet. Technol., 5, 1-8.

Cohen, D., Person, M., Wang, P., Gable, C.W., Hutchinson, D., Marksamer, A., Dugan, B., Kooi, H., Groen, K., Lizarralde, D., Evans, R. L., Day-Lewis, F.D., and J. W. Lane, Jr., 2010, Origin and Extent of Fresh Paleowaters Beneath the Atlantic Continental Shelf, New England, Ground Water, doi:/10.1111/j.1745-6584.2009.00627.x.

Custodio, E., W.M. Edmunds, and Y. Travi, 2001, Management of coastal palaeowaters, Geological Society of London Special Publications, 189, 313-327.

Edmunds, W.M. and C.J. Milne (eds), 2001, Palaeowaters in coastal Europe: evolution of groundwater since the late Pleistocene, Geological Society of London, Special Publication, 189, 332 pp.

Hathaway, J.C., C.W. Poag, P.C. Valentine, R.E. Millerk, D.M. Schultz, F.T. Manheim, F.A. Kohout, M.H. Bothner, and D.A. Sangrey, 1979, U.S. Geological Survey core drilling on the Atlantic Shelf, Science, 206(4418), 515-527.

Klitgord, K.D., C.M. Schneider, and L. North, 1994, Geophysical database of the East Coast of the United States Northern Atlantic Margin: cross sections and gridded database (Georges Bank basin, Long Island platform, and Baltimore Canyon trough): U.S. Geological Survey Open-File Report OF94-637, 189 pp.

Kooi, H. and J. Groen, 2000, Modes of seawater intrusion during transgressions, Water Resources Research, 36(12), 3581-3589.

Li, L., D.A. Barry, F. Sagnitti, and J.Y. Parlange, 1999, Submarine groundwater discharge and associated chemical input into the sea, Water Resources Research, 35(11), 3253-3259.

Marksamer, A. J., M. Person, F. Day-Lewis, and. J.W. Lane, D. Cohen, B. Dugan, H. Kooi, and M. Willett, 2007, Integrating Geophysical, Hydrochemical, and Hydrologic Data to Understand the Freshwater Resources on Nantucket Island, Massachusetts, doi:10.129/172GM12.

Meisler, H. Leahy, P.P., and Knobel, L. L., 1984, Effect of Eustatic sea-level changes on saltwater-freshwater in North Atlantic Coastal Plain, U.S. Geological Survey Water-Supply Paper 2255.

Michael, H.A., A.E. Mulligan, C.F. Harvey, 2005, Seasonal oscillations in water exchange

between aquifers and the coastal ocean, Nature, 436, doi:10.1038/nature03935.

Moore, W.S, 1996, Large groundwater inputs to coastal waters revealed by ^{226}Ra enrichments, Nature, 380, 612-614.

Person, M., B. Dugan, J.B. Swenson, L. Urbano, C. Stott, J. Taylor, and M. Willett, 2003, Pleistocene hydrogeology of the Atlantic continental shelf, New England, GSA Bull., 115, 1324-1343.

Pope D.A. and Gordon, A.D., 1999, Simulation of ground-water flow and movement of the freshwater-saltwater interface in the New Jersey Plain, US Geological Survey Investigations Report 98-4216.

Robb, J., 1984, Spring sapping on the lower continental slope, offshore New Jersey, Geology, 12(5), 278-282.

Taniguchi, M., 2002, Tidal effects of submarine groundwater discharge into the ocean, Geophysical Research Letters, 29(12), 2-1 to 2-3.

Taniguchi, M., T. Ishitobi, J. Shimada, 2006, Dynamics of submarine groundwater discharge and freshwater-seawater interface, J. Geophys. Res., 111, C01008, doi:10.1029/2005JC002924.

Uchupi, E., N. Driscoll, R.D. Ballard, and S.T. Bolmer, 2001, Drainage of late Wisconsin glacial lakes and the morphology and late quaternary stratigraphy of the New Jersey – southern New England continental shelf and slope, Marine Geology, 172, 117-145.

Weinstein, Y., W.C. Burnett, P.W. Swarzenski, Y. Shalem, Y. Yechieli, B. Herut, 2007, Role of aquifer heterogeneity in fresh groundwater discharge and seawater recycling: an example from the Carmel coast, Israel, J. Geophys. Res., 112, C12016, doi:10.1029/2007JC004112.

Appendix 1

Acquisition Geometries

SIO Portable Marine Seismic System

Geometry 1
GeoEel Streamer and Airguns

Cruise: **EN465**
Vessel: **R/V Endeavor**
Date: **Aug 2009**
Chief Sci: **Dugan**

Techs:
Lee Ellett
Brandi Murphy
Jim Dorrance

Item or Channel	Distance (m) from Stern	Distance (m) from Source	Distance (m) From GPS	Distance (m) off center line	Depth/Height from water
1	101.25	76.25	129.25	2	3
48	688.75	663.75	716.75	2	3
49	698.13	673.13	726.13	2	3
72	841.88	816.88	869.88	2	3
Source	25	0	53	2	2
GPS	28	53	0	3.3	?

Section	Length	Number of Channels
Towing Cables	95 m	
Active @ 12.5 Grp Int	600 m	48
Active @ 6.25 Grp Int	150 m	24

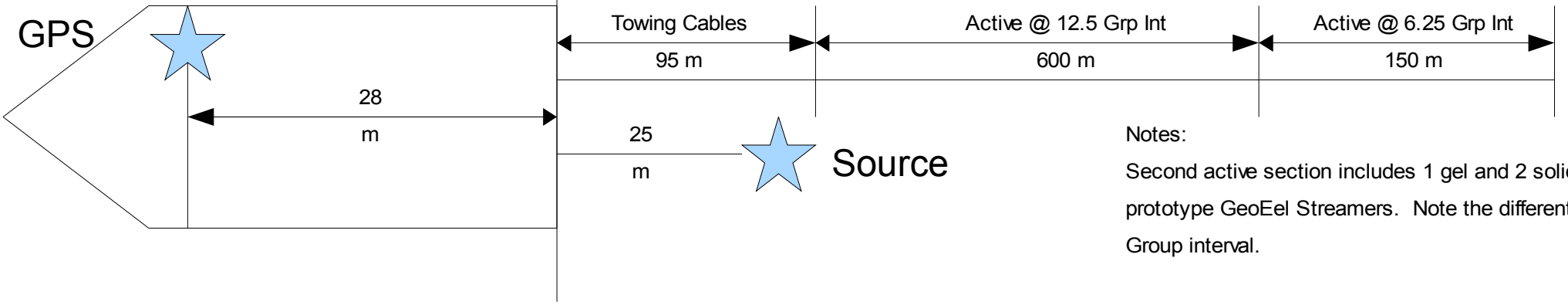
Bird Locations

Bird 1	Start of Ch 9 (Active 2)
Bird 2	Start of Ch 17 (Active 3)
Bird 3	Start of Ch 33 (Active 5)
Bird 4	Start of Tail Stretch

Source:	Airguns	45/105 Cu In	**Qty:**	1/2
Acq. Sys.	GeoEel	**PreAmp Gain:**	18 db	
Sample Int:	.500ms	**# of Channels:**	72	
File Format:	SEGD	D 8058 Rev 1		
Rec. Length:	4 sec	**Shot Interval:**	5/6 sec	

FOLD =

$$\frac{\text{No. Traces} * \text{Grp. Int}}{2*(\text{Shot Interval})}$$



Notes:
Second active section includes 1 gel and 2 solid prototype GeoEel Streamers. Note the different Group interval.

* Not drawn to Scale

SIO Portable Marine Seismic System

Geometry 2
GeoEel streamer and Airguns

Cruise: **EN465**
Vessel: **R/V Endeavor**
Date: **Aug 2009**
Chief Sci: **Dugan**

Techs:
Lee Ellett
Brandi Murphy
Jim Dorrance

Item OR Channel	Distance (m) from Stern	Distance (m) from Source	Distance (m) From GPS	Distance (m) off center line		Depth/Height from water
9	81.25	55.25	109.25	2	starboard	3
56	668.75	642.75	696.75	2	starboard	3
57	678.13	652.13	706.13	2	starboard	3
64	721.88	695.88	749.88	2	starboard	3
Source	26	0	54	2	port	2
GPS	28	54	0	3.3	starboard	?

Section	Length	Number of Channels
Towing W/ Active Sect	75 m	8
Active @ 12.5 Grp Int	600 m	48
Active @ 6.25 Grp Int	50m m	8

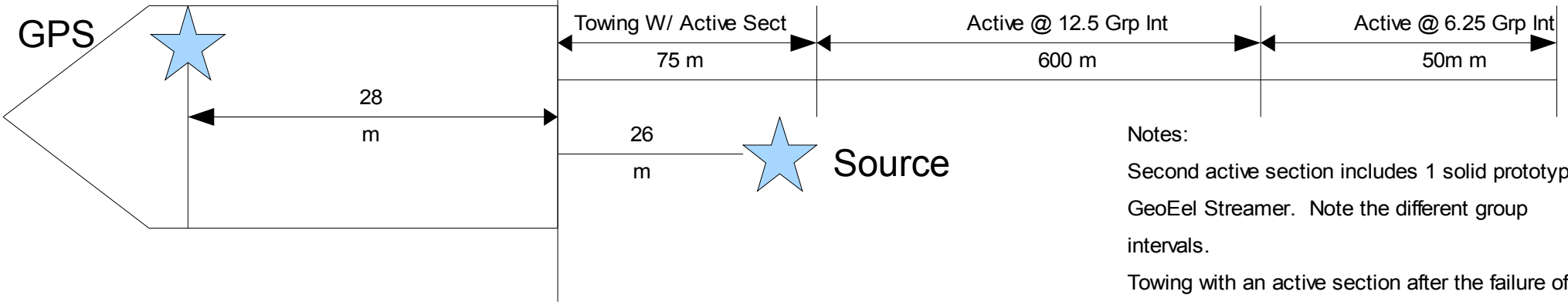
Bird Locations

Bird 1	Start of Ch 9 (Active 2) ??
Bird 2	Start of Ch 33 (Active 5)
Bird 3	Start of Ch 33 (Active 5)
Bird 4	Start of Tail Stretch

Source:	Airguns	45/105 Cu In	**Qty:**	1/2
Acq. Sys.	GeoEel	**PreAmp Gain:**	18 db	
Sample Int:	.500ms	**# of Channels:**	64	
File Format:	SEGD	D 8058 Rev 1		
Rec. Length:	4 sec	**Shot Interval:**	5/6 sec	

FOLD =

$$\frac{\text{No. Traces} * \text{Grp. Int}}{2*(\text{Shot Interval})}$$



* Not drawn to Scale

Notes:
Second active section includes 1 solid prototype GeoEel Streamer. Note the different group intervals.
Towing with an active section after the failure of the tow cable

SIO Portable Marine Seismic System

Geometry 1
GeoEel Streamer and Sparker

Cruise: **EN465**
Vessel: **R/V Endeavor**
Date: **Aug 2009**
Chief Sci: **Dugan**

Techs:
Lee Ellett
Brandi Murphy
Jim Dorrance

Item or Channel	Distance (m) from Stern	Distance (m) from Source	Distance (m) From GPS	Distance (m) off center line		Depth/Height from water
1	101.25	61.25	129.25	2	starboard	3
48	688.75	648.75	716.75	2	starboard	3
49	698.13	658.13	726.13	2	starboard	3
72	841.88	801.88	869.88	2	starboard	3
Source	40	0	68	3.5	port	2
GPS	28	68	0	3.3	starboard	?

Section	Length	Number of Channels
Towing Cables	95 m	
Active @ 12.5 Grp Int	600 m	48
Active @ 6.25 Grp Int	150 m	24

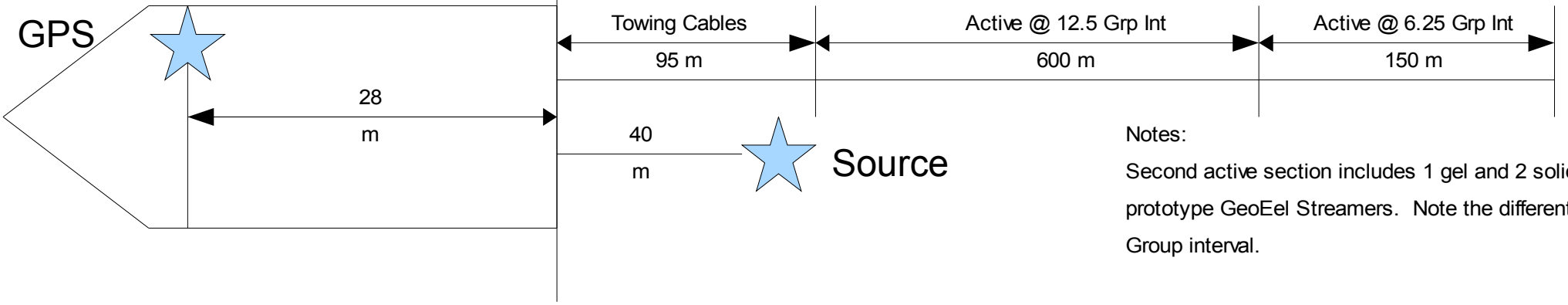
Bird Locations

Bird 1	Start of Ch 9 (Active 2)
Bird 2	Start of Ch 17 (Active 3)
Bird 3	Start of Ch 33 (Active 5)
Bird 4	Start of Tail Stretch

Source:	USGS	Sparker	**Qty:**	1
Acq. Sys.	GeoEel	**PreAmp Gain:**	18 db	
Sample Int:	.500ms	**# of Channels:**	72	
File Format:	SEGD	D 8058 Rev 1		
Rec. Length:	1 sec	**Shot Interval:**	1.5 sec	

FOLD =

$$\frac{\text{No. Traces} * \text{Grp. Int}}{2*(\text{Shot Interval})}$$



Notes:
Second active section includes 1 gel and 2 solid prototype GeoEel Streamers. Note the different Group interval.

* Not drawn to Scale

SIO Portable Marine Seismic System

Geometry 2
GeoEel streamer and Sparker

Cruise: **EN465**
Vessel: **R/V Endeavor**
Date: **Aug 2009**
Chief Sci: **Dugan**

Techs:
Lee Ellett
Brandi Murphy
Jim Dorrance

Item OR Channel	Distance (m) from Stern	Distance (m) from Source	Distance (m) From GPS	Distance (m) off center line		Depth/Height from water
9	81.25	51.25	109.25	2	starboard	3
56	668.75	638.75	696.75	2	starboard	3
57	678.13	648.13	706.13	2	starboard	3
64	721.88	691.88	749.88	2	starboard	3
Source	30	0	58	3.5	starboard	?
GPS	28	58	0	3.3	starboard	?

Section	Length	Number of Channels
Towing W/ Active Sect	75 m	8
Active @ 12.5 Grp Int	600 m	48
Active @ 6.25 Grp Int	50m m	8

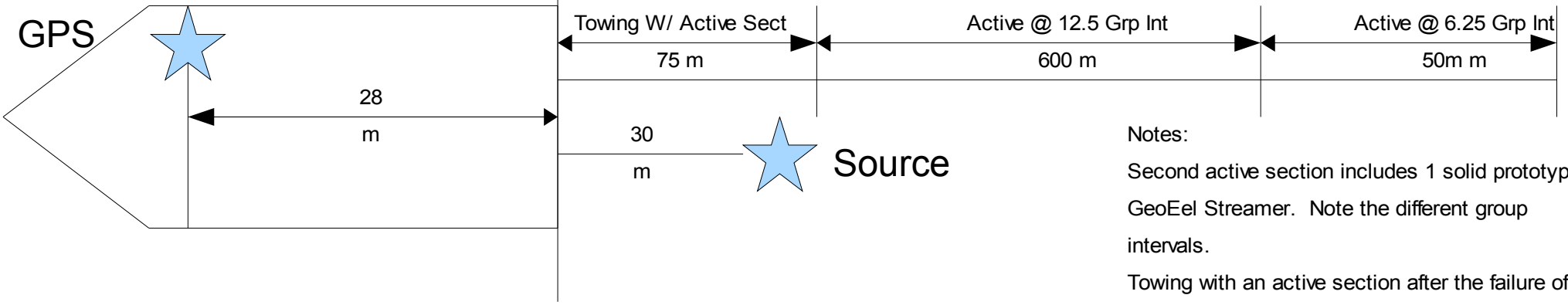
Bird Locations

Bird 1	Start of Ch 9 (Active 2) ??
Bird 2	Start of Ch 33 (Active 5)
Bird 3	Start of Ch 33 (Active 5)
Bird 4	Start of Tail Stretch

Source:	USGS	Sparker	**Qty:**	1
Acq. Sys.	GeoEel	**PreAmp Gain:**	18 db	
Sample Int:	.500ms	**# of Channels:**	64	
File Format:	SEGD	D 8058 Rev 1		
Rec. Length:	1 sec	**Shot Interval:**	1.5 sec	

FOLD =

$$\frac{\text{No. Traces} * \text{Grp. Int}}{2*(\text{Shot Interval})}$$



* Not drawn to Scale

Notes:
Second active section includes 1 solid prototype GeoEel Streamer. Note the different group intervals.
Towing with an active section after the failure of the tow cable

Appendix 2

Observers' Log

$@MID@$: 4
Date: Wed, 12 Aug 2009 11:21:27 -0300
Creation Time: 12 Aug 2009 11:19:18
Watch: NCM
Position: N 41.22692667, W 70.98477833, 33.50 m
Science Operations: Transit
Line Name: N/A
Shot Number:
Category: System
Subject: login to SIO system
Attachment:
Encoding: HTML
==========
Name: sci01

Password: endeavor465

Data will be in /seismic/data/EN465

Login over SSH or SCP, eg:

ssh sci01@192.168.2.75

$@MID@$: 6
Date: Wed, 12 Aug 2009 16:16:56 +0200
Creation Time: 12 Aug 2009 16:16:17
Watch: NCM
Position: N 41.17420500, W 70.86096333, 33.50 m
Science Operations: Transit
Line Name: N/A
Shot Number:
Category: System
Subject: elog using GMT time, synced with UDP string
Attachment:
Encoding: HTML
==========

$@MID@$: 9
Date: Wed, 12 Aug 2009 16:41:17 +0200
Creation Time: 12 Aug 2009 16:40:49
Watch: NCM
Position: N 41.18865500, W 70.77839333, 32.86 m
Science Operations: Transit | Knudsen
Line Name: N/A
Shot Number:
Category: System
Subject: elog depth working
Attachment:
Encoding: HTML
==========
 Earlier depths are bogus.
$@MID@$: 10
Date: Wed, 12 Aug 2009 19:21:31 +0200
Creation Time: 12 Aug 2009 19:20:10

Watch: NCM
Position: N 41.17893500, W 70.57492833, 37.50 m
Science Operations: Transit | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Begin deploying streamer
Attachment:
Encoding: HTML
==========
 MMO have been observing since ~11:00 GMT.
$@MID@$: 11
Date: Wed, 12 Aug 2009 20:42:56 +0200
Creation Time: 12 Aug 2009 20:42:22
Watch: NCM
Position: N 41.23442000, W 70.62214667, 27.15 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Streamer is out, towing from harness
Attachment:
Encoding: HTML
==========

$@MID@$: 12
Date: Wed, 12 Aug 2009 20:45:24 +0200
Creation Time: 12 Aug 2009 20:44:44
Watch: NCM
Position: N 41.23584167, W 70.62373667, 26.88 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Compressor
Subject: Starting compressor
Attachment:
Encoding: HTML
==========

$@MID@$: 13
Date: Wed, 12 Aug 2009 20:54:01 +0200
Creation Time: 12 Aug 2009 20:53:37
Watch: NCM
Position: N 41.24123167, W 70.62936000, 25.94 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Deploying GI gun string
Attachment:
Encoding: HTML
==========

$@MID@$: 14
Date: Wed, 12 Aug 2009 21:04:16 +0200

Creation Time: 12 Aug 2009 21:03:58
Watch: NCM
Position: N 41.24765667, W 70.63617667, 27.13 m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: GI guns are fully deployed
Attachment:
Encoding: HTML
==========

$@MID@$: 15
Date: Wed, 12 Aug 2009 21:16:52 +0200
Creation Time: 12 Aug 2009 21:16:26
Watch: NCM
Position: N 41.25676167, W 70.64176833, 27.24 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: Single GI gun firing
Attachment:
Encoding: HTML
==========
Second gun can come online in 5 minutes.
$@MID@$: 16
Date: Wed, 12 Aug 2009 21:22:30 +0200
Creation Time: 12 Aug 2009 21:22:04
Watch: NCM
Position: N 41.26156500, W 70.64066167, 26.89 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Nav
Subject: Starting turn onto Line 3
Attachment:
Encoding: HTML
==========

$@MID@$: 17
Date: Wed, 12 Aug 2009 21:26:34 +0200
Creation Time: 12 Aug 2009 21:26:19
Watch: BD
Position: N 41.26549833, W 70.63926500, 26.91 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Change of Watch
Subject: Dugan on watch
Attachment:
Encoding: HTML
==========

$@MID@$: 18

Date: Wed, 12 Aug 2009 21:29:15 +0200
Creation Time: 12 Aug 2009 21:28:53
Watch: BD
Position: N 41.26780500, W 70.63771167, 26.72 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: 2 air guns firing
Attachment:
Encoding: HTML
==========

$@MID@$: 19
Date: Wed, 12 Aug 2009 21:55:38 +0200
Creation Time: 12 Aug 2009 21:54:07
Watch: BD
Position: N 41.26000333, W 70.61036500, 26.00 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 101
Category: Nav-SOL
Subject: Start of Line 3
Attachment:
Encoding: HTML
==========
First Shot: 1001

SEGD File: (

Coming off test line and turn (not recorded), 2 guns firing. Start of line 3 with data acquisition.

$@MID@$: 20
Date: Thu, 13 Aug 2009 00:04:54 +0200
Creation Time: 13 Aug 2009 00:02:57
Watch: WLD
Position: N 41.02188833, W 70.47942333, 43.37 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: Line 3
Shot Number: 1545
Category: Change of Watch
Subject: Whitney On Primary Watch
Attachment:
Encoding: HTML
==========
 Whitney changed from secondary to primary watch.

Mark came on as secondary watch.
$@MID@$: 21
Date: Thu, 13 Aug 2009 02:03:11 +0200
Creation Time: 13 Aug 2009 02:00:53
Watch: WLD
Position: N 41.02188833, W 70.47942333, 43.37 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen

Line Name: Line 3
Shot Number: 2963
Category: Ops-Guns
Subject: Amplitude threshold exceeded
Attachment:
Encoding: HTML
==========
 Warning window came up, siting "Amplitude threshold exceeded".
$@MID@$: 22
Date: Thu, 13 Aug 2009 02:08:18 +0200
Creation Time: 13 Aug 2009 02:04:52
Watch: WLD
Position: N 41.01722333, W 70.47705833, 43.19 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: Line 3
Shot Number: 2995
Category: Ops-Guns
Subject: Amplitude threshold exceeded - checked out and OK
Attachment:
Encoding: HTML
==========
 Lee came out and checked error. The exceeding of amplitude threshold could have been a combination of the birds and a slight drop in pressure.
$@MID@$: 23
Date: Thu, 13 Aug 2009 03:43:48 +0200
Creation Time: 13 Aug 2009 03:40:28
Watch: WLD
Position: N 40.92987667, W 70.43224667, 45.78 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: Line 3
Shot Number: 4149
Category: Ops-Streamer
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==========
 Computer posted a sign saying "Overdriven Channel".

 Brandy told us just to push "ok", and said that it just means that one of the channels is noisy.
$@MID@$: 24
Date: Thu, 13 Aug 2009 03:51:43 +0200
Creation Time: 13 Aug 2009 03:51:12
Watch: WLD
Position: N 40.92277833, W 70.42885500, 46.29 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: Line 3
Shot Number: 4261
Category:
Subject: 4261 about Ch 35 - Red Bar
Attachment:
Encoding: HTML
==========

 On shot number 4261 or 4262 and around Ch 35, a bar turned red on the noise window graph. Likely these means the channel was noisy.
$@MID@$: 25
Date: Thu, 13 Aug 2009 03:59:31 +0200
Creation Time: 13 Aug 2009 03:58:01
Watch: MAP
Position: N 40.91598333, W 70.42526000, 46.07 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: Line 3
Shot Number: 4356
Category: Change of Watch
Subject: Midnight to 4 am watch shift
Attachment:
Encoding: HTML
==========
 MAP and JES on watch
$@MID@$: 26
Date: Thu, 13 Aug 2009 04:06:49 +0200
Creation Time: 13 Aug 2009 04:05:15
Watch: MAP
Position: N 40.90973667, W 70.42211667, 46.62 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 4436
Category: Ops-Streamer
Subject: Noise in hydrophone 1
Attachment:
Encoding: HTML
==========
 Red bar, channel 1, shot 4436
$@MID@$: 27
Date: Thu, 13 Aug 2009 04:21:44 +0200
Creation Time: 13 Aug 2009 04:21:04
Watch: MAP
Position: N 40.89740167, W 70.41544167, 47.67 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 4621
Category: Ops-Streamer
Subject: noise in hydrophone 1
Attachment:
Encoding: HTML
==========
 channel one bar red, MAP
$@MID@$: 28
Date: Thu, 13 Aug 2009 04:24:01 +0200
Creation Time: 13 Aug 2009 04:23:05
Watch: MAP
Position: N 40.89557667, W 70.41449000, 47.87 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 4647
Category: Ops-Streamer
Subject: noise in hydrophone 1
Attachment:

Encoding: HTML
==========
 channel 1 red bar again
$@MID@$: 29
Date: Thu, 13 Aug 2009 04:25:51 +0200
Creation Time: 13 Aug 2009 04:24:56
Watch: MAP
Position: N 40.89414500, W 70.41370667, 47.88 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 4679
Category: Ops-Guns
Subject: Add oil to compressor
Attachment:
Encoding: HTML
==========
 oil changed
$@MID@$: 30
Date: Thu, 13 Aug 2009 04:32:07 +0200
Creation Time: 13 Aug 2009 04:31:41
Watch: MAP
Position: N 40.88882000, W 70.41107000, 47.64 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 4753
Category: Ops-Guns
Subject: compressor back on line, shots resumed
Attachment:
Encoding: HTML
==========
 5.0 minutes down time
$@MID@$: 31
Date: Thu, 13 Aug 2009 05:14:02 +0200
Creation Time: 13 Aug 2009 05:13:11
Watch: MAP
Position: N 40.85211500, W 70.39247500, 50.22 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 5244
Category: Ops-Streamer
Subject: noise in hydrophone 1
Attachment:
Encoding: HTML
==========
 red bar
$@MID@$: 32
Date: Thu, 13 Aug 2009 05:16:37 +0200
Creation Time: 13 Aug 2009 05:15:37
Watch: MAP
Position: N 40.85002167, W 70.39123000, 50.14 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 5274, 5285
Category: Ops-Streamer
Subject: noise in hydrophone 74,78

Attachment:
Encoding: HTML
==========
 multiple red bars
$@MID@$: 33
Date: Thu, 13 Aug 2009 05:17:44 +0200
Creation Time: 13 Aug 2009 05:17:07
Watch: MAP
Position: N 40.84912167, W 70.39074667, 50.06 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 5297
Category: Ops-Streamer
Subject: noise in hydrophone 56
Attachment:
Encoding: HTML
==========
 red bar
$@MID@$: 34
Date: Thu, 13 Aug 2009 05:52:13 +0200
Creation Time: 13 Aug 2009 05:51:26
Watch: MAP
Position: N 40.82043000, W 70.37591333, 48.46 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 5701
Category: Ops-Streamer
Subject: noise in hydrophone 56
Attachment:
Encoding: HTML
==========
 red bar
$@MID@$: 35
Date: Thu, 13 Aug 2009 05:59:32 +0200
Creation Time: 13 Aug 2009 05:58:47
Watch: JES
Position: N 40.81416833, W 70.37269000, 48.73 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 5794
Category: Ops-Streamer
Subject: noise in hydrophone 38-47
Attachment:
Encoding: HTML
==========
 red bars
$@MID@$: 36
Date: Thu, 13 Aug 2009 06:15:06 +0200
Creation Time: 13 Aug 2009 06:00:49
Watch: MAP
Position: N 40.80046000, W 70.36602000, 48.91 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 5983
Category: Ops-Streamer

Subject: noise in hydrophone 38-39
Attachment:
Encoding: HTML
==========
 red bars
$@MID@$: 37
Date: Thu, 13 Aug 2009 06:18:34 +0200
Creation Time: 13 Aug 2009 06:18:02
Watch: MAP
Position: N 40.79749167, W 70.36438500, 48.43 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 6027
Category: Ops-Streamer
Subject: noise in hydrophone 39-42
Attachment:
Encoding: HTML
==========
 red bars
$@MID@$: 38
Date: Thu, 13 Aug 2009 08:01:13 +0200
Creation Time: 13 Aug 2009 08:00:45
Watch: JES
Position: N 40.70454833, W 70.31682667, 47.96 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 39
Date: Thu, 13 Aug 2009 08:11:39 +0200
Creation Time: 13 Aug 2009 08:11:05
Watch: NCM
Position: N 40.69417167, W 70.31143500, 48.36 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 7381
Category: Ops-Guns
Subject: not enough air pressure
Attachment:
Encoding: HTML
==========
All channels appear dead begining with shot number 7381. Problem appears to be low compressor tank pressure. Shooting stopped at shot 7427 (~8:11) to allow compressor to rebuild pressure.
$@MID@$: 40
Date: Thu, 13 Aug 2009 08:29:17 +0200
Creation Time: 13 Aug 2009 08:28:52
Watch: NCM
Position: N 40.67696667, W 70.30271667, 49.30 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen

Line Name: 3
Shot Number: 7509
Category: Ops-Guns
Subject: Trying to resume shooting
Attachment:
Encoding: HTML
==========
Guns not building pressure. Compressor pressure back to ~2000 PSI, but pressure on both guns is not above ~100 PSI. Guns may be flooded.
$@MID@$: 41
Date: Thu, 13 Aug 2009 08:36:43 +0200
Creation Time: 13 Aug 2009 08:35:49
Watch:
Position: N 40.67049000, W 70.29915167, 49.82 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 7690
Category: Nav
Subject: ship speed to 2.5 knots
Attachment:
Encoding: HTML
==========
 Slowed ship while troubleshooting gun issue.
$@MID@$: 42
Date: Thu, 13 Aug 2009 08:53:22 +0200
Creation Time: 13 Aug 2009 08:51:27
Watch: NCM
Position: N 40.66009333, W 70.29411333, 50.49 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number: 7381
Category: Nav-EOL
Subject: End of Line 3
Attachment:
Encoding: HTML
==========
Guns have been offline for awhile, stopping acquisition.

Last good shot: 7381

Guns have been offline for more than 5 minues; shooting cannot resume. Performing scheduled gun maintenence early. Planning to make a slow turn around to come back on Line 3 ahead of shot 7381 and 30 minutes after civil twillight.

$@MID@$: 43
Date: Thu, 13 Aug 2009 09:06:25 +0200
Creation Time: 13 Aug 2009 09:05:55
Watch: NCM
Position: N 40.65223167, W 70.28967000, 51.39 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Compressor

Subject: starting compressor maintenence
Attachment:
Encoding: HTML
==========

$@MID@$: 44
Date: Thu, 13 Aug 2009 09:11:25 +0200
Creation Time: 13 Aug 2009 09:09:14
Watch:
Position: N 40.64888333, W 70.28814333, 51.70 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Nav
Subject: starting turn back onto Line 3
Attachment:
Encoding: HTML
==========

$@MID@$: 45
Date: Thu, 13 Aug 2009 09:30:11 +0200
Creation Time: 13 Aug 2009 09:28:15
Watch: BD
Position: N 40.63014833, W 70.28466500, 53.64 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Guns crossing streamer
Attachment:
Encoding: HTML
==========
 Guns have crossed streamer; we are done doing maintenance and will do some maneuvering of the ship to try to uncross guns and streamer.
$@MID@$: 46
Date: Thu, 13 Aug 2009 09:51:49 +0200
Creation Time: 13 Aug 2009 09:50:57
Watch: BD
Position: N 40.61827833, W 70.27344167, 54.96 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Going to pull guns
Attachment:
Encoding: HTML
==========
 Pulling guns from water to try to undo cross-over of guns and streamer.
$@MID@$: 47
Date: Thu, 13 Aug 2009 10:28:31 +0200
Creation Time: 13 Aug 2009 10:25:51
Watch: BD
Position: N 40.61925833, W 70.24798667, 53.84 m
Science Operations: Transit | MCS Streamer | Knudsen

Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Guns and streamer uncrossed
Attachment:
Encoding: HTML
==========
Guns were pulled in near ship but not out of water. Pulled streamer starboard and guns port. This got streamer and guns back in line and uncrossed. Now working on towing guns farther port and streamer farther starboard to make turns easier and cross-overs less likely.
$@MID@$: 48
Date: Thu, 13 Aug 2009 10:58:57 +0200
Creation Time: 13 Aug 2009 10:49:42
Watch: BD
Position: N 40.63625333, W 70.23141333, 51.49 m
Science Operations: Transit | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Comment
Subject: Underway back to Line 3 where guns stopped near cross with Line 14
Attachment:
Encoding: HTML
==========
Gear is uncrossed and we are turning back to get on Line 3 going south to finish line. Need to try to keep speed up near 4 kts and especially during turns. Going to pay special attention to turns to prevent crossing again.
$@MID@$: 49
Date: Thu, 13 Aug 2009 11:51:38 +0200
Creation Time: 13 Aug 2009 11:51:10
Watch: NCM
Position: N 40.69238167, W 70.26827333, 45.97 m
Science Operations: MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Ramp up can begin at 12:20
Attachment:
Encoding: HTML
==========
 MMO have been observing since 11:50.
$@MID@$: 50
Date: Thu, 13 Aug 2009 12:05:41 +0200
Creation Time: 13 Aug 2009 12:05:25
Watch: NCM
Position: N 40.70780667, W 70.27913000, 46.13 m
Science Operations: MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Compressor
Subject: Starting compressor
Attachment:
Encoding: HTML
==========

$@MID@$: 51
Date: Thu, 13 Aug 2009 12:22:26 +0200
Creation Time: 13 Aug 2009 12:21:06
Watch: NCM
Position: N 40.72682167, W 70.29256500, 47.20 m
Science Operations: MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: MMO
Subject: Cleared for ramp-up
Attachment:
Encoding: HTML
==========
 MMO reported that the safety radius has been clear for 30 minutes.
 Ramp up can begin when compressor is ready.
$@MID@$: 52
Date: Thu, 13 Aug 2009 12:26:35 +0200
Creation Time: 13 Aug 2009 12:26:24
Watch: NCM
Position: N 40.73150667, W 70.29597833, 47.42 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Begin ramp-up
Attachment:
Encoding: HTML
==========
 Second gun can come online at 12:31:24.
$@MID@$: 53
Date: Thu, 13 Aug 2009 12:26:51 +0200
Creation Time: 13 Aug 2009 12:26:37
Watch: NCM
Position: N 40.73182000, W 70.29626667, 47.70 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Nav
Subject: Starting turn back onto Line 3
Attachment:
Encoding: HTML
==========

$@MID@$: 54
Date: Thu, 13 Aug 2009 12:39:15 +0200
Creation Time: 13 Aug 2009 12:38:31
Watch: NCM
Position: N 40.73639333, W 70.31487833, 47.53 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Guns not firing
Attachment:

Encoding: HTML
==========
 MMO have been notified. Cannot build pressure in Gun 2, Gun 1 can fire.
$@MID@$: 55
Date: Thu, 13 Aug 2009 12:47:31 +0200
Creation Time: 13 Aug 2009 12:47:00
Watch: NCM
Position: N 40.72956333, W 70.32396000, 47.29 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: MMO
Subject: Gun 2 firing
Attachment:
Encoding: HTML
==========
 MMO have been notified.
$@MID@$: 56
Date: Thu, 13 Aug 2009 12:56:28 +0200
Creation Time: 13 Aug 2009 12:55:59
Watch: NCM
Position: N 40.72005833, W 70.32548000, 47.52 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Ops-Guns
Subject: Both guns online
Attachment:
Encoding: HTML
==========
 MMO have been notified.
$@MID@$: 57
Date: Thu, 13 Aug 2009 12:58:33 +0200
Creation Time: 13 Aug 2009 12:58:16
Watch: NCM
Position: N 40.71809333, W 70.32451333, 47.59 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3
Shot Number:
Category: Nav
Subject: On Line 3
Attachment:
Encoding: HTML
==========

$@MID@$: 59
Date: Thu, 13 Aug 2009 13:00:13 +0200
Creation Time: 13 Aug 2009 12:59:28
Watch: NCM
Position: N 40.71653667, W 70.32363333, 47.51 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number: 7882
Category: Nav-SOL

Subject: Start of Line 3a
Attachment:
Encoding: HTML
==========
 First shot is 7882 at 13:00:07
$@MID@$: 60
Date: Thu, 13 Aug 2009 15:19:23 +0200
Creation Time: 13 Aug 2009 15:16:46
Watch: NCM
Position: N 40.57235333, W 70.24978500, 59.08 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number:
Category: Ops-Guns
Subject: gun 2 intermittently firing generator chamber
Attachment:
Encoding: HTML
==========
Starting at ~14:45, gun 2 started intermittently firing
its generator.
$@MID@$: 61
Date: Thu, 13 Aug 2009 15:22:38 +0200
Creation Time: 13 Aug 2009 15:21:40
Watch: NCM
Position: N 40.56856000, W 70.24780500, 58.98 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number: 9587
Category: Ops-Guns
Subject: Firing 1 gun - Gun 2 disabled
Attachment:
Encoding: HTML
==========
 Gun 2 (aft gun) disabled because of intermittent generator firing.
$@MID@$: 62
Date: Thu, 13 Aug 2009 15:57:48 +0200
Creation Time: 13 Aug 2009 15:57:26
Watch: DLz
Position: N 40.53405667, W 70.23009167, 61.18 m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number:
Category: Change of Watch
Subject: Watch is DLz and NBS
Attachment:
Encoding: HTML
==========

$@MID@$: 63
Date: Thu, 13 Aug 2009 16:20:13 +0200
Creation Time: 13 Aug 2009 16:18:32
Watch: DLz
Position: N 40.51309167, W 70.21942167, 63.52 m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 3a

Shot Number: 10255
Category: Ops-Guns
Subject: Gun 2 on, Gun 1 off for testing
Attachment:
Encoding: HTML
==
 Gun 2 on and Gun 1 off for testing
$@MID@$: 64
Date: Thu, 13 Aug 2009 16:23:56 +0200
Creation Time: 13 Aug 2009 16:23:05
Watch: DLz
Position: N 40.50948000, W 70.21753833, 63.74 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number: 10325
Category:
Subject: guns on and off
Attachment:
Encoding: HTML
==
 continue testing guns, on and off, mostly off
$@MID@$: 65
Date: Thu, 13 Aug 2009 16:26:20 +0200
Creation Time: 13 Aug 2009 16:25:37
Watch: DLz
Position: N 40.50719000, W 70.21625833, 64.11 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number: 10343
Category: Ops-Guns
Subject: 2 guns firing
Attachment:
Encoding: HTML
==
 both guns firing - looks like both guns are leaking
$@MID@$: 66
Date: Thu, 13 Aug 2009 16:32:43 +0200
Creation Time: 13 Aug 2009 16:30:03
Watch: DLz
Position: N 40.50090500, W 70.21330333, 64.97 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3a
Shot Number: 10412
Category: Nav-EOL
Subject: End of Line 03a
Attachment:
Encoding: HTML
==
 End of Line 3a, at approximately half way through. Pulling guns
for fix leaks and other problems.
$@MID@$: 67
Date: Thu, 13 Aug 2009 17:06:06 +0200
Creation Time: 13 Aug 2009 17:04:53
Watch: BD
Position: N 40.49185333, W 70.18081000, 66.16 m

Science Operations: Knudsen
Line Name:
Shot Number:
Category: Ops-Recovery
Subject: Guns recovered and on deck
Attachment:
Encoding: HTML
==========
 Guns recovered to assess leaks. Sparker will be deployed and recorded on single channel and MCS streamer.
$@MID@$: 68
Date: Thu, 13 Aug 2009 17:20:02 +0200
Creation Time: 13 Aug 2009 17:19:30
Watch: NCM
Position: N 40.50100333, W 70.16477500, 65.48 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: deploying sparker
Attachment:
Encoding: HTML
==========

$@MID@$: 69
Date: Thu, 13 Aug 2009 17:27:20 +0200
Creation Time: 13 Aug 2009 17:21:14
Watch: DLz
Position: N 40.50766000, W 70.16014667, 64.73 m
Science Operations: Sparker | Knudsen
Line Name: to 1
Shot Number:
Category: Comment
Subject: transit and plan
Attachment:
Encoding: HTML
==========
 Transitting to Line 1 between XLines 15 and 9. Sparker in the water.
$@MID@$: 70
Date: Thu, 13 Aug 2009 17:36:50 +0200
Creation Time: 13 Aug 2009 17:35:21
Watch: BD
Position: N 40.51684667, W 70.15639000, 64.73 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 1 transit
Shot Number:
Category: Ops-Acquisition
Subject: Sparker is pinging
Attachment:
Encoding: HTML
==========
 Sparker is in water pinging. Tuning parameters and setting up acquisition for MCS streamer.
$@MID@$: 71

Date: Thu, 13 Aug 2009 18:01:59 +0200
Creation Time: 13 Aug 2009 18:00:50
Watch: DLz
Position: N 40.54429167, W 70.14853000, 60.26 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 1a
Shot Number: 1001
Category: Nav-SOL
Subject: Start of Line 1a
Attachment:
Encoding: HTML
==========
 ~17:55, start sparker recording on streamer. First ping is 1001 on Line 1a.
$@MID@$: 72
Date: Thu, 13 Aug 2009 19:59:51 +0200
Creation Time: 13 Aug 2009 19:58:34
Watch: NBS
Position: N 40.68365833, W 70.16743333, 45.20 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 1a
Shot Number:
Category: Change of Watch
Subject: Nancy and Whitney come on watch
Attachment:
Encoding: HTML
==========

$@MID@$: 73
Date: Thu, 13 Aug 2009 20:22:59 +0200
Creation Time: 13 Aug 2009 20:21:29
Watch: NBS
Position: N 40.70734667, W 70.18196167, 44.91 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 1a
Shot Number:
Category: Nav
Subject: Turn to line 3b
Attachment:
Encoding: HTML
==========
 Starting to turn from line 1 to line 3. It will be called line 3b
$@MID@$: 74
Date: Thu, 13 Aug 2009 21:44:07 +0200
Creation Time: 13 Aug 2009 21:42:19
Watch: WLD
Position: N 40.68871000, W 70.28281667, 47.67 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 1a
Shot Number: sparker - 10117
Category: Ops-Sparker
Subject: Red Noise Bars
Attachment:
Encoding: HTML

==========
Sparker shots around 10117, noise bars turned red in the Noise Window.
$@MID@$: 75
Date: Thu, 13 Aug 2009 21:49:41 +0200
Creation Time: 13 Aug 2009 21:48:33
Watch: WLD
Position: N 40.68312500, W 70.28564000, 48.25 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 1a
Shot Number: 10247
Category: Nav-EOL
Subject: End of Line 1a
Attachment:
Encoding: HTML
==========
 Around 21:48 - sparker removed from water.
$@MID@$: 76
Date: Thu, 13 Aug 2009 21:59:59 +0200
Creation Time: 13 Aug 2009 21:59:10
Watch: WLD
Position: N 40.67292833, W 70.29003500, 49.43 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 3b
Shot Number:
Category: Ops-Guns
Subject: Guns in Water
Attachment:
Encoding: HTML
==========
 Guns back in the water!!!! WOOHOO!!!! Time to re-run line 3 - only all the other lines to go :)
$@MID@$: 77
Date: Thu, 13 Aug 2009 23:09:14 +0200
Creation Time: 13 Aug 2009 23:08:37
Watch: NBS
Position: N 40.59628833, W 70.27033000, 60.57 m
Science Operations: MCS Streamer | Knudsen
Line Name: 3b
Shot Number:
Category: Ops-Guns
Subject: recovered guns
Attachment:
Encoding: HTML
==========
 Guns not firing. Gun string back on deck. Plan is to finish out line3 with the sparker.
$@MID@$: 78
Date: Thu, 13 Aug 2009 23:16:52 +0200
Creation Time: 13 Aug 2009 23:15:29
Watch: NBS
Position: N 40.59086167, W 70.27482667, 62.56 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Sparker

Subject: Starting of deployment of the sparker.
Attachment:
Encoding: HTML
==========
 Starting of deployment of the sparker.
$@MID@$: 79
Date: Thu, 13 Aug 2009 23:22:53 +0200
Creation Time: 13 Aug 2009 23:21:23
Watch: NBS
Position: N 40.58725333, W 70.27899833, 59.50 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Sparker
Subject: Sparker again!
Attachment:
Encoding: HTML
==========
 Sparker is in the water and firing. It will be 3c.
$@MID@$: 80
Date: Thu, 13 Aug 2009 23:28:46 +0200
Creation Time: 13 Aug 2009 23:25:05
Watch: NBS
Position: N 40.58042500, W 70.28114333, 57.84 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 10248
Category: Nav-SOL
Subject: Start of Line 3c
Attachment:
Encoding: HTML
==========
 Recording Sparker on MCS streamer.

$@MID@$: 81
Date: Fri, 14 Aug 2009 00:03:21 +0200
Creation Time: 14 Aug 2009 00:01:47
Watch: WLD
Position: N 40.53853167, W 70.23326333, 60.62 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number:
Category: Change of Watch
Subject: Whitney Watch
Attachment:
Encoding: HTML
==========
 WLD and MAP now on watch.
$@MID@$: 82
Date: Fri, 14 Aug 2009 00:19:48 +0200
Creation Time: 14 Aug 2009 00:18:56
Watch: WLD
Position: N 40.53853167, W 70.23326333, 60.62 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c

Shot Number: 12273
Category:
Subject: Back on Line 3 track
Attachment:
Encoding: HTML
==
 Back on the Line 3 track, was paralleling it.
$@MID@$: 83
Date: Fri, 14 Aug 2009 01:07:04 +0200
Creation Time: 14 Aug 2009 01:06:21
Watch: WLD
Position: N 40.48906500, W 70.20732500, 65.36 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 14151
Category: Ops-Acquisition
Subject: Serial String not Detected
Attachment:
Encoding: HTML
==

$@MID@$: 84
Date: Fri, 14 Aug 2009 01:10:47 +0200
Creation Time: 14 Aug 2009 01:10:31
Watch: WLD
Position: N 40.48586000, W 70.20561333, 66.17 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 14321
Category: Ops-Acquisition
Subject: Serial String not Detected
Attachment:
Encoding: HTML
==

$@MID@$: 85
Date: Fri, 14 Aug 2009 01:24:51 +0200
Creation Time: 14 Aug 2009 01:24:21
Watch: WLD
Position: N 40.47245000, W 70.19916667, 70.08 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 14878
Category: Ops-Acquisition
Subject: Cereal String not Detected
Attachment:
Encoding: HTML
==

$@MID@$: 86
Date: Fri, 14 Aug 2009 01:37:28 +0200
Creation Time: 14 Aug 2009 01:36:45
Watch: WLD
Position: N 40.46043167, W 70.19253667, 68.97 m
Science Operations: Sparker | MCS Streamer | Knudsen

Line Name: 3c
Shot Number: Around 15376
Category: Ops-Acquisition
Subject: Serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 87
Date: Fri, 14 Aug 2009 02:02:55 +0200
Creation Time: 14 Aug 2009 02:01:26
Watch: WLD
Position: N 40.43520000, W 70.17986500, 72.46 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 16344
Category: Ops-Acquisition
Subject: Serial String not Detected, Incomplete Data, and Trigger threshold Exceeded.
Attachment:
Encoding: HTML
==========
 Incomplete data on file 16317,

Trigger time threshold exceeded.
$@MID@$: 88
Date: Fri, 14 Aug 2009 02:07:49 +0200
Creation Time: 14 Aug 2009 02:06:56
Watch: WLD
Position: N 40.43002833, W 70.17749000, 72.73 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 16518
Category: Ops-Acquisition
Subject: Serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========
 Serial String not Detected and Incomplete Data for 16518
$@MID@$: 89
Date: Fri, 14 Aug 2009 02:18:41 +0200
Creation Time: 14 Aug 2009 02:18:17
Watch: WLD
Position: N 40.41874333, W 70.17124000, 74.34 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 18042
Category: Ops-Acquisition
Subject: Serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========
 TIME WAS REALLY AROUND 02:54
$@MID@$: 90
Date: Fri, 14 Aug 2009 02:22:32 +0200

Creation Time: 14 Aug 2009 02:22:02
Watch: WLD
Position: N 40.41434833, W 70.16967833, 74.78 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 17085
Category:
Subject: Trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 91
Date: Fri, 14 Aug 2009 02:23:44 +0200
Creation Time: 14 Aug 2009 02:22:02
Watch: WLD
Position: N 40.41434833, W 70.16967833, 74.78 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 17319?
Category:
Subject: Trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========
 (I am not sure about that Shot Number)
$@MID@$: 92
Date: Fri, 14 Aug 2009 02:31:32 +0200
Creation Time: 14 Aug 2009 02:22:02
Watch: WLD
Position: N 40.41434833, W 70.16967833, 74.78 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 17418
Category:
Subject: Trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 93
Date: Fri, 14 Aug 2009 02:33:31 +0200
Creation Time: 14 Aug 2009 02:22:02
Watch: WLD
Position: N 40.41434833, W 70.16967833, 74.78 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 17490
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 94

Date: Fri, 14 Aug 2009 02:34:45 +0200
Creation Time: 14 Aug 2009 02:18:17
Watch: WLD
Position: N 40.41874333, W 70.17124000, 74.34 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 17520
Category: Ops-Acquisition
Subject: Serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 95
Date: Fri, 14 Aug 2009 02:40:30 +0200
Creation Time: 14 Aug 2009 02:18:17
Watch: WLD
Position: N 40.41874333, W 70.17124000, 74.34 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 17722
Category: Ops-Acquisition
Subject: Serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 96
Date: Fri, 14 Aug 2009 02:40:45 +0200
Creation Time: 14 Aug 2009 02:18:17
Watch: WLD
Position: N 40.41874333, W 70.17124000, 74.34 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 17721
Category: Ops-Acquisition
Subject: Incomplete Data on File
Attachment:
Encoding: HTML
==========

$@MID@$: 97
Date: Fri, 14 Aug 2009 02:57:11 +0200
Creation Time: 14 Aug 2009 02:56:26
Watch: WLD
Position: N 40.38045000, W 70.15218833, 79.28 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: Around 18322
Category: Ops-Acquisition
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 98
Date: Fri, 14 Aug 2009 03:02:07 +0200
Creation Time: 14 Aug 2009 03:01:18
Watch: WLD
Position: N 40.37597500, W 70.14976667, 79.63 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 18402
Category: System
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 99
Date: Fri, 14 Aug 2009 03:02:20 +0200
Creation Time: 14 Aug 2009 03:01:18
Watch: WLD
Position: N 40.37597500, W 70.14976667, 79.63 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 18429
Category: System
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 100
Date: Fri, 14 Aug 2009 03:08:02 +0200
Creation Time: 14 Aug 2009 03:07:36
Watch: WLD
Position: N 40.37035167, W 70.14667500, 80.63 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 18717
Category: Ops-Acquisition
Subject: Serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 101
Date: Fri, 14 Aug 2009 03:13:08 +0200
Creation Time: 14 Aug 2009 03:12:38
Watch: WLD
Position: N 40.36489667, W 70.14442167, 81.97 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 18898
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 102
Date: Fri, 14 Aug 2009 03:14:22 +0200
Creation Time: 14 Aug 2009 03:13:32
Watch: WLD
Position: N 40.36378833, W 70.14363833, 81.61 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: about 18940
Category: Ops-Acquisition
Subject: serial String not Detected
Attachment:
Encoding: HTML
==

$@MID@$: 103
Date: Fri, 14 Aug 2009 03:19:00 +0200
Creation Time: 14 Aug 2009 03:18:42
Watch: WLD
Position: N 40.35890167, W 70.14130333, 82.58 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: About 19120
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==

$@MID@$: 104
Date: Fri, 14 Aug 2009 03:25:46 +0200
Creation Time: 14 Aug 2009 03:25:17
Watch: WLD
Position: N 40.35186333, W 70.13765500, 83.38 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: ec
Shot Number: 19322
Category: Ops-Acquisition
Subject: Serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==

$@MID@$: 105
Date: Fri, 14 Aug 2009 03:28:36 +0200
Creation Time: 14 Aug 2009 03:28:05
Watch: WLD
Position: N 40.34890667, W 70.13611500, 83.28 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19439
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML

```
========================================

$@MID@$: 106
Date: Fri, 14 Aug 2009 03:28:45 +0200
Creation Time: 14 Aug 2009 03:28:05
Watch: WLD
Position: N 40.34890667, W 70.13611500, 83.28 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19466
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
========================================

$@MID@$: 107
Date: Fri, 14 Aug 2009 03:30:27 +0200
Creation Time: 14 Aug 2009 03:30:03
Watch: WLD
Position: N 40.34687500, W 70.13523000, 83.72 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19511
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
========================================

$@MID@$: 108
Date: Fri, 14 Aug 2009 03:30:34 +0200
Creation Time: 14 Aug 2009 03:30:03
Watch: WLD
Position: N 40.34687500, W 70.13523000, 83.72 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19538
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
========================================

$@MID@$: 109
Date: Fri, 14 Aug 2009 03:34:21 +0200
Creation Time: 14 Aug 2009 03:30:03
Watch: WLD
Position: N 40.34687500, W 70.13523000, 83.72 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19667
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
```

Encoding: HTML
==========

$@MID@$: 110
Date: Fri, 14 Aug 2009 03:36:21 +0200
Creation Time: 14 Aug 2009 03:36:05
Watch: WLD
Position: N 40.34091000, W 70.13224500, 84.54 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19739
Category:
Subject: Serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 111
Date: Fri, 14 Aug 2009 03:38:57 +0200
Creation Time: 14 Aug 2009 03:38:16
Watch: WLD
Position: N 40.33853000, W 70.13083500, 84.81 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: Around 19825
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========
 Time of exceedance: 3:37:15
$@MID@$: 112
Date: Fri, 14 Aug 2009 03:39:29 +0200
Creation Time: 14 Aug 2009 03:39:16
Watch: WLD
Position: N 40.33805500, W 70.13051667, 84.59 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19862
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 113
Date: Fri, 14 Aug 2009 03:41:00 +0200
Creation Time: 14 Aug 2009 03:40:28
Watch: WLD
Position: N 40.33672333, W 70.12951167, 84.93 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19882
Category: Ops-Acquisition
Subject: Serial String not Detected and Incomplete Data

Attachment:
Encoding: HTML
==========

$@MID@$: 114
Date: Fri, 14 Aug 2009 03:41:41 +0200
Creation Time: 14 Aug 2009 03:41:15
Watch: WLD
Position: N 40.33601000, W 70.12918667, 84.77 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19884
Category: Ops-Acquisition
Subject: serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 115
Date: Fri, 14 Aug 2009 03:42:02 +0200
Creation Time: 14 Aug 2009 03:41:43
Watch: WLD
Position: N 40.33561667, W 70.12906833, 85.14 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19924
Category: Ops-Acquisition
Subject: Serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 116
Date: Fri, 14 Aug 2009 03:42:44 +0200
Creation Time: 14 Aug 2009 03:42:25
Watch: WLD
Position: N 40.33481500, W 70.12884833, 84.89 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 19970
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 117
Date: Fri, 14 Aug 2009 03:55:30 +0200
Creation Time: 14 Aug 2009 03:55:06
Watch: WLD
Position: N 40.32194500, W 70.12240833, 90.61 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20325
Category: Ops-Acquisition

Subject: Serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 118
Date: Fri, 14 Aug 2009 03:55:55 +0200
Creation Time: 14 Aug 2009 03:55:32
Watch: WLD
Position: N 40.32156500, W 70.12216000, 86.40 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20407
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 119
Date: Fri, 14 Aug 2009 03:57:33 +0200
Creation Time: 14 Aug 2009 03:57:17
Watch: WLD
Position: N 40.32004500, W 70.12123000, 86.39 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20506
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 120
Date: Fri, 14 Aug 2009 03:58:12 +0200
Creation Time: 14 Aug 2009 03:57:57
Watch: WLD
Position: N 40.31939167, W 70.12086833, 86.61 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20524
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 121
Date: Fri, 14 Aug 2009 03:59:07 +0200
Creation Time: 14 Aug 2009 03:58:50
Watch: WLD
Position: N 40.31857000, W 70.12034833, 86.80 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20560

Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==

$@MID@$: 122
Date: Fri, 14 Aug 2009 04:00:29 +0200
Creation Time: 14 Aug 2009 03:58:50
Watch: WLD
Position: N 40.31857000, W 70.12034833, 86.80 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20623
Category:
Subject: Trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==

$@MID@$: 123
Date: Fri, 14 Aug 2009 04:02:10 +0200
Creation Time: 14 Aug 2009 04:00:58
Watch: MAP
Position: N 40.31535500, W 70.11905833, 87.05 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20672
Category: Change of Watch
Subject: Midnight to 4 am watch shift
Attachment:
Encoding: HTML
==
 MAP Primary

JES Backup
$@MID@$: 124
Date: Fri, 14 Aug 2009 04:04:55 +0200
Creation Time: 14 Aug 2009 04:03:33
Watch: MAP
Position: N 40.31250000, W 70.11764167, 88.48 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3b
Shot Number: 20725, 20734
Category:
Subject: trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==

$@MID@$: 125
Date: Fri, 14 Aug 2009 04:09:35 +0200
Creation Time: 14 Aug 2009 04:07:46
Watch:
Position: N 40.30765833, W 70.11535333, 88.70 m

Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 20060, 20929
Category: Ops-Streamer
Subject: trigger Time Threshold Exceeded
Attachment:
Encoding: HTML
==========
 MAP
$@MID@$: 126
Date: Fri, 14 Aug 2009 04:16:00 +0200
Creation Time: 14 Aug 2009 04:13:54
Watch: JES
Position: N 40.30139667, W 70.11180333, 89.77 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: 21100
Category: Ops-Sparker
Subject: Trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 127
Date: Fri, 14 Aug 2009 04:17:00 +0200
Creation Time: 14 Aug 2009 04:16:05
Watch: JES
Position: N 40.30041167, W 70.11108167, 89.85 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: 21136
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 128
Date: Fri, 14 Aug 2009 04:18:48 +0200
Creation Time: 14 Aug 2009 04:18:02
Watch: JES
Position: N 40.29845000, W 70.11035667, 89.90 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: 21245
Category:
Subject: Trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 129
Date: Fri, 14 Aug 2009 04:20:25 +0200
Creation Time: 14 Aug 2009 04:19:46
Watch: JES

Position: N 40.29663500, W 0.10976667, 89.88 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: 21236
Category:
Subject: Incomplete Data on File
Attachment:
Encoding: HTML
==========

$@MID@$: 130
Date: Fri, 14 Aug 2009 04:21:41 +0200
Creation Time: 14 Aug 2009 04:21:12
Watch: JES
Position: N 40.29529667, W 70.10921667, 90.23 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: 21363
Category:
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 131
Date: Fri, 14 Aug 2009 04:29:35 +0200
Creation Time: 14 Aug 2009 04:21:50
Watch: MAP
Position: N 40.28767500, W 70.10532500, 90.76 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 21400, 21415, 21650
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========
also, incomplete data on file <span class="Apple-style-span"
style="font-family: 'Lucida Grande'; font-size: 11px; white-space: pre;
">21415
$@MID@$: 132
Date: Fri, 14 Aug 2009 04:32:13 +0200
Creation Time: 14 Aug 2009 04:29:40
Watch: MAP
Position: N 40.28541833, W 70.10381833, 91.66 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 21728
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 133

Date: Fri, 14 Aug 2009 04:34:42 +0200
Creation Time: 14 Aug 2009 04:32:17
Watch: MAP
Position: N 40.28322667, W 70.10248667, 91.25 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 21827
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 134
Date: Fri, 14 Aug 2009 04:40:52 +0200
Creation Time: 14 Aug 2009 04:34:45
Watch: MAP
Position: N 40.27730833, W 70.09991833, 96.68 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 22061
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 135
Date: Fri, 14 Aug 2009 04:44:55 +0200
Creation Time: 14 Aug 2009 04:40:57
Watch: MAP
Position: N 40.27375167, W 70.09801167, 92.48 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 22285
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 136
Date: Fri, 14 Aug 2009 04:54:23 +0200
Creation Time: 14 Aug 2009 04:44:58
Watch: MAP
Position: N 40.26508667, W 70.09378833, 93.29 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 22304,22336,22493,22530
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 137
Date: Fri, 14 Aug 2009 05:04:45 +0200
Creation Time: 14 Aug 2009 04:54:26
Watch: MAP
Position: N 40.25586167, W 70.08902167, 94.53 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 22918, 22657
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 138
Date: Fri, 14 Aug 2009 05:22:21 +0200
Creation Time: 14 Aug 2009 05:04:48
Watch: MAP
Position: N 40.24005500, W 70.08068500, 95.63 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 23422, 23533
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 139
Date: Fri, 14 Aug 2009 05:39:05 +0200
Creation Time: 14 Aug 2009 05:38:36
Watch: MAP
Position: N 40.22451000, W 70.07303333, 97.12 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 23777
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 140
Date: Fri, 14 Aug 2009 05:39:31 +0200
Creation Time: 14 Aug 2009 05:39:08
Watch: MAP
Position: N 40.22407500, W 70.07291500, 97.00 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 24133
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 141
Date: Fri, 14 Aug 2009 06:02:01 +0200
Creation Time: 14 Aug 2009 06:01:33
Watch: MAP
Position: N 40.20302500, W 70.06227000, 99.76 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 24355
Category: Ops-Sparker
Subject: serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 142
Date: Fri, 14 Aug 2009 06:02:47 +0200
Creation Time: 14 Aug 2009 06:02:03
Watch: MAP
Position: N 40.20226667, W 70.06190333, 99.47 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 24950
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 143
Date: Fri, 14 Aug 2009 06:25:34 +0200
Creation Time: 14 Aug 2009 06:25:08
Watch: MAP
Position: N 40.18127667, W 70.05108500, 102.26 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 25805
Category: Ops-Sparker
Subject: serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 144
Date: Fri, 14 Aug 2009 06:31:24 +0200
Creation Time: 14 Aug 2009 06:30:56
Watch: MAP
Position: N 40.17589167, W 70.04820500, 103.57 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 26011
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML

```
========================================

$@MID@$: 145
Date: Fri, 14 Aug 2009 06:47:07 +0200
Creation Time: 14 Aug 2009 06:46:44
Watch: MAP
Position: N 40.16100167, W 70.04081500, 108.14 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 36353
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
========================================

$@MID@$: 146
Date: Fri, 14 Aug 2009 06:47:33 +0200
Creation Time: 14 Aug 2009 06:47:10
Watch: MAP
Position: N 40.16057333, W 70.04066167, 108.30 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 26594
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
========================================

$@MID@$: 147
Date: Fri, 14 Aug 2009 07:10:39 +0200
Creation Time: 14 Aug 2009 07:09:43
Watch: MAP
Position: N 40.13792167, W 70.02930833, 117.10 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 26939, 27194, 27416
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
========================================

$@MID@$: 148
Date: Fri, 14 Aug 2009 07:35:19 +0200
Creation Time: 14 Aug 2009 07:34:38
Watch: MAP
Position: N 40.11450667, W 70.01745667, 125.85 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 27809, 27913, 28196
Category: Ops-Sparker
Subject: serial String not Detected and Incomplete Data
Attachment:
```

Encoding: HTML
==========

$@MID@$: 149
Date: Fri, 14 Aug 2009 07:35:44 +0200
Creation Time: 14 Aug 2009 07:35:21
Watch: MAP
Position: N 40.11410333, W 70.01729500, 126.30 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 28314
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 150
Date: Fri, 14 Aug 2009 07:40:25 +0200
Creation Time: 14 Aug 2009 07:39:55
Watch: MAP
Position: N 40.10997167, W 70.01491333, 127.10 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 28491, 28521
Category: Ops-Sparker
Subject: trigger Threshold Exceeded
Attachment:
Encoding: HTML
==========

$@MID@$: 151
Date: Fri, 14 Aug 2009 07:48:10 +0200
Creation Time: 14 Aug 2009 07:47:42
Watch: MAP
Position: N 40.10298833, W 70.01127167, 130.95 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 3c
Shot Number: 28597, 28799
Category:
Subject: serial String not Detected and Incomplete Data
Attachment:
Encoding: HTML
==========

$@MID@$: 152
Date: Fri, 14 Aug 2009 07:54:00 +0200
Creation Time: 14 Aug 2009 07:52:45
Watch: JES
Position: N 40.09748000, W 70.00920333, 135.58 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number: 28888
Category: Nav-EOL
Subject: End of Sparker Line 3 at shot 28888

Attachment:
Encoding: HTML
==========

$@MID@$: 153
Date: Fri, 14 Aug 2009 08:03:51 +0200
Creation Time: 14 Aug 2009 08:03:27
Watch: JES
Position: N 40.08750667, W 70.00635000, 140.45 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 154
Date: Fri, 14 Aug 2009 08:11:42 +0200
Creation Time: 14 Aug 2009 08:10:49
Watch: NCM
Position: N 40.08293667, W 69.99838667, 141.96 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 2889
Category: Nav-SOL
Subject: Start of Line turn3_1
Attachment:
Encoding: HTML
==========
 Recording sparker on MCS streamer through turn.
$@MID@$: 155
Date: Fri, 14 Aug 2009 09:06:00 +0200
Creation Time: 14 Aug 2009 09:05:20
Watch: NCM
Position: N 40.07984333, W 69.92333667, 128.74 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 3950
Category: Ops-Sparker
Subject: Sparker not triggering acquisition
Attachment:
Encoding: HTML
==========
Acquisition did not receive trigger from sparker for shots 30950-
30970. Resolved by shot 30971.
$@MID@$: 156
Date: Fri, 14 Aug 2009 09:47:07 +0200
Creation Time: 14 Aug 2009 09:46:59
Watch: NCM
Position: N 40.08651667, W 69.86731167, 116.75 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 32600

Category: MMO-shutdown
Subject: Shutdown for dolphins.
Attachment:
Encoding: HTML
==
 Shutdown for dolphins within safety radius. Shooting can resume if animals have left safety radius by 10:17.
$@MID@$: 157
Date: Fri, 14 Aug 2009 09:54:46 +0200
Creation Time: 14 Aug 2009 09:54:41
Watch: NCM
Position: N 40.09403833, W 69.86362833, 114.18 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 326333
Category: MMO
Subject: Resumed sparking
Attachment:
Encoding: HTML
==
 Dolphins have left safety radius, sparking can resume.
$@MID@$: 158
Date: Fri, 14 Aug 2009 10:10:41 +0200
Creation Time: 14 Aug 2009 10:10:07
Watch: JES
Position: N 40.11067000, W 69.87520500, 110.62 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 326333
Category:
Subject: Start of new line, line 1
Attachment:
Encoding: HTML
==

$@MID@$: 159
Date: Fri, 14 Aug 2009 10:18:08 +0200
Creation Time: 14 Aug 2009 10:17:09
Watch: JES
Position: N 40.11912167, W 69.87940833, 107.55 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 33492
Category: Ops-Sparker
Subject: Trigger Threshold Exceeded
Attachment:
Encoding: HTML
==

$@MID@$: 160
Date: Fri, 14 Aug 2009 10:18:53 +0200
Creation Time: 14 Aug 2009 10:18:15
Watch: JES

Position: N 40.12000333, W 69.87983167, 107.23 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number:
Category:
Subject: started recording knudsen on line 1
Attachment:
Encoding: HTML
==

$@MID@$: 161
Date: Fri, 14 Aug 2009 10:22:04 +0200
Creation Time: 14 Aug 2009 10:21:36
Watch: JES
Position: N 40.12359167, W 69.88163000, 106.14 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 33647
Category:
Subject: overdriven Channel Message
Attachment:
Encoding: HTML
==

$@MID@$: 162
Date: Fri, 14 Aug 2009 10:28:02 +0200
Creation Time: 14 Aug 2009 10:27:20
Watch: JES
Position: N 40.13046667, W 69.88532667, 108.10 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 33756
Category: Ops-Sparker
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==

$@MID@$: 163
Date: Fri, 14 Aug 2009 10:28:34 +0200
Creation Time: 14 Aug 2009 10:28:04
Watch: JES
Position: N 40.13107500, W 69.88563833, 105.72 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 33829
Category: Ops-Sparker
Subject: overdriven Channel Message
Attachment:
Encoding: HTML
==

$@MID@$: 164
Date: Fri, 14 Aug 2009 11:02:36 +0200
Creation Time: 14 Aug 2009 11:02:16

Watch: JES
Position: N 40.16984667, W 69.90494833, 99.63 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 34001
Category:
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 165
Date: Fri, 14 Aug 2009 11:03:03 +0200
Creation Time: 14 Aug 2009 11:02:37
Watch: JES
Position: N 40.17035167, W 69.90519167, 99.02 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 34087
Category:
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 166
Date: Fri, 14 Aug 2009 11:04:03 +0200
Creation Time: 14 Aug 2009 11:03:06
Watch: JES
Position: N 40.17146667, W 69.90566833, 98.79 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 34309
Category:
Subject: overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 167
Date: Fri, 14 Aug 2009 11:04:52 +0200
Creation Time: 14 Aug 2009 11:04:06
Watch: JES
Position: N 40.17230667, W 69.90629167, 99.00 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 35029
Category:
Subject: Overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 168
Date: Fri, 14 Aug 2009 11:05:12 +0200

Creation Time: 14 Aug 2009 11:04:55
Watch: JES
Position: N 40.17265167, W 69.90654500, 99.10 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 35057
Category:
Subject: overdriven Channel Message
Attachment:
Encoding: HTML
==========

$@MID@$: 169
Date: Fri, 14 Aug 2009 11:05:56 +0200
Creation Time: 14 Aug 2009 11:05:15
Watch: JES
Position: N 40.17343833, W 69.90711167, 98.83 m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: turn3_1
Shot Number: 35363
Category:
Subject: End of line turn3_1, line 1 sparker
Attachment:
Encoding: HTML
==========

$@MID@$: 170
Date: Fri, 14 Aug 2009 11:31:15 +0200
Creation Time: 14 Aug 2009 11:27:28
Watch: BD
Position: N 40.19753167, W 69.91932500, 95.28 m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Deployment
Subject: GI guns are in the water
Attachment:
Encoding: HTML
==========
 Getting ready to start line 1 with GI guns after rebuild of GI guns.
Going north on Line 1 just north of Line 11.
$@MID@$: 171
Date: Fri, 14 Aug 2009 11:44:28 +0200
Creation Time: 14 Aug 2009 11:43:23
Watch: JES
Position: N 40.20797833, W 69.92444000, 93.21 m
Science Operations: MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: gun 1 is firing
Attachment:
Encoding: HTML
==========

$@MID@$: 172
Date: Fri, 14 Aug 2009 11:55:25 +0200
Creation Time: 14 Aug 2009 11:54:55
Watch: JES
Position: N 40.21689500, W 69.92879500, 96.11 m
Science Operations: MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category:
Subject: Air guns are off
Attachment:
Encoding: HTML
==========

$@MID@$: 173
Date: Fri, 14 Aug 2009 13:11:05 +0200
Creation Time: 14 Aug 2009 13:10:38
Watch: JES
Position: N 40.28017833, W 69.95170000, 88.01 m
Science Operations: MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Deployment
Subject: recovering the streamer
Attachment:
Encoding: HTML
==========

$@MID@$: 174
Date: Fri, 14 Aug 2009 15:00:45 +0200
Creation Time: 14 Aug 2009 15:00:13
Watch: NCM
Position: N 40.36362667, W 69.97274500, 85.24 m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Ops-Recovery
Subject: Streamer recovered
Attachment:
Encoding: HTML
==========

$@MID@$: 175
Date: Fri, 14 Aug 2009 21:31:20 +0200
Creation Time: 14 Aug 2009 21:29:47
Watch: NBS
Position: N 40.12878167, W 69.85820500, 104.70 m
Science Operations: MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Deployment
Subject: deploying the streamer
Attachment:
Encoding: HTML
==========

 Deploying the streamer. Voltage was leaking from the tow leader. We have removed the two leader and are towing from a stretch section wrapped on the drum. We also removed 150 meters from the tail end, 100 meters of GeoEel and 50 meters of experimental to decrease tension.
$@MID@$: 176
Date: Fri, 14 Aug 2009 22:22:30 +0200
Creation Time: 14 Aug 2009 22:22:01
Watch: NBS
Position: N 40.16638667, W 69.87108000, m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: First Shot Fired, Not Recorded
Attachment:
Encoding: HTML
==========

$@MID@$: 177
Date: Fri, 14 Aug 2009 22:28:33 +0200
Creation Time: 14 Aug 2009 22:28:08
Watch: NBS
Position: N 40.16845500, W 69.87948500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: Two Guns Firing
Attachment:
Encoding: HTML
==========

$@MID@$: 178
Date: Fri, 14 Aug 2009 22:29:25 +0200
Creation Time: 14 Aug 2009 22:28:55
Watch: NBS
Position: N 40.16880500, W 69.88069500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: Setting Guns to Fire at 6 seconds
Attachment:
Encoding: HTML
==========

$@MID@$: 179
Date: Fri, 14 Aug 2009 22:58:31 +0200
Creation Time: 14 Aug 2009 22:57:29
Watch: NBS
Position: N 40.18690167, W 69.91277333, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 10413
Category: Nav-SOL

Subject: Start of Line 1
Attachment:
Encoding: HTML
==========

$@MID@$: 180
Date: Fri, 14 Aug 2009 23:04:48 +0200
Creation Time: 14 Aug 2009 23:03:49
Watch: NBS
Position: N 40.19307000, W 69.91660667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 10479
Category: Ops-Guns
Subject: Stop Firing on Line 1
Attachment:
Encoding: HTML
==========
 Stopped guns to check filters because the guns were losing pressure.
$@MID@$: 181
Date: Fri, 14 Aug 2009 23:34:49 +0200
Creation Time: 14 Aug 2009 23:34:18
Watch: WLD
Position: N 40.22358500, W 69.93216500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: Gun 1 is Firing -
Attachment:
Encoding: HTML
==========
 NOT RECording shots
$@MID@$: 182
Date: Fri, 14 Aug 2009 23:50:24 +0200
Creation Time: 14 Aug 2009 23:50:11
Watch: WLD
Position: N 40.23952667, W 69.94048667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: No Guns Firing
Attachment:
Encoding: HTML
==========

$@MID@$: 183
Date: Sat, 15 Aug 2009 00:02:01 +0200
Creation Time: 15 Aug 2009 00:01:41
Watch: WLD
Position: N 40.25258833, W 69.94729333, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen

Line Name: 1
Shot Number:
Category: Change of Watch
Subject: Whitney On Watch
Attachment:
Encoding: HTML
==========

$@MID@$: 184
Date: Sat, 15 Aug 2009 00:03:21 +0200
Creation Time: 15 Aug 2009 00:02:03
Watch: WLD
Position: N 40.25258833, W 69.94729333, m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: Gun 1 is firing -
Attachment:
Encoding: HTML
==========
 Not Recording Fires Yet
$@MID@$: 185
Date: Sat, 15 Aug 2009 00:09:51 +0200
Creation Time: 15 Aug 2009 00:09:29
Watch: WLD
Position: N 40.25967500, W 69.95056000, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number:
Category: Ops-Guns
Subject: Two guns firing, not recording
Attachment:
Encoding: HTML
==========

$@MID@$: 186
Date: Sat, 15 Aug 2009 00:12:14 +0200
Creation Time: 15 Aug 2009 00:11:51
Watch:
Position: N 40.26214500, W 69.95219833, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 10480
Category: Ops-Guns
Subject: First Shot 10480 - NOW FIRING
Attachment:
Encoding: HTML
==========

$@MID@$: 187
Date: Sat, 15 Aug 2009 04:00:41 +0200
Creation Time: 15 Aug 2009 03:59:00
Watch: MAP
Position: N 40.51221167, W 70.07973833, m

Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1b(?)
Shot Number: 12766
Category: Change of Watch
Subject: midnight to 4 am watch shift
Attachment:
Encoding: HTML
==========

$@MID@$: 188
Date: Sat, 15 Aug 2009 08:06:12 +0200
Creation Time: 15 Aug 2009 08:05:50
Watch: JES
Position: N 40.81974167, W 70.23805000, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 15223
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 189
Date: Sat, 15 Aug 2009 08:12:41 +0200
Creation Time: 15 Aug 2009 08:11:47
Watch: JES
Position: N 40.82737667, W 70.24196167, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 15280
Category: Ops-Streamer
Subject: tail streamer has been running about a meter deep
Attachment:
Encoding: HTML
==========

$@MID@$: 190
Date: Sat, 15 Aug 2009 08:17:32 +0200
Creation Time: 15 Aug 2009 08:16:55
Watch: JES
Position: N 40.83293000, W 70.24466500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 15333
Category: Ops-Streamer
Subject: tail streamer still running about a meter deep
Attachment:
Encoding: HTML
==========

$@MID@$: 191
Date: Sat, 15 Aug 2009 08:22:02 +0200
Creation Time: 15 Aug 2009 08:21:18
Watch: JES

Position: N 40.83804000, W 70.24731500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 15378
Category: Ops-Streamer
Subject: tail streamer about 1.5 meters to deep
Attachment:
Encoding: HTML
==

$@MID@$: 192
Date: Sat, 15 Aug 2009 08:38:06 +0200
Creation Time: 15 Aug 2009 08:37:41
Watch: JES
Position: N 40.85602500, W 70.25640833, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 15540
Category: Ops-Streamer
Subject: streamer is back in line
Attachment:
Encoding: HTML
==

$@MID@$: 193
Date: Sat, 15 Aug 2009 09:26:39 +0200
Creation Time: 15 Aug 2009 09:17:28
Watch: JES
Position: N 40.91104333, W 70.28517167, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 16024
Category:
Subject: tail streamer has been running about a meter deep
Attachment:
Encoding: HTML
==

$@MID@$: 194
Date: Sat, 15 Aug 2009 09:30:53 +0200
Creation Time: 15 Aug 2009 09:30:26
Watch: JES
Position: N 40.91555167, W 70.28723500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 16050
Category: Ops-Streamer
Subject: streamer was at surface
Attachment:
Encoding: HTML
==

$@MID@$: 195
Date: Sat, 15 Aug 2009 09:53:31 +0200
Creation Time: 15 Aug 2009 09:53:06

Watch: JES
Position: N 40.93897000, W 70.29926667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 16290
Category: Ops-Streamer
Subject: tail of streamer 2 meters too deep
Attachment:
Encoding: HTML
==========

$@MID@$: 196
Date: Sat, 15 Aug 2009 11:51:37 +0200
Creation Time: 15 Aug 2009 11:50:47
Watch: JES
Position: N 41.05711667, W 70.36054833, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 17472
Category: Change of Watch
Subject: NCM DLZ on watch
Attachment:
Encoding: HTML
==========

$@MID@$: 197
Date: Sat, 15 Aug 2009 12:56:38 +0200
Creation Time: 15 Aug 2009 12:54:56
Watch: JES
Position: N 41.12627000, W 70.39305167, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 18114
Category: System
Subject: Ship turned off the line
Attachment:
Encoding: HTML
==========

$@MID@$: 198
Date: Sat, 15 Aug 2009 12:57:42 +0200
Creation Time: 15 Aug 2009 12:57:14
Watch: JES
Position: N 41.12735833, W 70.39384000, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 18136
Category:
Subject: ship back on the line
Attachment:
Encoding: HTML
==========

$@MID@$: 199
Date: Sat, 15 Aug 2009 14:03:35 +0200

Creation Time: 15 Aug 2009 14:02:05
Watch: JES
Position: N 41.19647667, W 70.43470667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 18780
Category: Ops-Guns
Subject: Guns stopped firing, near crosspoint with line 12
Attachment:
Encoding: HTML
==========
 compressor overheated, checking problem
$@MID@$: 200
Date: Sat, 15 Aug 2009 14:22:26 +0200
Creation Time: 15 Aug 2009 14:22:01
Watch: JES
Position: N 41.21581167, W 70.44587500, m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 18983
Category: Ops-Guns
Subject: First gun firing
Attachment:
Encoding: HTML
==========

$@MID@$: 201
Date: Sat, 15 Aug 2009 14:26:02 +0200
Creation Time: 15 Aug 2009 14:24:58
Watch: WLD
Position: N 41.21918333, W 70.44815667, m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 18980
Category: Ops-Guns
Subject: gun 1 started firing and recording
Attachment:
Encoding: HTML
==========

$@MID@$: 202
Date: Sat, 15 Aug 2009 14:28:10 +0200
Creation Time: 15 Aug 2009 14:27:44
Watch: WLD
Position: N 41.22121000, W 70.44888500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 19042
Category: Ops-Guns
Subject: Two Guns firing
Attachment:
Encoding: HTML
==========

$@MID@$: 203

Date: Sat, 15 Aug 2009 14:42:46 +0200
Creation Time: 15 Aug 2009 14:42:24
Watch: WLD
Position: N 41.23088833, W 70.46371000, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 1
Shot Number: 19189
Category: Nav-EOL
Subject: End of Line 1
Attachment:
Encoding: HTML
==========

$@MID@$: 204
Date: Sat, 15 Aug 2009 14:43:16 +0200
Creation Time: 15 Aug 2009 14:42:49
Watch: WLD
Position: N 41.23084000, W 70.46448000, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 21
Shot Number: 19189
Category: Nav-SOL
Subject: Start of Line 21
Attachment:
Encoding: HTML
==========
 Still being recorded by the data acquisition system as Line 1.
$@MID@$: 205
Date: Sat, 15 Aug 2009 16:43:43 +0200
Creation Time: 15 Aug 2009 16:42:43
Watch: WLD
Position: N 41.22033667, W 70.65551833, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 21
Shot Number: 20397
Category: Nav-EOL
Subject: End of Line 21
Attachment:
Encoding: HTML
==========

$@MID@$: 206
Date: Sat, 15 Aug 2009 16:44:05 +0200
Creation Time: 15 Aug 2009 16:43:48
Watch: WLD
Position: N 41.22033167, W 70.65607167, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 21
Shot Number:
Category: Ops-Guns
Subject: Guns Shut Down
Attachment:
Encoding: HTML
==========

$@MID@$: 207
Date: Sat, 15 Aug 2009 18:07:22 +0200
Creation Time: 15 Aug 2009 18:06:50
Watch: WLD
Position: N 41.16867167, W 70.64133833, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 12
Shot Number:
Category: Ops-Guns
Subject: Gun 1 Up and Getting Ready to start line 12
Attachment:
Encoding: HTML
==========

$@MID@$: 208
Date: Sat, 15 Aug 2009 18:21:28 +0200
Creation Time: 15 Aug 2009 18:21:06
Watch: WLD
Position: N 41.17103667, W 70.62171500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 12
Shot Number:
Category: Ops-Guns
Subject: Two guns firing, not recording
Attachment:
Encoding: HTML
==========

$@MID@$: 209
Date: Sat, 15 Aug 2009 18:21:58 +0200
Creation Time: 15 Aug 2009 18:21:30
Watch: WLD
Position: N 41.17110500, W 70.62104667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 12
Shot Number: 20398
Category: Nav-SOL
Subject: Start of Line 12 and recording
Attachment:
Encoding: HTML
==========

$@MID@$: 210
Date: Sat, 15 Aug 2009 21:47:15 +0200
Creation Time: 15 Aug 2009 21:46:19
Watch: BD
Position: N 41.20808333, W 70.31233667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 12
Shot Number: 22444
Category: Nav-EOL
Subject: End of Line 12
Attachment:
Encoding: HTML
==========

 End of line 12. Shut down guns to add oil then start up again on line 5a to move to line 7.
$@MID@$: 211
Date: Sat, 15 Aug 2009 21:55:33 +0200
Creation Time: 15 Aug 2009 21:54:52
Watch: NBS
Position: N 41.20726833, W 70.29929667, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: turning
Shot Number:
Category:
Subject: starting up both guns
Attachment:
Encoding: HTML
==========

$@MID@$: 212
Date: Sat, 15 Aug 2009 22:03:02 +0200
Creation Time: 15 Aug 2009 21:59:31
Watch: BD
Position: N 41.20174667, W 70.29121500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 5a
Shot Number: 22445
Category: Nav-SOL
Subject: Start of Line 5a
Attachment:
Encoding: HTML
==========
 Portion of Line 5 between Lines 12 and 7 collected during transit from line 12 to 7.
$@MID@$: 213
Date: Sat, 15 Aug 2009 22:26:07 +0200
Creation Time: 15 Aug 2009 22:25:04
Watch: WLD
Position: N 41.17677667, W 70.27776000, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 5a
Shot Number: around 22674
Category: Ops-Streamer
Subject: Birds up at surface, quickly went back to right locations
Attachment:
Encoding: HTML
==========
 Could have been bad scan
$@MID@$: 214
Date: Sat, 15 Aug 2009 22:32:35 +0200
Creation Time: 15 Aug 2009 22:31:45
Watch: WLD
Position: N 41.17033167, W 70.27427500, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 5a
Shot Number:
Category: Nav
Subject: Ship lost connection to GPS to Auto Navigation

Attachment:
Encoding: HTML
==========
 <span class="Apple-style-span" style="font-family: 'Lucida Grande';
font-size: 11px; white-space: pre; ">Ship lost connection to GPS to Auto
Navigation, we are still able to record Lat and Long
$@MID@$: 215
Date: Sat, 15 Aug 2009 22:36:27 +0200
Creation Time: 15 Aug 2009 22:35:51
Watch: WLD
Position: N 41.16646000, W 70.27269833, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 5a
Shot Number: 22776
Category: Nav-EOL
Subject: End of Line 5a
Attachment:
Encoding: HTML
==========

$@MID@$: 216
Date: Sat, 15 Aug 2009 22:41:59 +0200
Creation Time: 15 Aug 2009 22:41:26
Watch: WLD
Position: N 41.16016333, W 70.27392333, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 7
Shot Number: 22777
Category: Nav-SOL
Subject: Start of Line 7
Attachment:
Encoding: HTML
==========
 Actually turning on to Line 7 - curvy part!

$@MID@$: 217
Date: Sun, 16 Aug 2009 00:03:44 +0200
Creation Time: 16 Aug 2009 00:03:04
Watch: WLD
Position: N 41.12643333, W 70.37840167, m
Science Operations: GI-1 | GI-2 | MCS Streamer | Knudsen
Line Name: 7
Shot Number: 23596
Category: Change of Watch
Subject: Whitney On Watch
Attachment:
Encoding: HTML
==========

$@MID@$: 218
Date: Sun, 16 Aug 2009 00:30:17 +0200
Creation Time: 16 Aug 2009 00:29:31
Watch: WLD
Position: N 41.11520667, W 70.41707000, m
Science Operations: GI-2 | MCS Streamer | Knudsen

Line Name: 7
Shot Number: 23858
Category: Ops-Guns
Subject: Going to One Gun (Gun2)
Attachment:
Encoding: HTML
==========
 Went down to one gun because the first stage in the compressor was over 400 degrees.
$@MID@$: 219
Date: Sun, 16 Aug 2009 01:35:15 +0200
Creation Time: 16 Aug 2009 01:34:30
Watch: BD
Position: N 41.08813833, W 70.50839000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 7
Shot Number: 24502
Category: Ops-Guns
Subject: Guns shut down to add oil
Attachment:
Encoding: HTML
==========

$@MID@$: 220
Date: Sun, 16 Aug 2009 01:38:55 +0200
Creation Time: 16 Aug 2009 01:38:29
Watch: WLD
Position: N 41.08648167, W 70.51370333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 7
Shot Number: 24548
Category: Ops-Guns
Subject: Air Guns Back On
Attachment:
Encoding: HTML
==========

$@MID@$: 221
Date: Sun, 16 Aug 2009 01:46:42 +0200
Creation Time: 16 Aug 2009 01:45:42
Watch: BD
Position: N 41.08317167, W 70.52512833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 7
Shot Number: 24616
Category: Nav-EOL
Subject: End of Line 7
Attachment:
Encoding: HTML
==========
 End of line 7. Starting turn to Line 13. Turn will be recorded as start of Line 13 on acquisition side.
$@MID@$: 222
Date: Sun, 16 Aug 2009 01:49:47 +0200
Creation Time: 16 Aug 2009 00:57:37

Watch: WLD
Position: N 41.08076167, W 70.52859667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 24617
Category: Nav-SOL
Subject: Start of Line 13 - turning
Attachment:
Encoding: HTML
==========
 This recording the Turn into Line 13
$@MID@$: 223
Date: Sun, 16 Aug 2009 04:02:51 +0200
Creation Time: 16 Aug 2009 04:02:12
Watch: WLD
Position: N 40.95912667, W 70.44831667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 25947
Category: Nav-SOL
Subject: Start of Line 13 - ship on line 13 track after turn
Attachment:
Encoding: HTML
==========

$@MID@$: 224
Date: Sun, 16 Aug 2009 04:43:38 +0200
Creation Time: 16 Aug 2009 04:43:08
Watch: MAP
Position: N 40.97621000, W 70.39831500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 26361
Category: Change of Watch
Subject: Mark on Watch
Attachment:
Encoding: HTML
==========

$@MID@$: 225
Date: Sun, 16 Aug 2009 05:53:42 +0200
Creation Time: 16 Aug 2009 05:52:19
Watch: MAP
Position: N 41.00591333, W 70.30733667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 27029
Category: Ops-Compressor
Subject: shutdown compressor for oil change 1:50 am Sunday Aug 16
Attachment:
Encoding: HTML
==========

$@MID@$: 226
Date: Sun, 16 Aug 2009 05:55:01 +0200

Creation Time: 16 Aug 2009 05:54:17
Watch: MAP
Position: N 41.00648167, W 70.30553000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 27063
Category: Ops-Compressor
Subject: compressor back on line temporarily
Attachment:
Encoding: HTML
==========

$@MID@$: 227
Date: Sun, 16 Aug 2009 05:57:10 +0200
Creation Time: 16 Aug 2009 05:56:23
Watch: MAP
Position: N 41.00734500, W 70.30253000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 27087
Category: Ops-Guns
Subject: compressor back on line temporarily again 1:56 am Sat. 16
Attachment:
Encoding: HTML
==========

$@MID@$: 228
Date: Sun, 16 Aug 2009 06:01:47 +0200
Creation Time: 16 Aug 2009 06:00:56
Watch: MAP
Position: N 41.00922500, W 70.29622833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 27132
Category: Ops-Compressor
Subject: compressor back on line
Attachment:
Encoding: HTML
==========
 Back on line at 2:01 am, Sunday, Aug 16
$@MID@$: 229
Date: Sun, 16 Aug 2009 06:57:29 +0200
Creation Time: 16 Aug 2009 06:56:26
Watch: MAP
Position: N 41.03490500, W 70.21652333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 13
Shot Number: 27687
Category: Nav-EOL
Subject: End of Line 13/Start of Line 8
Attachment:
Encoding: HTML
==========

 End of line 13 .... Starting turn into Line 8 .... via Line 5 .....
ship did not complete to end of Line 13. Got onto Line 5 at shot
27868.
$@MID@$: 230
Date: Sun, 16 Aug 2009 08:04:01 +0200
Creation Time: 16 Aug 2009 08:02:56
Watch: JES
Position: N 40.97317167, W 70.17147667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 28326
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 231
Date: Sun, 16 Aug 2009 08:35:33 +0200
Creation Time: 16 Aug 2009 08:35:22
Watch: NCM
Position: N 40.93961333, W 70.15501333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 28641
Category: Ops-Guns
Subject: Gap around shots 28620 to 28641
Attachment:
Encoding: HTML
==========
 Gap in shooting during compressor servicing from shot 28620 to
28641.
$@MID@$: 232
Date: Sun, 16 Aug 2009 08:48:08 +0200
Creation Time: 16 Aug 2009 08:48:03
Watch: NCM
Position: N 40.92629167, W 70.14876000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 28722
Category: Nav
Subject: starting turn to line 8
Attachment:
Encoding: HTML
==========

$@MID@$: 233
Date: Sun, 16 Aug 2009 09:05:24 +0200
Creation Time: 16 Aug 2009 08:55:25
Watch: NCM
Position: N 40.91325333, W 70.16269333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 28925
Category: Nav

Subject: On Line 8
Attachment:
Encoding: HTML
==========
 Shot number is approximate.
$@MID@$: 234
Date: Sun, 16 Aug 2009 09:15:18 +0200
Creation Time: 16 Aug 2009 09:14:55
Watch: JES
Position: N 40.90914833, W 70.17501167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 29000
Category:
Subject: Start of line 8
Attachment:
Encoding: HTML
==========

$@MID@$: 235
Date: Sun, 16 Aug 2009 12:01:36 +0200
Creation Time: 16 Aug 2009 12:01:12
Watch: JES
Position: N 40.84165500, W 70.37554833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 30702
Category: Change of Watch
Subject: NCM DLZ on watch
Attachment:
Encoding: HTML
==========

$@MID@$: 236
Date: Sun, 16 Aug 2009 12:53:37 +0200
Creation Time: 16 Aug 2009 12:52:25
Watch: WLD
Position: N 40.81970333, W 70.44056000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 8
Shot Number: 31214
Category: Nav-EOL
Subject: End of Line 8
Attachment:
Encoding: HTML
==========
 The last shot is 31214
$@MID@$: 237
Date: Sun, 16 Aug 2009 12:55:20 +0200
Creation Time: 16 Aug 2009 12:54:40
Watch: WLD
Position: N 40.81845500, W 70.44262333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14
Shot Number: 31215

Category: Nav-SOL
Subject: Start of Line 14
Attachment:
Encoding: HTML
==
 31215 is the first shot of line 14
$@MID@$: 238
Date: Sun, 16 Aug 2009 13:53:29 +0200
Creation Time: 16 Aug 2009 13:52:24
Watch: WLD
Position: N 40.76226500, W 70.40908167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14
Shot Number: 31741
Category: Ops-Guns
Subject: Compressor Down
Attachment:
Encoding: HTML
==
 Compressor down starting with shot #31741. Down because it overheated. Letting cool before restarting.
$@MID@$: 239
Date: Sun, 16 Aug 2009 14:19:14 +0200
Creation Time: 16 Aug 2009 14:18:40
Watch: WLD
Position: N 40.73699167, W 70.38394167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14
Shot Number:
Category: Ops-Acquisition
Subject: Stopped Acquisition
Attachment:
Encoding: HTML
==
 Stopped Acquisition because it was determined we would be down for a while.
$@MID@$: 240
Date: Sun, 16 Aug 2009 15:09:42 +0200
Creation Time: 16 Aug 2009 15:08:48
Watch: BD
Position: N 40.68356500, W 70.37233333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number: 32043
Category: Nav-SOL
Subject: Start of Line 14a - continuation of 14
Attachment:
Encoding: HTML
==
renamed to 14a to continue after compressor shut down due to overheating.
$@MID@$: 241
Date: Sun, 16 Aug 2009 15:14:54 +0200
Creation Time: 16 Aug 2009 15:14:51
Watch:
Position: N 40.68721167, W 70.36616167, m

Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number:
Category:
Subject:
Attachment:
Encoding: HTML
==========

$@MID@$: 242
Date: Sun, 16 Aug 2009 15:54:59 +0200
Creation Time: 16 Aug 2009 15:08:51
Watch: WLD
Position: N 40.71481167, W 70.32026000, m
Science Operations: GI-1 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number: 32484
Category: Nav
Subject: On line 14a path
Attachment:
Encoding: HTML
==========
 Probably been on path for about 1/2 km.
$@MID@$: 243
Date: Sun, 16 Aug 2009 16:07:46 +0200
Creation Time: 16 Aug 2009 16:07:26
Watch: NBS
Position: N 40.71976167, W 70.30236833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number:
Category:
Subject: came on watch
Attachment:
Encoding: HTML
==========

$@MID@$: 244
Date: Sun, 16 Aug 2009 17:17:45 +0200
Creation Time: 16 Aug 2009 17:16:29
Watch: WLD
Position: N 40.75115500, W 70.21072333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number: 33307
Category: Nav
Subject: Diverting off Line Path
Attachment:
Encoding: HTML
==========
 Diverting off line path inorder to move around fishing gear.
$@MID@$: 245
Date: Sun, 16 Aug 2009 18:05:35 +0200
Creation Time: 16 Aug 2009 18:04:07
Watch: BD

Position: N 40.78217000, W 70.15201167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number: 33784
Category: MMO
Subject: Dolphins observed outside of safety radius
Attachment:
Encoding: HTML
==========
 <span class="Apple-style-span" style="font-family: 'Lucida Grande';
font-size: 11px; white-space: pre; "> MMOs will keep watching and keep us
posted. Can keep operating for now.
$@MID@$: 246
Date: Sun, 16 Aug 2009 18:48:37 +0200
Creation Time: 16 Aug 2009 18:48:09
Watch: WLD
Position: N 40.79472500, W 70.09187833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number: 34224
Category: Nav
Subject: Starting to Turn Off line 14a
Attachment:
Encoding: HTML
==========

$@MID@$: 247
Date: Sun, 16 Aug 2009 18:51:22 +0200
Creation Time: 16 Aug 2009 18:50:28
Watch: WLD
Position: N 40.79445167, W 70.08801167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number: 34249
Category: Nav-EOL
Subject: End of Line 14a
Attachment:
Encoding: HTML
==========

$@MID@$: 248
Date: Sun, 16 Aug 2009 18:54:26 +0200
Creation Time: 16 Aug 2009 18:53:24
Watch: WLD
Position: N 40.79334167, W 70.08409333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number:
Category: Ops-Guns
Subject: Shutdown for dolphins.
Attachment:
Encoding: HTML
==========
 Transitioning from line 14a and 9. Guns went down when we weren't
recording because we were EOL 14a and just about to start recording Line 9.

$@MID@$: 249
Date: Sun, 16 Aug 2009 19:11:04 +0200
Creation Time: 16 Aug 2009 19:10:20
Watch: WLD
Position: N 40.77936333, W 70.07213333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 14a
Shot Number:
Category: Ops-Guns
Subject: Gun 2 Firing
Attachment:
Encoding: HTML
==========

$@MID@$: 250
Date: Sun, 16 Aug 2009 19:12:02 +0200
Creation Time: 16 Aug 2009 19:11:08
Watch: WLD
Position: N 40.77845167, W 70.07182500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 34250
Category: Nav-SOL
Subject: Start of Line 9
Attachment:
Encoding: HTML
==========
 We are actually on line 5 getting ready to turn onto line 9.
$@MID@$: 251
Date: Sun, 16 Aug 2009 19:59:44 +0200
Creation Time: 16 Aug 2009 19:59:22
Watch: NCM
Position: N 40.73375500, W 70.04535333, m
Science Operations: MCS Streamer | Knudsen
Line Name: 9
Shot Number: 34732
Category: MMO-shutdown
Subject: Shutdown for turtle.
Attachment:
Encoding: HTML
==========

$@MID@$: 252
Date: Sun, 16 Aug 2009 20:03:55 +0200
Creation Time: 16 Aug 2009 20:01:55
Watch: NCM
Position: N 40.72982667, W 70.04337167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 34771
Category: Ops-Guns
Subject: Resumed shooting at shot number 34771
Attachment:
Encoding: HTML
==========

$@MID@$: 253
Date: Sun, 16 Aug 2009 21:12:47 +0200
Creation Time: 16 Aug 2009 21:12:20
Watch: BD
Position: N 40.66606000, W 70.01325333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 35460
Category: Nav
Subject: Making turn off line 5 to line 9
Attachment:
Encoding: HTML
==========

$@MID@$: 254
Date: Sun, 16 Aug 2009 21:26:30 +0200
Creation Time: 16 Aug 2009 21:25:58
Watch: BD
Position: N 40.65572667, W 70.02379833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 35596
Category: Nav
Subject: On line 9
Attachment:
Encoding: HTML
==========

$@MID@$: 255
Date: Sun, 16 Aug 2009 22:10:50 +0200
Creation Time: 16 Aug 2009 22:10:13
Watch: WLD
Position: N 40.63719333, W 70.07867333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 36041
Category: MMO-shutdown
Subject: Shutdown for dolphins
Attachment:
Encoding: HTML
==========

$@MID@$: 256
Date: Sun, 16 Aug 2009 22:18:50 +0200
Creation Time: 16 Aug 2009 22:18:29
Watch: WLD
Position: N 40.63397167, W 70.08809167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 36123
Category: Ops-Guns
Subject: Gun 2 Firing
Attachment:
Encoding: HTML

```
========================================

$@MID@$: 257
Date: Sun, 16 Aug 2009 23:04:15 +0200
Creation Time: 16 Aug 2009 23:03:49
Watch: WLD
Position: N 40.61554167, W 70.14447333,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 36577
Category: Ops-Guns
Subject: shut down for dophins
Attachment:
Encoding: HTML
========================================

$@MID@$: 258
Date: Sun, 16 Aug 2009 23:11:29 +0200
Creation Time: 16 Aug 2009 23:10:49
Watch: BD
Position: N 40.61287000, W 70.15229333,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 36644
Category: Ops-Guns
Subject: All clear from MMOs. One gun back up firing.
Attachment:
Encoding: HTML
========================================


$@MID@$: 259
Date: Mon, 17 Aug 2009 00:06:01 +0200
Creation Time: 17 Aug 2009 00:05:04
Watch: WLD
Position: N 40.56136167, W 70.30582167,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 37190
Category: Change of Watch
Subject: Whitney On Watch
Attachment:
Encoding: HTML
========================================
<p> MAP second in command</p>
$@MID@$: 260
Date: Mon, 17 Aug 2009 01:04:24 +0200
Creation Time: 17 Aug 2009 01:03:22
Watch: WLD
Position: N 40.56136167, W 70.30582167,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 9
Shot Number: 37779
Category: Nav-EOL
Subject: End of Line 9
```

Attachment:
Encoding: HTML
==========

$@MID@$: 261
Date: Mon, 17 Aug 2009 01:05:30 +0200
Creation Time: 17 Aug 2009 01:04:27
Watch: WLD
Position: N 40.56077167, W 70.30755000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number: 37780
Category: Nav-SOL
Subject: Start of Line 15 -turn
Attachment:
Encoding: HTML
==========
 starting to turn from line 9 to line 15.
$@MID@$: 262
Date: Mon, 17 Aug 2009 01:12:15 +0200
Creation Time: 17 Aug 2009 01:11:43
Watch: WLD
Position: N 40.55363333, W 70.31198167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number: around 37780
Category: Comment
Subject: Boat coming on us fast - boat picked up speed
Attachment:
Encoding: HTML
==========

$@MID@$: 263
Date: Mon, 17 Aug 2009 01:16:59 +0200
Creation Time: 17 Aug 2009 01:16:18
Watch: WLD
Position: N 40.54787500, W 70.30903333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number: 37836
Category: Nav
Subject: Endeaver slowed back down to 4
Attachment:
Encoding: HTML
==========

$@MID@$: 264
Date: Mon, 17 Aug 2009 03:06:29 +0200
Creation Time: 17 Aug 2009 03:05:30
Watch: WLD
Position: N 40.45005500, W 70.20416333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number: 38925
Category: Nav-SOL

Subject: Start of Line 15
Attachment:
Encoding: HTML
==========
 Now on Trajectory of Line 15.
$@MID@$: 265
Date: Mon, 17 Aug 2009 03:09:20 +0200
Creation Time: 17 Aug 2009 03:08:45
Watch: WLD
Position: N 40.45102833, W 70.20031833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number:
Category: Ops-Streamer
Subject: One bird out of green
Attachment:
Encoding: HTML
==========
 May be bad! Ahh Nets!!!!!! OH NO NO NONONONONNONOON!!!
$@MID@$: 266
Date: Mon, 17 Aug 2009 03:58:44 +0200
Creation Time: 17 Aug 2009 03:58:18
Watch: BD
Position: N 40.46824500, W 70.13806833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number:
Category: Ops-Streamer
Subject: Birds back at 3 m.
Attachment:
Encoding: HTML
==========
Birds back at 3 m once straight on line; probably were low due to turn to
line 15.
$@MID@$: 267
Date: Mon, 17 Aug 2009 04:03:14 +0200
Creation Time: 17 Aug 2009 04:02:37
Watch: WLD
Position: N 40.46974667, W 70.13239667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15
Shot Number: 39499
Category: Change of Watch
Subject: Mark on Watch
Attachment:
Encoding: HTML
==========
 Jake is Second!
$@MID@$: 268
Date: Mon, 17 Aug 2009 07:24:42 +0200
Creation Time: 17 Aug 2009 07:22:48
Watch: MAP
Position: N 40.54165500, W 69.91174167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 15

Shot Number: 41530
Category: Nav-EOL
Subject: End of Line 15
Attachment:
Encoding: HTML
==========
 Starting turn to Line 10
$@MID@$: 269
Date: Mon, 17 Aug 2009 07:30:10 +0200
Creation Time: 17 Aug 2009 07:29:07
Watch: MAP
Position: N 40.53955667, W 69.90586833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 41530
Category: Nav-SOL
Subject: Start of Line10
Attachment:
Encoding: HTML
==========
 ETA to Line 15 is 4 hrs 2m
$@MID@$: 270
Date: Mon, 17 Aug 2009 08:01:12 +0200
Creation Time: 17 Aug 2009 08:00:01
Watch: JES
Position: N 40.50953167, W 69.89733667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 41850
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 271
Date: Mon, 17 Aug 2009 09:17:14 +0200
Creation Time: 17 Aug 2009 09:15:57
Watch: BD
Position: N 40.44305833, W 69.87066333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 42608
Category: Nav
Subject: Turning to slightly north of line 10
Attachment:
Encoding: HTML
==========
 Altering line 10 path a little to north of original plan to stay north
of some crab gear in the water at the NE portion of planned line 10.
$@MID@$: 272
Date: Mon, 17 Aug 2009 09:45:47 +0200
Creation Time: 17 Aug 2009 09:45:28
Watch: BD
Position: N 40.42035500, W 69.87388167, m

Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 42900
Category: Nav
Subject: On line 10 path
Attachment:
Encoding: HTML
==========

$@MID@$: 273
Date: Mon, 17 Aug 2009 10:40:42 +0200
Creation Time: 17 Aug 2009 10:39:41
Watch: JES
Position: N 40.39853833, W 69.94886833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 43447
Category: Nav
Subject: turning to avoid crab traps in water
Attachment:
Encoding: HTML
==========

$@MID@$: 274
Date: Mon, 17 Aug 2009 11:35:19 +0200
Creation Time: 17 Aug 2009 11:34:29
Watch: JES
Position: N 40.38368000, W 70.02426500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 43955
Category: Nav
Subject: Many crab traps in the way. Will be turning to avoid.
Attachment:
Encoding: HTML
==========

$@MID@$: 275
Date: Mon, 17 Aug 2009 12:00:39 +0200
Creation Time: 17 Aug 2009 12:00:14
Watch: JES
Position: N 40.36988833, W 70.05364833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 44254
Category: Change of Watch
Subject: Nathan and Dan
Attachment:
Encoding: HTML
==========

$@MID@$: 276
Date: Mon, 17 Aug 2009 12:48:16 +0200
Creation Time: 17 Aug 2009 12:47:25
Watch: NCM

Position: N 40.34745500, W 70.11387833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 44722
Category: Nav
Subject: clear of lobster pots
Attachment:
Encoding: HTML
==========
Out of lobster pot area
$@MID@$: 277
Date: Mon, 17 Aug 2009 13:50:27 +0200
Creation Time: 17 Aug 2009 13:49:23
Watch: WLD
Position: N 40.31940667, W 70.19822000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 10
Shot Number: 45342
Category: Nav-EOL
Subject: End of Line 10
Attachment:
Encoding: HTML
==========

$@MID@$: 278
Date: Mon, 17 Aug 2009 13:51:15 +0200
Creation Time: 17 Aug 2009 13:50:35
Watch: WLD
Position: N 40.31883833, W 70.19914167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 16
Shot Number: 45343
Category: Nav-SOL
Subject: Start of Line 16 - starting turn
Attachment:
Encoding: HTML
==========
 Starting Turn from Line 10 to Line 16
$@MID@$: 279
Date: Mon, 17 Aug 2009 15:54:51 +0200
Creation Time: 17 Aug 2009 15:54:16
Watch: NCM
Position: N 40.22345333, W 70.12038833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 16
Shot Number: 46562
Category: Nav
Subject: back on line
Attachment:
Encoding: HTML
==========

$@MID@$: 280
Date: Mon, 17 Aug 2009 20:11:41 +0200
Creation Time: 17 Aug 2009 20:09:53

Watch: BD
Position: N 40.33842667, W 69.78356000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 16
Shot Number: 49113
Category: Nav-EOL
Subject: End of Line 16
Attachment:
Encoding: HTML
==========
 End of line 16. Going to shut down gun to add oil and grease clutch on compressor.
$@MID@$: 281
Date: Mon, 17 Aug 2009 20:12:33 +0200
Creation Time: 17 Aug 2009 20:11:52
Watch: BD
Position: N 40.33876833, W 69.78234833, m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: Guns off for compressor maintenance during transit from 16 to 11
Attachment:
Encoding: HTML
==========

$@MID@$: 282
Date: Mon, 17 Aug 2009 20:45:28 +0200
Creation Time: 17 Aug 2009 20:45:00
Watch: BD
Position: N 40.32693333, W 69.74359667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: Gun 2 up and firing; compressor maintenance complete.
Attachment:
Encoding: HTML
==========

$@MID@$: 283
Date: Mon, 17 Aug 2009 20:48:12 +0200
Creation Time: 17 Aug 2009 20:46:19
Watch: BD
Position: N 40.32450833, W 69.74158167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number: 49114
Category: Nav-SOL
Subject: Start of Line 11
Attachment:
Encoding: HTML
==========
 On turn/transit to line 11. Collecting data as line 11.
$@MID@$: 284

Date: Mon, 17 Aug 2009 20:55:48 +0200
Creation Time: 17 Aug 2009 20:55:45
Watch: NCM
Position: N 40.31744667, W 69.73793333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number: 49191
Category: MMO-shutdown
Subject: Shutdown for dolphins
Attachment:
Encoding: HTML
==========

$@MID@$: 285
Date: Mon, 17 Aug 2009 21:00:23 +0200
Creation Time: 17 Aug 2009 20:59:23
Watch: NCM
Position: N 40.31346667, W 69.73620667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number: 49230
Category: Ops-Guns
Subject: Guns firing
Attachment:
Encoding: HTML
==========

$@MID@$: 286
Date: Mon, 17 Aug 2009 21:05:29 +0200
Creation Time: 17 Aug 2009 21:04:38
Watch: WLD
Position: N 40.30904167, W 69.73413667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number: 49276
Category: Ops-Guns
Subject: Guns misfiring - compressor Overheated
Attachment:
Encoding: HTML
==========
 The Compressor overheated - the acquisition system is still
recording.
$@MID@$: 287
Date: Mon, 17 Aug 2009 21:07:14 +0200
Creation Time: 17 Aug 2009 21:06:53
Watch: WLD
Position: N 40.30747500, W 69.73344167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number: 49300
Category: Ops-Acquisition
Subject: Acquisition system shut down
Attachment:
Encoding: HTML
==========

$@MID@$: 288
Date: Mon, 17 Aug 2009 21:24:44 +0200
Creation Time: 17 Aug 2009 21:16:56
Watch: WLD
Position: N 40.29156833, W 69.72798167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number:
Category: Ops-Guns
Subject: One Gun Firing - Not recording any numbers
Attachment:
Encoding: HTML
==========

$@MID@$: 289
Date: Mon, 17 Aug 2009 21:25:28 +0200
Creation Time: 17 Aug 2009 21:24:55
Watch: WLD
Position: N 40.29084333, W 69.72784000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number: 49301
Category: Nav-SOL
Subject: Start of Line 11a
Attachment:
Encoding: HTML
==========
 Start of Line 11a
$@MID@$: 290
Date: Mon, 17 Aug 2009 21:42:00 +0200
Creation Time: 17 Aug 2009 21:41:32
Watch: NBS
Position: N 40.27459833, W 69.72453167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number: 49456
Category: Ops-Guns
Subject: gun was shut down - it was over heating.
Attachment:
Encoding: HTML
==========

$@MID@$: 291
Date: Mon, 17 Aug 2009 22:29:58 +0200
Creation Time: 17 Aug 2009 22:29:55
Watch: WLD
Position: N 40.24106667, W 69.76516667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number: 49457
Category: Ops-Guns
Subject: Guns Back Up
Attachment:
Encoding: HTML

```
========================================

$@MID@$: 292
Date: Mon, 17 Aug 2009 22:33:20 +0200
Creation Time: 17 Aug 2009 22:32:52
Watch: WLD
Position: N 40.23972333, W 69.76934667,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11b
Shot Number:
Category: Ops-Guns
Subject: One gun Firing - Not recording any numbers
Attachment:
Encoding: HTML
========================================

$@MID@$: 293
Date: Mon, 17 Aug 2009 22:35:37 +0200
Creation Time: 17 Aug 2009 22:35:02
Watch: WLD
Position: N 40.23871667, W 69.77229167,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number: 49457
Category: Ops-Acquisition
Subject: Started to Acquire Data
Attachment:
Encoding: HTML
========================================

$@MID@$: 294
Date: Mon, 17 Aug 2009 22:35:43 +0200
Creation Time: 17 Aug 2009 22:35:41
Watch:
Position: N 40.23869667, W 69.77238167,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11
Shot Number:
Category:
Subject:
Attachment:
Encoding: HTML
========================================

$@MID@$: 295
Date: Mon, 17 Aug 2009 23:33:49 +0200
Creation Time: 17 Aug 2009 23:33:10
Watch: WLD
Position: N 40.21394833, W 69.83964000,  m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number: 50038
Category: Nav
Subject: Diverting Off Line Path
Attachment:
```

Encoding: HTML
==========
Diverting off path to get around fishing gear.
$@MID@$: 296
Date: Mon, 17 Aug 2009 23:58:59 +0200
Creation Time: 17 Aug 2009 23:57:59
Watch: NBS
Position: N 40.21939167, W 69.86120667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number: 50288
Category:
Subject: End of line 11/ compressor shut down on it's own
Attachment:
Encoding: HTML
==========

$@MID@$: 297
Date: Tue, 18 Aug 2009 00:01:24 +0200
Creation Time: 18 Aug 2009 00:00:52
Watch: NBS
Position: N 40.23124333, W 69.86969833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number:
Category: Ops-Compressor
Subject: changing the fuel filters
Attachment:
Encoding: HTML
==========

$@MID@$: 298
Date: Tue, 18 Aug 2009 00:10:47 +0200
Creation Time: 18 Aug 2009 00:02:00
Watch: NBS
Position: N 40.23124333, W 69.86969833, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Sparker
Subject: deployed sparker and firing
Attachment:
Encoding: HTML
==========

$@MID@$: 299
Date: Tue, 18 Aug 2009 00:14:13 +0200
Creation Time: 18 Aug 2009 00:13:23
Watch: WLD
Position: N 40.23509500, W 69.87126333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Change of Watch

Subject: Whitney on Watch
Attachment:
Encoding: HTML
==========
 On Line 4 path. - not recording.
$@MID@$: 300
Date: Tue, 18 Aug 2009 00:16:17 +0200
Creation Time: 18 Aug 2009 00:15:40
Watch: BD
Position: N 40.23728167, W 69.87261833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 11a
Shot Number: 50310
Category: Nav-EOL
Subject: End of Line 11a
Attachment:
Encoding: HTML
==========
 End of Line 11a - shot # 50310. Compressor shut down so we put sparker in about 15m back off starboard stern. Compressor needs fuel filter changes. May try one gun start in dark with night vision devices if compressor gets fixed and MMOs will authorize. MMOs said they would evaluate as necessary.
$@MID@$: 301
Date: Tue, 18 Aug 2009 00:20:28 +0200
Creation Time: 18 Aug 2009 00:17:45
Watch: WLD
Position: N 40.24181500, W 69.87500833, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 4
Shot Number: 1001
Category: Nav-SOL
Subject: Start of Line 4 - with sparker
Attachment:
Encoding: HTML
==========
 Starting Line 4 with sparker, at shot # 1001. Shooting every 1.5 seconds, recording for 1 second. Sampling on MCS streamer at 0.125 ms.
$@MID@$: 302
Date: Tue, 18 Aug 2009 00:56:03 +0200
Creation Time: 18 Aug 2009 00:55:14
Watch: WLD
Position: N 40.27551667, W 69.90454667, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 4
Shot Number: 2376
Category: Ops-Acquisition
Subject: Signal Strength Not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 303
Date: Tue, 18 Aug 2009 01:06:47 +0200
Creation Time: 18 Aug 2009 01:04:50
Watch: WLD

Position: N 40.28441000, W 69.91523333, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 4
Shot Number: 2766
Category: Nav
Subject: Fishing gear
Attachment:
Encoding: HTML
==========
 Due to fishing gear, we are going to stay close to line 4, but not always exactly on it.
$@MID@$: 304
Date: Tue, 18 Aug 2009 01:47:25 +0200
Creation Time: 18 Aug 2009 01:46:55
Watch: WLD
Position: N 40.31574000, W 69.95937167, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 4
Shot Number: about 4440
Category: Ops-Acquisition
Subject: serial String not Detected
Attachment:
Encoding: HTML
==========

$@MID@$: 305
Date: Tue, 18 Aug 2009 02:16:10 +0200
Creation Time: 18 Aug 2009 02:15:17
Watch: MAP
Position: N 40.33704167, W 69.98913667, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 4
Shot Number: 5374, 5420
Category: Ops-Sparker
Subject: serial String not Detected
Attachment:
Encoding: HTML
==========
 MAP
$@MID@$: 306
Date: Tue, 18 Aug 2009 02:25:18 +0200
Creation Time: 18 Aug 2009 02:24:58
Watch: WLD
Position: N 40.34436833, W 69.99836500, m
Science Operations: Sparker | MCS Streamer | Knudsen
Line Name: 4
Shot Number: 5966
Category: Nav-EOL
Subject: End of Line 4
Attachment:
Encoding: HTML
==========
 ending sparker acquisition to start using GI Gun
$@MID@$: 307
Date: Tue, 18 Aug 2009 02:28:31 +0200

Creation Time: 18 Aug 2009 02:28:09
Watch: WLD
Position: N 40.34717000, W 70.00117333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number:
Category: Ops-Guns
Subject: Air Gun firing every ten seconds
Attachment:
Encoding: HTML
==========
 Not Acquiring/Recording shots or data
$@MID@$: 308
Date: Tue, 18 Aug 2009 02:36:32 +0200
Creation Time: 18 Aug 2009 02:34:52
Watch: WLD
Position: N 40.35470667, W 70.00704500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 50311
Category: Nav-SOL
Subject: Start of Line 4a
Attachment:
Encoding: HTML
==========
 Starting Line 4a, with GI-Gun, and at shot 50311.
$@MID@$: 309
Date: Tue, 18 Aug 2009 04:01:33 +0200
Creation Time: 18 Aug 2009 04:00:05
Watch: MAP
Position: N 40.43024500, W 69.98363333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 51154
Category: Change of Watch
Subject: midnight to 4 am watch shift
Attachment:
Encoding: HTML
==========
 Moving back onto Line 4 in shipping lane
$@MID@$: 310
Date: Tue, 18 Aug 2009 04:37:22 +0200
Creation Time: 18 Aug 2009 04:36:01
Watch: MAP
Position: N 40.46872667, W 69.98880667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 51507
Category: Nav
Subject: Back online 4a
Attachment:
Encoding: HTML
==========
 Returned to Line 4a in shipping lanes....deviation of course was made
to the south to avoid lobster pots

$@MID@$: 311
Date: Tue, 18 Aug 2009 08:11:33 +0200
Creation Time: 18 Aug 2009 08:10:21
Watch: JES
Position: N 40.71077667, W 70.11200167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 53660
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 312
Date: Tue, 18 Aug 2009 09:36:08 +0200
Creation Time: 18 Aug 2009 09:35:14
Watch: JES
Position: N 40.84037833, W 70.17787500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 54509
Category: Ops-Streamer
Subject: tail of streamer 1 meter too deep
Attachment:
Encoding: HTML
==========

$@MID@$: 313
Date: Tue, 18 Aug 2009 11:20:29 +0200
Creation Time: 18 Aug 2009 10:36:31
Watch: JES
Position: N 40.96435333, W 70.24058333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 55545
Category: Nav
Subject: changing course to avoid crab nets
Attachment:
Encoding: HTML
==========

$@MID@$: 314
Date: Tue, 18 Aug 2009 11:30:28 +0200
Creation Time: 18 Aug 2009 11:29:45
Watch: JES
Position: N 40.97534833, W 70.24325833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 55648
Category: Ops-Streamer
Subject: tail of streamer 2 meter too deep
Attachment:
Encoding: HTML
==========

$@MID@$: 315
Date: Tue, 18 Aug 2009 12:04:49 +0200
Creation Time: 18 Aug 2009 12:04:32
Watch: JES
Position: N 41.00687333, W 70.26339167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number:
Category: Change of Watch
Subject: nathan and Dan
Attachment:
Encoding: HTML
==

$@MID@$: 316
Date: Tue, 18 Aug 2009 15:55:49 +0200
Creation Time: 18 Aug 2009 15:54:53
Watch: NBS
Position: N 41.24119667, W 70.38153833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 58299
Category: Nav
Subject: turning off line 4a heading along line 21
Attachment:
Encoding: HTML
==
 still recording as line 4a
$@MID@$: 317
Date: Tue, 18 Aug 2009 15:56:35 +0200
Creation Time: 18 Aug 2009 15:56:13
Watch: NBS
Position: N 41.24185167, W 70.38222833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number:
Category: Change of Watch
Subject: Dan and nancy
Attachment:
Encoding: HTML
==

$@MID@$: 318
Date: Tue, 18 Aug 2009 16:35:13 +0200
Creation Time: 18 Aug 2009 16:33:55
Watch: BD
Position: N 41.23972167, W 70.44519500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 4a
Shot Number: 58689
Category: Nav-EOL
Subject: End of Line 4a
Attachment:
Encoding: HTML

```
========================================
<p>&amp;nbsp;End of line 4a. Guns off to recover guns and streamer for transfer of
oil and pads to ship. Estimated arrival of Mytilus is 1:30 EDT.</p>
$@MID@$: 319
Date: Tue, 18 Aug 2009 16:35:39 +0200
Creation Time: 18 Aug 2009 16:35:15
Watch: BD
Position: N 41.23969333, W 70.44593833,  m
Science Operations: MCS Streamer | Knudsen
Line Name: n/a
Shot Number:
Category: Ops-Guns
Subject: Guns off.
Attachment:
Encoding: HTML
========================================

$@MID@$: 320
Date: Tue, 18 Aug 2009 16:36:17 +0200
Creation Time: 18 Aug 2009 16:35:41
Watch: BD
Position: N 41.23963500, W 70.44705667,  m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Ops-Recovery
Subject: recovering guns and streamer to prepare for eqpt transfer
Attachment:
Encoding: HTML
========================================

$@MID@$: 321
Date: Tue, 18 Aug 2009 16:53:14 +0200
Creation Time: 18 Aug 2009 16:52:49
Watch: BD
Position: N 41.23834500, W 70.47170333,  m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Ops-Recovery
Subject: Guns on deck
Attachment:
Encoding: HTML
========================================

$@MID@$: 322
Date: Tue, 18 Aug 2009 17:01:41 +0200
Creation Time: 18 Aug 2009 17:00:15
Watch: NBS
Position: N 41.23761667, W 70.48157500,  m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Streamer
Subject: hauling in the streamer
```

Attachment:
Encoding: HTML
==========

$@MID@$: 323
Date: Tue, 18 Aug 2009 17:56:35 +0200
Creation Time: 18 Aug 2009 17:55:56
Watch: BD
Position: N 41.23524667, W 70.53886667, m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Comment
Subject: Streamer on deck; Mytilus in sight
Attachment:
Encoding: HTML
==========

$@MID@$: 324
Date: Tue, 18 Aug 2009 18:12:13 +0200
Creation Time: 18 Aug 2009 18:11:09
Watch: BD
Position: N 41.23647000, W 70.54063333, m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Comment
Subject: All equipment transferred from Mytilus to Endeavor
Attachment:
Encoding: HTML
==========
 Equipment = 30 gallons compressor oil, oil rags, oil rolls, and inline filters.
$@MID@$: 325
Date: Tue, 18 Aug 2009 18:21:29 +0200
Creation Time: 18 Aug 2009 18:19:15
Watch: BD
Position: N 41.23174500, W 70.54549000, m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Comment
Subject: Bringing ship up to speed for about an hour.
Attachment:
Encoding: HTML
==========
 Going to make Endeavor happy by bringing her up to cruising speed for an hour. Then will redeploy gear and head to start of Line 2.
$@MID@$: 326
Date: Tue, 18 Aug 2009 20:04:42 +0200
Creation Time: 18 Aug 2009 19:57:33
Watch: BD
Position: N 41.27462667, W 70.60285667, m
Science Operations: MCS Streamer | Knudsen
Line Name:

Shot Number:
Category: Ops-Deployment
Subject: Deploying streamer
Attachment:
Encoding: HTML
==

$@MID@$: 327
Date: Tue, 18 Aug 2009 20:45:09 +0200
Creation Time: 18 Aug 2009 20:44:43
Watch: BD
Position: N 41.29683333, W 70.57538500, m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Streamer in the water, preparing to deploy air guns
Attachment:
Encoding: HTML
==

$@MID@$: 328
Date: Tue, 18 Aug 2009 20:58:17 +0200
Creation Time: 18 Aug 2009 20:57:12
Watch: BD
Position: N 41.29713000, W 70.56262833, m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Streamer
Subject: Bird 2 not correctly reporting depth
Attachment:
Encoding: HTML
==
 Checking status of bird 2 to see if we need to recover streamer to bird 2 and then redeploy.
$@MID@$: 329
Date: Tue, 18 Aug 2009 21:05:57 +0200
Creation Time: 18 Aug 2009 21:05:31
Watch: BD
Position: N 41.29501667, W 70.55496833, m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Recovery
Subject: Bringing streamer back in to check bird 2
Attachment:
Encoding: HTML
==

$@MID@$: 330
Date: Tue, 18 Aug 2009 21:34:41 +0200
Creation Time: 18 Aug 2009 21:33:55
Watch: NBS
Position: N 41.28933333, W 70.52909333, m

Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: swapped out the second bird and now deploying streamer
Attachment:
Encoding: HTML
==========

$@MID@$: 331
Date: Tue, 18 Aug 2009 21:45:47 +0200
Creation Time: 18 Aug 2009 21:45:27
Watch: BD
Position: N 41.28736167, W 70.51974500, m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Streamer back in water.
Attachment:
Encoding: HTML
==========

$@MID@$: 332
Date: Tue, 18 Aug 2009 21:55:07 +0200
Creation Time: 18 Aug 2009 21:54:47
Watch: BD
Position: N 41.28505833, W 70.50915333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Putting airguns in water
Attachment:
Encoding: HTML
==========

$@MID@$: 333
Date: Tue, 18 Aug 2009 22:01:04 +0200
Creation Time: 18 Aug 2009 22:00:43
Watch: WLD
Position: N 41.28355000, W 70.50292833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: Guns are in the Water
Attachment:
Encoding: HTML
==========

$@MID@$: 334
Date: Tue, 18 Aug 2009 22:04:26 +0200
Creation Time: 18 Aug 2009 22:03:35
Watch: WLD

Position: N 41.28148667, W 70.49932333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: Guns are firing.
Attachment:
Encoding: HTML
==========

$@MID@$: 335
Date: Tue, 18 Aug 2009 22:11:44 +0200
Creation Time: 18 Aug 2009 22:10:54
Watch: BD
Position: N 41.27396167, W 70.49646000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 58690
Category: Nav-SOL
Subject: Start of Line 2
Attachment:
Encoding: HTML
==========
 On turn and path to line 2, recording data after fixing bird and putting guns/streamer back in water.
$@MID@$: 336
Date: Tue, 18 Aug 2009 22:54:09 +0200
Creation Time: 18 Aug 2009 22:53:40
Watch: BD
Position: N 41.25973167, W 70.53984500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 59117
Category: Ops-Acquisition
Subject: Channel 43 is not working well
Attachment:
Encoding: HTML
==========

$@MID@$: 337
Date: Tue, 18 Aug 2009 22:55:35 +0200
Creation Time: 18 Aug 2009 22:54:51
Watch: NBS
Position: N 41.25834667, W 70.53890667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 59130
Category: Nav
Subject: Turned on to start of Line 2
Attachment:
Encoding: HTML
==========

$@MID@$: 338

Date: Wed, 19 Aug 2009 00:00:05 +0200
Creation Time: 18 Aug 2009 23:59:42
Watch: WLD
Position: N 41.15576167, W 70.48168000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number:
Category: Change of Watch
Subject: Whitney on Watch
Attachment:
Encoding: HTML
==========

$@MID@$: 339
Date: Wed, 19 Aug 2009 00:34:33 +0200
Creation Time: 19 Aug 2009 00:28:30
Watch: BD
Position: N 41.15576167, W 70.48168000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 60036
Category: Ops-Acquisition
Subject: Channel 43 appears to be working intermittently
Attachment:
Encoding: HTML
==========

$@MID@$: 340
Date: Wed, 19 Aug 2009 04:11:53 +0200
Creation Time: 19 Aug 2009 04:10:49
Watch: MAP
Position: N 40.91114500, W 70.35282000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 62293
Category: Change of Watch
Subject: Mark on Watch
Attachment:
Encoding: HTML
==========
 midnigth to 4 am shift
$@MID@$: 341
Date: Wed, 19 Aug 2009 13:02:25 +0200
Creation Time: 19 Aug 2009 13:01:47
Watch: JES
Position: N 40.41283667, W 70.10119000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 67590
Category: Nav
Subject: small change of course to avoid crab nets
Attachment:
Encoding: HTML
==========

$@MID@$: 342
Date: Wed, 19 Aug 2009 18:16:16 +0200
Creation Time: 19 Aug 2009 18:15:21
Watch: WLD
Position: N 40.09876167, W 69.93970333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 2
Shot Number: 70734
Category: Nav-EOL
Subject: End of Line 2
Attachment:
Encoding: HTML
==========
 End of line 2 at shot 70734
$@MID@$: 343
Date: Wed, 19 Aug 2009 20:15:05 +0200
Creation Time: 19 Aug 2009 20:13:58
Watch: WLD
Position: N 40.07411500, W 69.78002500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number:
Category: Ops-Guns
Subject: One Air gun firing
Attachment:
Encoding: HTML
==========
 Not yet started line 5 and not recording shots.
$@MID@$: 344
Date: Wed, 19 Aug 2009 20:17:34 +0200
Creation Time: 19 Aug 2009 20:16:47
Watch: WLD
Position: N 40.07516333, W 69.77679833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 70735
Category: Nav-SOL
Subject: Start of Line 5
Attachment:
Encoding: HTML
==========
 Starting Line 5 at Shot# 70735
$@MID@$: 345
Date: Wed, 19 Aug 2009 21:15:05 +0200
Creation Time: 19 Aug 2009 21:12:52
Watch: WLD
Position: N 40.10913167, W 69.72391000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 71284
Category: Nav
Subject: On line 5 path
Attachment:
Encoding: HTML
==========

$@MID@$: 346
Date: Thu, 20 Aug 2009 00:37:01 +0200
Creation Time: 20 Aug 2009 00:36:41
Watch: WLD
Position: N 40.37981167, W 69.85354667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number:
Category: Change of Watch
Subject: Whitney on Watch
Attachment:
Encoding: HTML
==========

$@MID@$: 347
Date: Thu, 20 Aug 2009 01:16:12 +0200
Creation Time: 20 Aug 2009 01:14:47
Watch: BD
Position: N 40.37981167, W 69.85354667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 73703
Category: Nav
Subject: moving a little E off line 5 to avoid lobster gear
Attachment:
Encoding: HTML
==========

$@MID@$: 348
Date: Thu, 20 Aug 2009 03:09:24 +0200
Creation Time: 20 Aug 2009 03:08:38
Watch: WLD
Position: N 40.48769833, W 69.91539667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 74840
Category: Nav
Subject: coming back onto Line 5
Attachment:
Encoding: HTML
==========
 Though, the streamer is probably not straight yet.
$@MID@$: 349
Date: Thu, 20 Aug 2009 04:02:48 +0200
Creation Time: 20 Aug 2009 03:15:08
Watch: MAP
Position: N 40.53613667, W 69.94523667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 75381
Category: Change of Watch
Subject: Mark on Watch
Attachment:

Encoding: HTML
==========
 midnight to 4 am
$@MID@$: 350
Date: Thu, 20 Aug 2009 05:20:04 +0200
Creation Time: 20 Aug 2009 05:19:30
Watch: JES
Position: N 40.60865000, W 69.98315167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 76155
Category:
Subject: Channel 43 appears to be working intermittently
Attachment:
Encoding: HTML
==========

$@MID@$: 351
Date: Thu, 20 Aug 2009 08:09:54 +0200
Creation Time: 20 Aug 2009 08:06:40
Watch: NCM
Position: N 40.77815500, W 70.08176333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 77854
Category: Ops-Guns
Subject: shutdown compressor for oil change
Attachment:
Encoding: HTML
==========
 Gun shutdown for compressor oil change from shot 77854
to 77895.
$@MID@$: 352
Date: Thu, 20 Aug 2009 08:30:32 +0200
Creation Time: 20 Aug 2009 08:30:14
Watch: JES
Position: N 40.80627167, W 70.09291333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number:
Category:
Subject: compressor back on line
Attachment:
Encoding: HTML
==========

$@MID@$: 353
Date: Thu, 20 Aug 2009 09:08:33 +0200
Creation Time: 20 Aug 2009 09:08:04
Watch: JES
Position: N 40.85643167, W 70.11244500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 78439
Category: Ops-Streamer

Subject: tail of streamer 1 meter too deep
Attachment:
Encoding: HTML
==========

$@MID@$: 354
Date: Thu, 20 Aug 2009 09:10:35 +0200
Creation Time: 20 Aug 2009 09:10:14
Watch: JES
Position: N 40.85845333, W 70.11324000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 78459
Category:
Subject: tail of streamer 2 meter too deep
Attachment:
Encoding: HTML
==========

$@MID@$: 355
Date: Thu, 20 Aug 2009 10:29:11 +0200
Creation Time: 20 Aug 2009 10:28:33
Watch: JES
Position: N 40.94079333, W 70.15615333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 79244
Category:
Subject: stream birds 2 and 4 are running 2 meters to low.
Attachment:
Encoding: HTML
==========

$@MID@$: 356
Date: Thu, 20 Aug 2009 12:04:17 +0200
Creation Time: 20 Aug 2009 12:03:51
Watch: JES
Position: N 41.04372667, W 70.20984667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 5
Shot Number: 80200
Category: Change of Watch
Subject: Nathan and Dan
Attachment:
Encoding: HTML
==========

$@MID@$: 357
Date: Thu, 20 Aug 2009 15:13:25 +0200
Creation Time: 20 Aug 2009 15:12:22
Watch: NBS
Position: N 41.23791500, W 70.30877333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: end of line 5
Shot Number: 82083

Category: Nav-EOL
Subject: End of Line 5
Attachment:
Encoding: HTML
==========

$@MID@$: 358
Date: Thu, 20 Aug 2009 15:18:08 +0200
Creation Time: 20 Aug 2009 15:17:33
Watch: NBS
Position: N 41.24168333, W 70.31314500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: starting on line 17
Shot Number: 82084
Category: Nav-SOL
Subject: Start of Line 17
Attachment:
Encoding: HTML
==========

$@MID@$: 359
Date: Thu, 20 Aug 2009 16:07:09 +0200
Creation Time: 20 Aug 2009 16:05:49
Watch: DLz
Position: N 41.24178833, W 70.38357333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: turn from 5 to 17 more or less on Lin21
Shot Number: 82423
Category: Comment
Subject: Pockmarks
Attachment:
Encoding: HTML
==========
 Very interesting pockmark-like seafloor feature.
$@MID@$: 360
Date: Thu, 20 Aug 2009 17:20:14 +0200
Creation Time: 20 Aug 2009 17:19:33
Watch: NBS
Position: N 41.24041667, W 70.49069000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 17
Shot Number: 83305
Category: Nav
Subject: On line 17 track
Attachment:
Encoding: HTML
==========

$@MID@$: 365
Date: Fri, 21 Aug 2009 01:16:26 +0200
Creation Time: 21 Aug 2009 01:13:22
Watch: WLD
Position: N 40.81962333, W 70.25859333, m
Science Operations: GI-2 | MCS Streamer | Knudsen

Line Name: 20
Shot Number: 87934
Category: Nav-SOL
Subject: Start of Line 20
Attachment:
Encoding: HTML
==========

$@MID@$: 366
Date: Fri, 21 Aug 2009 02:41:28 +0200
Creation Time: 21 Aug 2009 02:39:21
Watch: WLD
Position: N 40.83391667, W 70.12716500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 88782
Category: Nav-SOL
Subject: Start of Line 20 - on track
Attachment:
Encoding: HTML
==========
 Actually on Line 20 track
$@MID@$: 367
Date: Fri, 21 Aug 2009 02:56:36 +0200
Creation Time: 21 Aug 2009 02:55:04
Watch: WLD
Position: N 40.84625333, W 70.13607500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 88927
Category: Nav
Subject: Swung wide of line 20.
Attachment:
Encoding: HTML
==========
 Swung wide of line 20, to the east, and now we are coming back to it.
$@MID@$: 368
Date: Fri, 21 Aug 2009 04:16:49 +0200
Creation Time: 21 Aug 2009 04:15:38
Watch: WLD
Position: N 40.92306000, W 70.17811333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number:
Category: Comment
Subject: Appear to missing Entries 346-364
Attachment:
Encoding: HTML
==========
 We are talking to you NATHAN!!!
$@MID@$: 369
Date: Fri, 21 Aug 2009 04:18:08 +0200
Creation Time: 21 Aug 2009 04:17:27
Watch: WLD

Position: N 40.92434833, W 70.17895667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number:
Category: Comment
Subject: Missing Entries
Attachment:
Encoding: HTML
==========
 Wait wait ... scratch that. The entries are back.
$@MID@$: 370
Date: Fri, 21 Aug 2009 04:19:49 +0200
Creation Time: 21 Aug 2009 04:19:10
Watch: WLD
Position: N 40.92588500, W 70.17980500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number:
Category: Comment
Subject: Missing Entries
Attachment:
Encoding: HTML
==========
 Still appear to be missing 361-364.
$@MID@$: 371
Date: Fri, 21 Aug 2009 04:35:04 +0200
Creation Time: 21 Aug 2009 04:34:12
Watch: MAP
Position: N 40.94032500, W 70.18709000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 89916
Category: Change of Watch
Subject: midnight to 4 am watch shift
Attachment:
Encoding: HTML
==========
 MAP on watch
$@MID@$: 372
Date: Fri, 21 Aug 2009 07:47:13 +0200
Creation Time: 21 Aug 2009 07:46:11
Watch: MAP
Position: N 41.14363667, W 70.29385167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 91830
Category: Ops-Compressor
Subject: gun shut down for maintanence
Attachment:
Encoding: HTML
==========
 oil change
$@MID@$: 373
Date: Fri, 21 Aug 2009 07:49:16 +0200
Creation Time: 21 Aug 2009 07:47:15

Watch: MAP
Position: N 41.14593500, W 70.29518833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 91859
Category: Ops-Compressor
Subject: guns are firing.
Attachment:
Encoding: HTML
==========
 back up in less than 5 minutes
$@MID@$: 374
Date: Fri, 21 Aug 2009 08:00:24 +0200
Creation Time: 21 Aug 2009 07:59:18
Watch: JES
Position: N 41.15837833, W 70.30241667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 91968
Category: Change of Watch
Subject: JES and NCM
Attachment:
Encoding: HTML
==========

$@MID@$: 375
Date: Fri, 21 Aug 2009 09:20:54 +0200
Creation Time: 21 Aug 2009 09:20:17
Watch: NCM
Position: N 41.24623167, W 70.35495833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 20
Shot Number: 92774
Category: Nav-EOL
Subject: End of Line 20
Attachment:
Encoding: HTML
==========

$@MID@$: 376
Date: Fri, 21 Aug 2009 09:24:01 +0200
Creation Time: 21 Aug 2009 09:23:12
Watch: JES
Position: N 41.24915667, W 70.35852833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 92775
Category:
Subject: start of Line 19
Attachment:
Encoding: HTML
==========

$@MID@$: 377
Date: Fri, 21 Aug 2009 09:48:24 +0200

Creation Time: 21 Aug 2009 09:47:45
Watch: JES
Position: N 41.25365500, W 70.39418333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 93014
Category: Ops-Streamer
Subject: bird 3 is 1 meter too high.
Attachment:
Encoding: HTML
==========

$@MID@$: 378
Date: Fri, 21 Aug 2009 10:03:54 +0200
Creation Time: 21 Aug 2009 10:01:46
Watch: JES
Position: N 41.25194167, W 70.41546833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 93154
Category: Ops-Streamer
Subject: bird 3 is 1.5 meter too high.
Attachment:
Encoding: HTML
==========

$@MID@$: 379
Date: Fri, 21 Aug 2009 10:05:17 +0200
Creation Time: 21 Aug 2009 10:04:26
Watch: JES
Position: N 41.25101167, W 70.41762333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 93186
Category:
Subject: tail of streamer almost at surface
Attachment:
Encoding: HTML
==========

$@MID@$: 380
Date: Fri, 21 Aug 2009 10:54:28 +0200
Creation Time: 21 Aug 2009 10:47:15
Watch: JES
Position: N 41.20862333, W 70.40212000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 93600
Category:
Subject: start of Line 19
Attachment:
Encoding: HTML
==========

$@MID@$: 381

Date: Fri, 21 Aug 2009 12:35:23 +0200
Creation Time: 21 Aug 2009 12:34:16
Watch: NCM
Position: N 41.12320500, W 70.35198333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 94666
Category: Ops-Compressor
Subject: Compressor Down
Attachment:
Encoding: HTML
==========
 Compressor shutdown (overheating?) starting at shot 94666.
 Continuing to acquire MCS. Will try to bring the compressor back up
after it cools.
$@MID@$: 382
Date: Fri, 21 Aug 2009 12:56:51 +0200
Creation Time: 21 Aug 2009 12:55:40
Watch: NCM
Position: N 41.10419667, W 70.34181833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 944696
Category: Ops-Compressor
Subject: Compressor back on line, warming up
Attachment:
Encoding: HTML
==========
 Shooting should resume in ~5 minutes. MMO notified, OK to start
shooting when we are ready.
$@MID@$: 383
Date: Fri, 21 Aug 2009 13:01:26 +0200
Creation Time: 21 Aug 2009 13:01:22
Watch: NCM
Position: N 41.10011167, W 70.33976333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 94930
Category: Ops-Guns
Subject: Resumed shooting
Attachment:
Encoding: HTML
==========
 Resumed shooting GI gun no. 2 at shot number 94930.
$@MID@$: 384
Date: Fri, 21 Aug 2009 13:17:19 +0200
Creation Time: 21 Aug 2009 13:15:44
Watch: JES
Position: N 41.08590833, W 70.33217333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 95095
Category: Ops-Streamer
Subject: several channels (50-57) are showing a bad signal
Attachment:

Encoding: HTML
==========

$@MID@$: 385
Date: Fri, 21 Aug 2009 13:19:30 +0200
Creation Time: 21 Aug 2009 13:18:52
Watch: JES
Position: N 41.08566500, W 70.33176000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 95125
Category: Ops-Streamer
Subject: Bird #2 is running 2m too deep. Tail streamer is running 2m too high (near the surface).
Attachment:
Encoding: HTML
==========

$@MID@$: 386
Date: Fri, 21 Aug 2009 13:26:22 +0200
Creation Time: 21 Aug 2009 13:23:48
Watch: JES
Position: N 41.08334000, W 70.33068000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 19
Shot Number: 95171
Category: Nav-EOL
Subject: End of Line 19 - Guns out of water
Attachment:
Encoding: HTML
==========
Guns have been turned off. It appears streamer has been caught by gear.

Recovered Guns and Streamer.
$@MID@$: 387
Date: Fri, 21 Aug 2009 15:33:39 +0200
Creation Time: 21 Aug 2009 15:33:02
Watch: WLD
Position: N 41.05860833, W 70.28110333, m
Science Operations: MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Putting Streamer in the water
Attachment:
Encoding: HTML
==========

$@MID@$: 388
Date: Fri, 21 Aug 2009 16:48:14 +0200
Creation Time: 21 Aug 2009 16:28:29
Watch: WLD
Position: N 41.01962000, W 70.22455167, m
Science Operations: GI-2 | MCS Streamer | Knudsen

Line Name:
Shot Number:
Category: Ops-Deployment
Subject: Guns and Streamer In Water
Attachment:
Encoding: HTML
==========

$@MID@$: 389
Date: Fri, 21 Aug 2009 16:52:15 +0200
Creation Time: 21 Aug 2009 16:51:51
Watch: WLD
Position: N 41.02073167, W 70.21843000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: One Gun Firing - Not recording any numbers
Attachment:
Encoding: HTML
==========

$@MID@$: 390
Date: Fri, 21 Aug 2009 17:06:40 +0200
Creation Time: 21 Aug 2009 16:52:40
Watch: WLD
Position: N 41.02625167, W 70.19720833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 24
Shot Number: 95176
Category: Nav-SOL
Subject: Start of Line 24 - One gun firing and acquiring data
Attachment:
Encoding: HTML
==========
Head toward line 24.

$@MID@$: 391
Date: Fri, 21 Aug 2009 18:32:13 +0200
Creation Time: 21 Aug 2009 18:31:15
Watch: WLD
Position: N 41.10054667, W 70.18232333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 24
Shot Number: 96010
Category: Ops-Guns
Subject: Guns shut down for turtles
Attachment:
Encoding: HTML
==========

$@MID@$: 392
Date: Fri, 21 Aug 2009 18:38:48 +0200
Creation Time: 21 Aug 2009 18:38:14

Watch: WLD
Position: N 41.10753000, W 70.18840333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 24
Shot Number: 96080
Category: Ops-Guns
Subject: One gun firing - acquiring data
Attachment:
Encoding: HTML
==========

$@MID@$: 393
Date: Fri, 21 Aug 2009 19:15:14 +0200
Creation Time: 21 Aug 2009 19:14:35
Watch: WLD
Position: N 41.13621833, W 70.22612833, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 24
Shot Number: 96450
Category: Nav
Subject: On Line 24 Track
Attachment:
Encoding: HTML
==========

$@MID@$: 394
Date: Fri, 21 Aug 2009 22:29:50 +0200
Creation Time: 21 Aug 2009 22:26:15
Watch: NBS
Position: N 41.12240500, W 70.53752333, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: headed toward line 32
Shot Number: 98393
Category: Nav-EOL
Subject: End of Line 24
Attachment:
Encoding: HTML
==========

$@MID@$: 395
Date: Fri, 21 Aug 2009 22:32:04 +0200
Creation Time: 21 Aug 2009 22:31:16
Watch: WLD
Position: N 41.12150333, W 70.54078167, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 32
Shot Number: 98394
Category: Nav-SOL
Subject: Start of Line 32
Attachment:
Encoding: HTML
==========
 Heading toward Line 32 Track
$@MID@$: 396
Date: Fri, 21 Aug 2009 23:48:13 +0200

Creation Time: 21 Aug 2009 23:47:31
Watch: WLD
Position: N 41.06510167, W 70.56008000, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 32
Shot Number: 99150
Category: Nav
Subject: On Line 32 Track
Attachment:
Encoding: HTML
==========

$@MID@$: 397
Date: Sat, 22 Aug 2009 03:50:04 +0200
Creation Time: 22 Aug 2009 03:48:39
Watch: BD
Position: N 41.05120500, W 70.17064500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name: 32
Shot Number: 101575
Category: Nav-EOL
Subject: End of Line 32
Attachment:
Encoding: HTML
==========
 Finished line 32. Pulling guns and streamer to steam toward Narragansett Bay to hold for Hurricane Bill.
$@MID@$: 398
Date: Sat, 22 Aug 2009 03:52:19 +0200
Creation Time: 22 Aug 2009 03:51:55
Watch: BD
Position: N 41.05120500, W 70.17064500, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Guns
Subject: Guns are off.
Attachment:
Encoding: HTML
==========

$@MID@$: 399
Date: Sat, 22 Aug 2009 03:54:16 +0200
Creation Time: 22 Aug 2009 03:53:54
Watch: WLD
Position: N 41.05106333, W 70.16784667, m
Science Operations: GI-2 | MCS Streamer | Knudsen
Line Name:
Shot Number:
Category: Ops-Streamer
Subject: Streamers Off
Attachment:
Encoding: HTML
==========

$@MID@$: 400
Date: Sat, 22 Aug 2009 05:32:01 +0200
Creation Time: 22 Aug 2009 05:30:35
Watch: BD
Position: N 41.11036167, W 70.18080333, 20.54 m
Science Operations: Transit | Knudsen
Line Name:
Shot Number:
Category: Comment
Subject: All gear out of water and secure on deck.
Attachment:
Encoding: HTML
==========

$@MID@$: 401
Date: Sat, 22 Aug 2009 05:32:38 +0200
Creation Time: 22 Aug 2009 05:32:04
Watch: NBS
Position: N 41.11056667, W 70.18267333, 22.23 m
Science Operations: Transit | Knudsen
Line Name:
Shot Number:
Category: Nav
Subject: Underway to Narragansett Bay to wait out Hurricane Bill
Attachment:
Encoding: HTML
==========

$@MID@$: 402
Date: Sun, 23 Aug 2009 18:55:28 +0200
Creation Time: 23 Aug 2009 18:52:50
Watch: BD
Position: N @LAT@, W @LON@, @DEPTH@ m
Science Operations: None
Line Name:
Shot Number:
Category: Comment
Subject: Personnel transfer for EM work
Attachment:
Encoding: HTML
==========
 Dan Lizarralde and Nathan Miller departed at URI-GSO from Endeavor to dock via zodiac; Matt Gould and Rob Evans joined Endeavor for EM work. Plan to depart for south of MV late this evening and do EM Monday (8/23).

$@MID@$: 403
Date: Mon, 24 Aug 2009 11:37:52 +0200
Creation Time: 24 Aug 2009 11:36:53
Watch: BD
Position: N 41.20371500, W 70.43836167, 35.17 m
Science Operations: EM
Line Name: EM Path (Portions of 1-5-21)
Shot Number:

Category: Ops-Deployment
Subject: EM in the water
Attachment:
Encoding: HTML
==========

$@MID@$: 404
Date: Mon, 24 Aug 2009 12:34:36 +0200
Creation Time: 24 Aug 2009 12:33:54
Watch: BD
Position: N 41.20371500, W 70.43836167, 35.17 m
Science Operations: EM
Line Name: EM Path (Line 1 portion)
Shot Number:
Category: Nav
Subject: Collecting EM Data
Attachment:
Encoding: HTML
==========

$@MID@$: 405
Date: Mon, 24 Aug 2009 16:56:16 +0200
Creation Time: 24 Aug 2009 16:55:40
Watch: BD
Position: N 41.06362167, W 70.36057333, 38.05 m
Science Operations: EM
Line Name: EM Path
Shot Number:
Category: Nav
Subject: Turn to get on W-E line from Line 1 to Line 5
Attachment:
Encoding: HTML
==========

$@MID@$: 406
Date: Mon, 24 Aug 2009 18:58:26 +0200
Creation Time: 24 Aug 2009 18:57:52
Watch: BD
Position: N 41.06578667, W 70.28765833, 31.69 m
Science Operations: EM
Line Name: EM Path
Shot Number:
Category: Comment
Subject: EM stopped transmitting data; removed from water; will finish time with sparker SCS
Attachment:
Encoding: HTML
==========

$@MID@$: 407
Date: Mon, 24 Aug 2009 19:34:31 +0200
Creation Time: 24 Aug 2009 19:33:42
Watch: WLD
Position: N 41.06897667, W 70.30047500, 33.49 m
Science Operations: Knudsen

Line Name:
Shot Number:
Category: Ops-Deployment
Subject: The Safety Distance is Clear enough for Sparker Deployment
Attachment:
Encoding: HTML
==========

$@MID@$: 408
Date: Mon, 24 Aug 2009 19:41:20 +0200
Creation Time: 24 Aug 2009 19:40:48
Watch: WLD
Position: N 41.07287333, W 70.29574333, 33.77 m
Science Operations: Sparker | Knudsen
Line Name: EM_path
Shot Number:
Category: Ops-Sparker
Subject: Sparker in the Water and firing
Attachment:
Encoding: HTML
==========

$@MID@$: 409
Date: Mon, 24 Aug 2009 20:26:04 +0200
Creation Time: 24 Aug 2009 20:25:24
Watch: WLD
Position: N 41.08196000, W 70.23766500, 29.67 m
Science Operations: Sparker | Knudsen
Line Name: EM_path
Shot Number:
Category: Nav
Subject: Starting Turn on to Path of Line 5
Attachment:
Encoding: HTML
==========

$@MID@$: 410
Date: Mon, 24 Aug 2009 22:54:12 +0200
Creation Time: 24 Aug 2009 22:53:34
Watch: BD
Position: N 41.23557000, W 70.31481833, 25.36 m
Science Operations: Sparker | Knudsen
Line Name: EM Path
Shot Number:
Category: Ops-Sparker
Subject: turning on to line 21, making new sparker SCS file
Attachment:
Encoding: HTML
==========

$@MID@$: 411
Date: Tue, 25 Aug 2009 00:26:45 +0200
Creation Time: 25 Aug 2009 00:26:19
Watch: BD

Position: N 41.06598000, W 70.36525667, 38.14 m
Science Operations: Sparker | Knudsen
Line Name: EM Path
Shot Number:
Category: Ops-Sparker
Subject: tunring on to line 1 track
Attachment:
Encoding: HTML
==========

$@MID@$: 412
Date: Tue, 25 Aug 2009 03:42:19 +0200
Creation Time: 25 Aug 2009 03:41:52
Watch: BD
Position: N 41.06598000, W 70.36525667, 38.14 m
Science Operations: Sparker | Knudsen
Line Name: EM_Path
Shot Number:
Category: Nav-EOL
Subject: End of Line EM_Path
Attachment:
Encoding: HTML
==========

$@MID@$: 413
Date: Tue, 25 Aug 2009 03:49:48 +0200
Creation Time: 25 Aug 2009 03:49:17
Watch: BD
Position: N 41.06498167, W 70.36341167, 37.95 m
Science Operations: Knudsen
Line Name:
Shot Number:
Category: Ops-Recovery
Subject: Sparker and SCS recovered; headed back to URI/GSO
Attachment:
Encoding: HTML
==========

Appendix 3

Seismic Processing Scripts

d2y.csh

```
#!/bin/csh -f
#
# EN465 - Shipboard seismic data processing
#
# Convert Geometrics *.sgd shot files to a single shot gathered SEG-Y
#
# Notes:
#      **Requires 2009 or later version of sioseis to write wb real depths
#        to SEG-Y headers.
#      **Requires sioseis_*_2009.5.9_dlz version of sioseis to write large files.
#        This version uses Dan's edits to 64-bit addressing in diskio.c for large
#        file i/o.
#



# Input
source linename.csh

set segd_list=${linename}.sgd.list
set sht_ch=(1 64)

# Output
set raw_segy_dir=../raw/SEGY
set shot_segy_file=${raw_segy_dir}/${linename}_ch$sht_ch[1]-$sht_ch[2].sgy

#=========================================================================
# Give some feed-back
source banner.csh
# Create shot sorted list of SEG-D files in segd_dir
set wd=`pwd`
set segd_list=$wd/$segd_list
cd $segd_dir
find *.sgd  | awk -F"/" '{print $NF}'                    \
          | awk -F"." '{printf("%015i  %s\n",$1,NR)}'    \
```

```
        | sort                                  \
        | awk '($1!=0){print dir"/"int($1)".sgd"}'     \
          dir=$segd_dir > $segd_list
cd $wd

echo "**INPUT:"
cat $segd_list
echo ""
echo "**OUTPUT:"
echo $shot_segy_file


mkdir -p $raw_segy_dir

# Read in Geometrics *.sgd and write out SEG-Y
time sioseis << eof
procs segddin prout diskoa end
          segddin
       listpath $segd_list
       fcset 1 lcset 1
       ftr $sht_ch[1] ltr $sht_ch[2]   end
   end
   prout
      fno 0 lno 999999 ftr 1 ltr 1 noinc 100 end
   end
   diskoa
            fno 1 lno 99999 opath $shot_segy_file end
   end
end
eof
```

---

gather.csh

```
#!/bin/csh -f
#
# EN465 - Shipboard seismic data processing
#
# Make SEG-Y cdp gathers from SEG-Y shot gathers
#
# Notes:
#      **Requires sioseis_*_2009.5.9_dlz version of sioseis to write large files.
#        This version uses Dan's edits to 64-bit addressing in diskio.c for large
#        file i/o.
#

source linename.csh

set sht_ch=(9 56) # channels to include from shot gathers
set GeoEel_geom="9 -81.25 56 -668.75 57 -678.125 64 -721.875"

set raw_segy_dir=../raw/SEGY
set proc_segy_dir=../proc

# Input
set shot_segy_file=${raw_segy_dir}/${linename}_ch1-64.sgy

# Output
set cdp_segy_file=${proc_segy_dir}/${linename}.cdp.sgy

#=============================================================================
# Give some feed-back
source banner.csh
echo ""
echo "**INPUT:"
echo $shot_segy_file
echo ""
echo "**OUTPUT:"
```

```
echo $cdp_segy_file



mkdir -p $proc_segy_dir

# make gathers
time sioseis << eof
procs diskin prout geom gather diskoa end
        diskin
                fno 1 lno 999999 ftr $sht_ch[1] ltr $sht_ch[2]
                random 0
      ipath $shot_segy_file end
        end
   prout
     fno 0 lno 999999 ftr 1 ltr 1 noinc 100 end
   end
   geom
     type 2                                    # use CONSTANT SHOT SPACING
     rpadd 1000          # first CDP number
     dbrps -12.5         # group (channel) spacing
     dfls  -12.5         # shot spacing
     gxp $GeoEel_geom      # streamer channel source,receiver offset pairs
     smear 6.25 end
   end
   gather
     maxtrs 72 maxrps 100 end
   end
   diskoa
          fno 1 lno 99999 opath $cdp_segy_file end
   end
end
eof



----------
```

stack_v1D.csh

```
#!/bin/csh -f
#
# EN465 - Shipboard seismic data processing
#
# Stack MCS data using a 1D velocity function hung from the seafloor
#
# Notes:
#      **Requires sioseis_*_2009.5.9_dlz version of sioseis to write large files.
#        This version uses Dan's edits to 64-bit addressing in diskio.c for large
#        file i/o.
#

source linename.csh

set CDP=(1 99999)   # CDP numbers to include in stack
set cdp_trc=(1 48)              # CDP trace numbers to include in stack

# Streamer channel, offset pairs
set GeoEel_geom="9 -81.25 56 -668.75 57 -678.125 64 -721.875"
set bp=(15 200)     # Bandpass Filter pass-band applied before stacking
set dNMO=100        # Increment of NMO'd and NMO+Mute CDP gathers to write to disk

set raw_segy_dir=../raw/SEGY
set proc_segy_dir=../proc

# Input:
set cdp_segy_file=${proc_segy_dir}/${linename}.cdp.sgy

# Output:
set nmo_segy_file=${proc_segy_dir}/${linename}.cdp-trc$cdp_trc[1]-$cdp_trc[2].filt.v1d.nmo.x$dNMO.sgy
set mut_segy_file=${proc_segy_dir}/${linename}.cdp-trc$cdp_trc[1]-$cdp_trc[2].filt.v1d.nmo.mute.x$dNMO.sgy
set stk_segy_file=${proc_segy_dir}/${linename}.cdp-trc$cdp_trc[1]-$cdp_trc[2].v1d.stk.dc.bp$bp[1]-$bp[2].sgy
```

```
#=============================================================================
# Give some feed-back
source banner.csh
echo ""
echo "**INPUT:"
echo $cdp_segy_file
echo ""
echo "**OUTPUT:"
echo $nmo_segy_file
echo $mut_segy_file
echo $stk_segy_file

# stack
time sioseis << eof
procs diskin prout filter nmo filter diskoa mute diskob
     stack decon diskoc end
          diskin
                    fno $CDP[1] lno $CDP[2] ftr $cdp_trc[1] ltr $cdp_trc[2]
        ipath $cdp_segy_file end
          end
    prout
       fno 0 lno 999999 ftr 1 ltr 1 noinc $dNMO end
    end
    filter  # band-pass filter
      pass $bp[1] $bp[2] ftype 0 dbdrop 24 end
    end
    decon
      sedts 0.08 1.5 fillen 0.10 pdist 0.0025 end
    end
    mute
      addwb yes
      xtp 100 -0.01
         120  0.04
         656  1.00 end
    end
    diskoa  # write out a few NMO CDP gathers
      fno 1 lno 99999
```

```
      noinc $dNMO
      opath $nmo_segy_file end
    end
    diskob  # write out a few NMO CDP gathers
      fno 1 lno 99999
      noinc $dNMO
      opath $mut_segy_file end
    end
    diskoc  # write out complete stacked section
      fno 1 lno 99999
      opath $stk_segy_file end
    end
    nmo
      vtrkwb 500 stretc 20
      vtp 1460 0.000
         2000 0.500
         3200 2.000 end
     end
end
eof
```

---

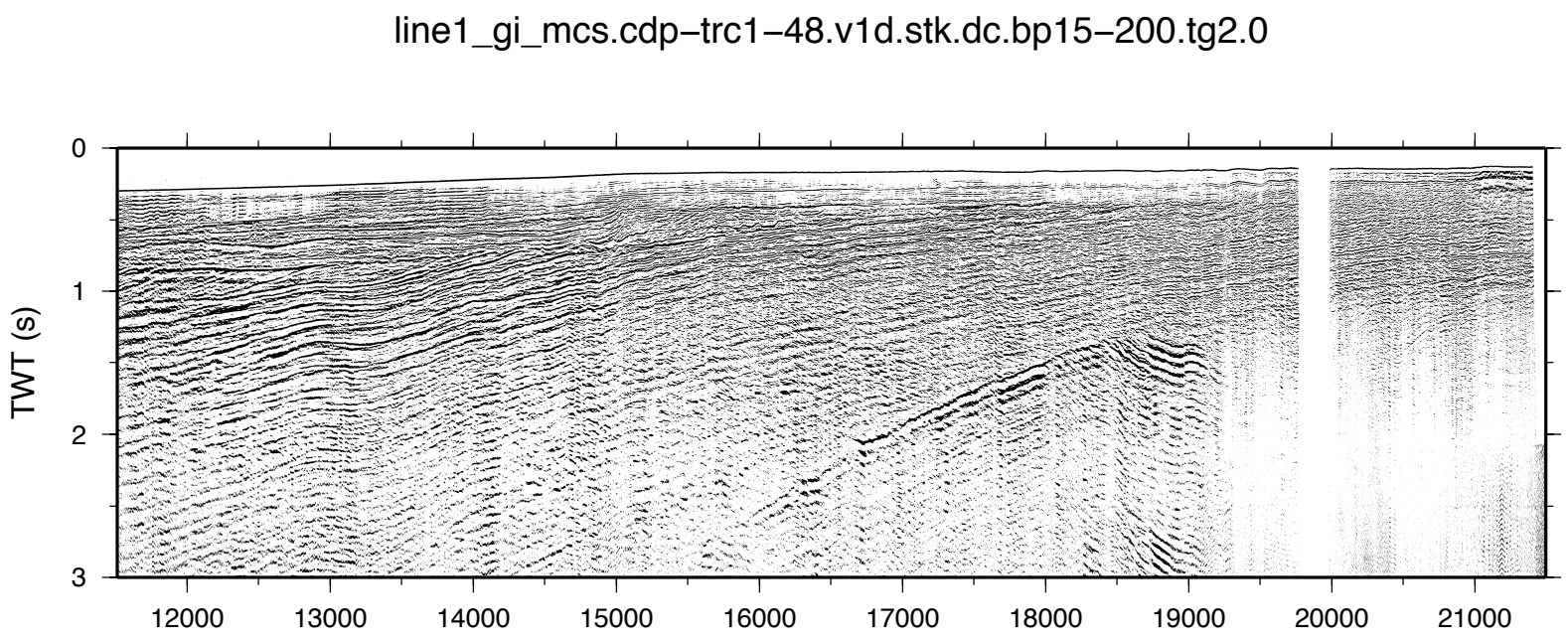
gplt_stack.csh

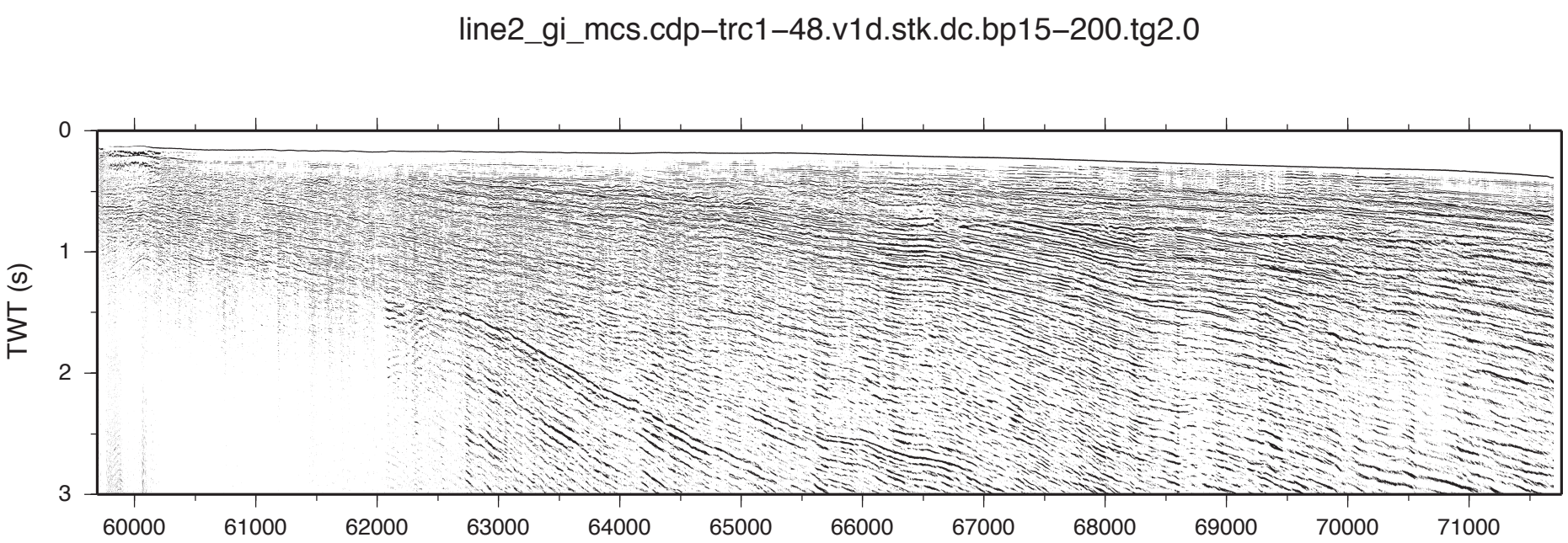
```
#!/bin/csh -f
#
# EN465 - Shipboard seismic data processing
#

# Input:
source linename.csh
set ifile=../proc/${linename}.cdp-trc1-48.v1d.stk.dc.bp15-200.sgy

# Plot parameters
set T1=0.
set T2=3.

#Output:
set plt_dir=../plt
set grd=${plt_dir}/${linename}.grd
set ps=${plt_dir}/${linename}.stack.ps

#=================================================================
mkdir -p $plt_dir

source banner.csh

echo "**INPUT:"
echo $ifile
echo ""
echo "**OUTPUT:"
echo $grd
echo $ps
echo ""

# Make GMT grd
segy2grd << done
$ifile
```

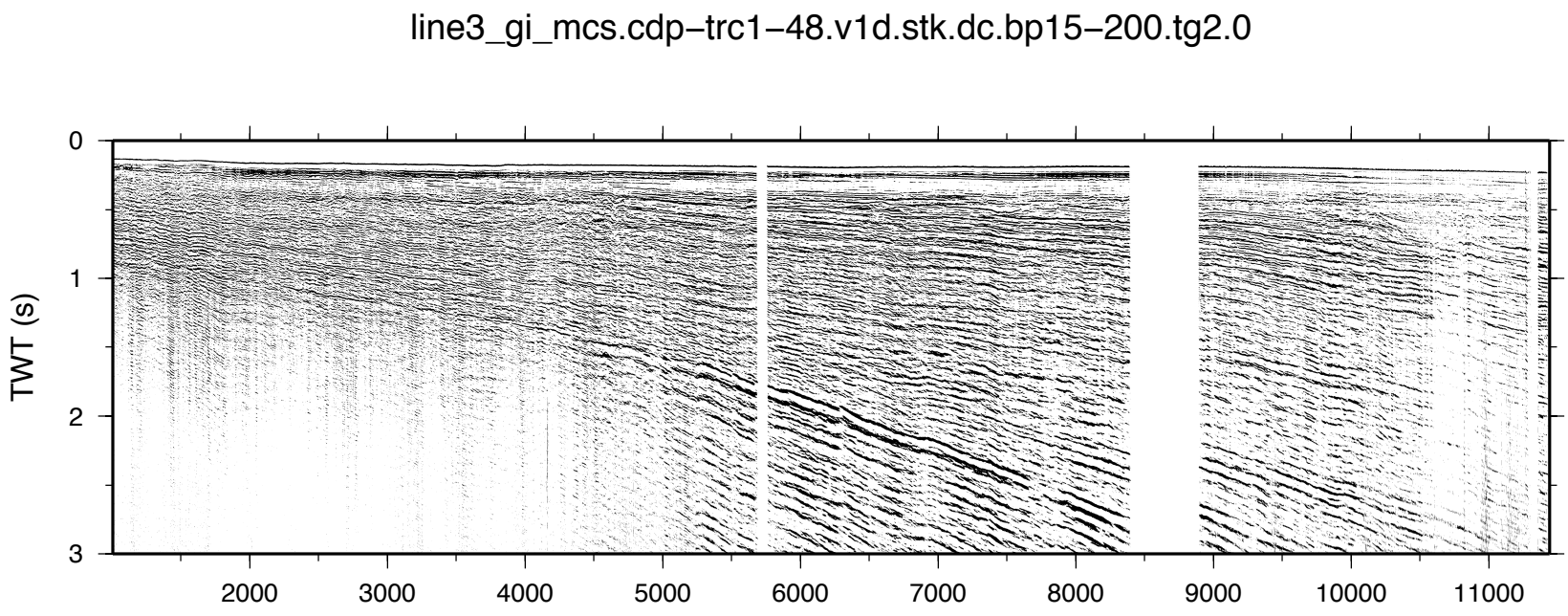
```
$grd
0 0 0  1     1    ! iX1, iX2, X0, dx_km, inc_X
$T1 $T2 2.0        !  T1,  T2, Tgain
0.001            !  si_new
0                !  iq_add_delay
1                !  iq_norm
done
#
grdedit -A $grd=1

set cpt=cpt.bit

# Make scale
echo "-150.0    255 255 255    0.050   255 255 255"  > $cpt
echo "  0.050      0   0   0  200.0     0   0   0"  >> $cpt



# Set region
set xR=`grdinfo -C $grd=1 | awk '{print $2"/"$3}'`
set RG=$xR/$T1/$T2
set XS=9.00
set YS=2.50

set title=$linename

grdimage $grd=1 -JX$XS/-$YS -R$RG -V -C$cpt -X1. -Y4.0 -K > $ps

psbasemap   -JX$XS/-$YS -R$RG -V \
        -Bf500a1000/f.5a1.:"TWT (s)"::."$title":WeSn \
        -O     >> $ps

# Open
gv $ps
```

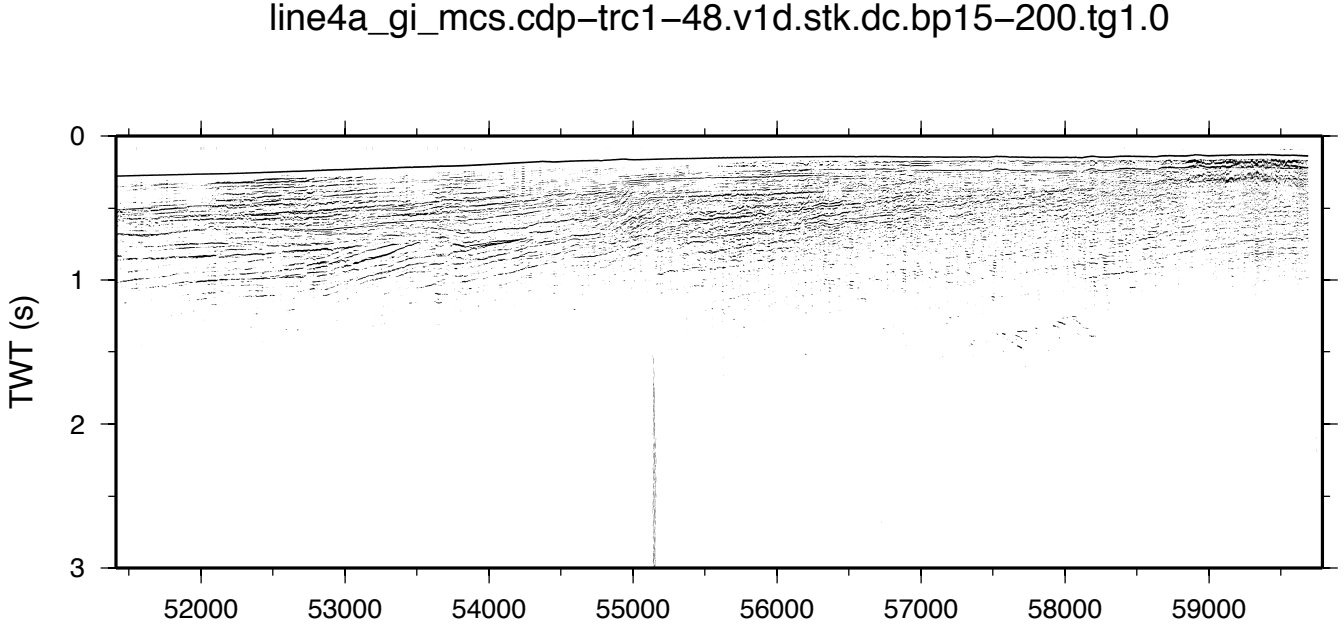
Appendix 4

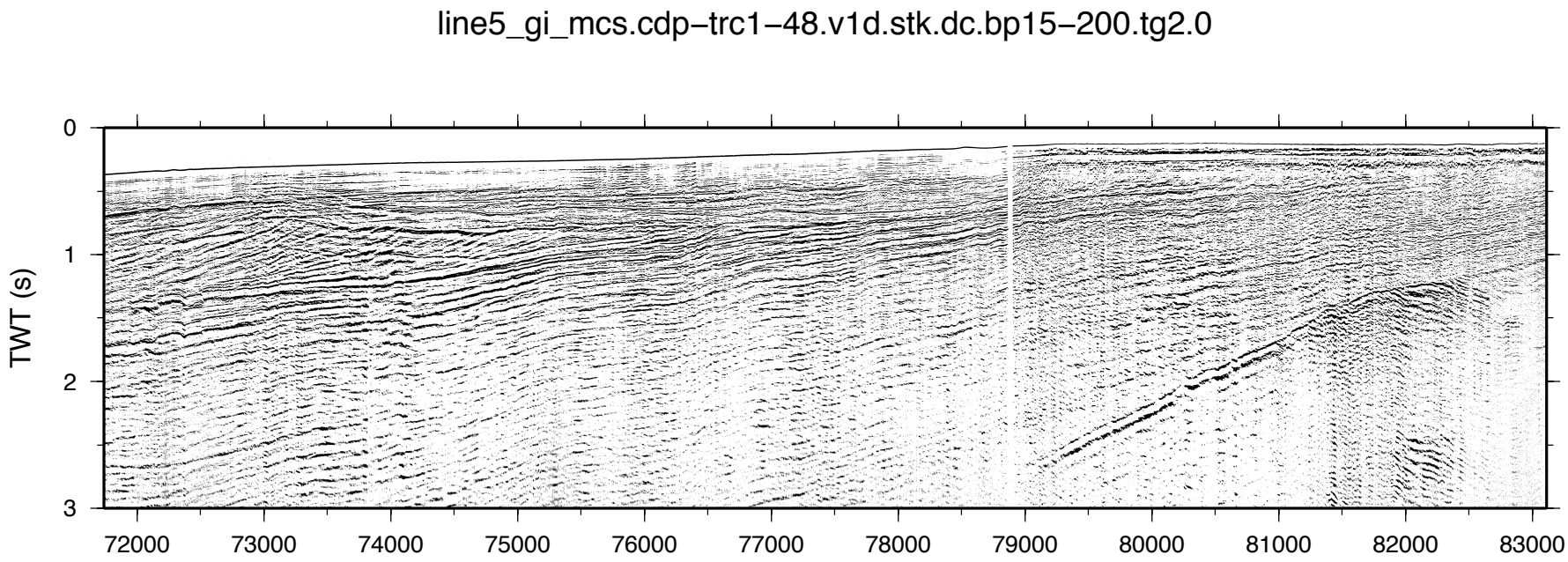
Shipboard Stacked CDP Sections


line1_gi_mcs.cdp−trc1−48.v1d.stk.dc.bp15−200.tg2.0
TWT (s)
0
1
2
3
12000
13000
14000
15000
16000
17000
18000
19000
20000
21000

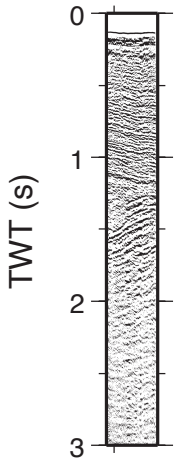

line2_gi_mcs.cdp−trc1−48.v1d.stk.dc.bp15−200.tg2.0
TWT (s)
0
1
2
3
60000
61000
62000
63000
64000
65000
66000
67000
68000
69000
70000
71000


line3_gi_mcs.cdp−trc1−48.v1d.stk.dc.bp15−200.tg2.0
TWT (s)
0
1
2
3
2000
3000
4000
5000
6000
7000
8000
9000
10000
11000

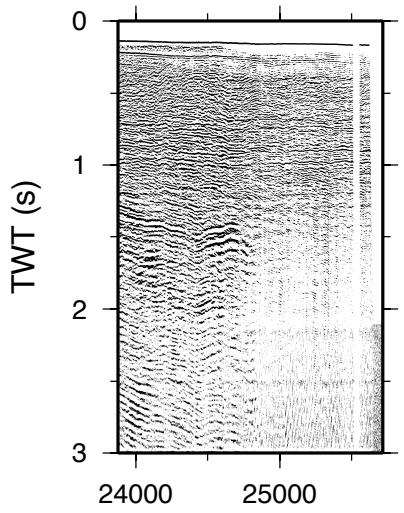

line4a_gi_mcs.cdp–trc1–48.v1d.stk.dc.bp15–200.tg1.0
TWT (s)
0
1
2
3
52000
53000
54000
55000
56000
57000
58000
59000


line5_gi_mcs.cdp−trc1−48.v1d.stk.dc.bp15−200.tg2.0
TWT (s)
0
1
2
3
72000
73000
74000
75000
76000
77000
78000
79000
80000
81000
82000
83000

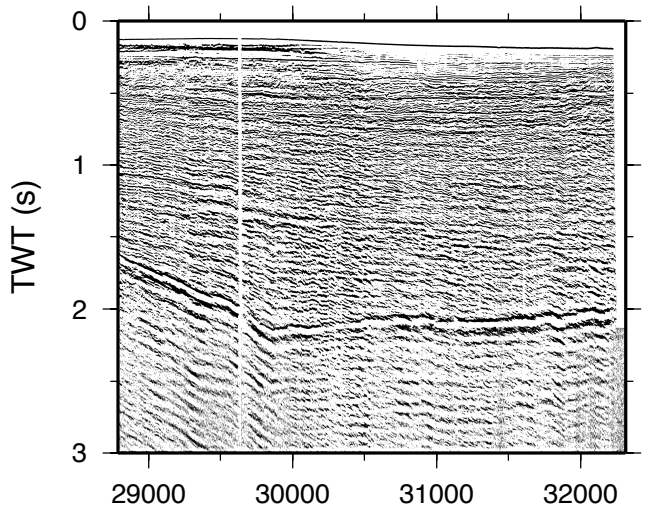
line5a_gi_mcs.cdp–trc1–48.v1d.stk.dc.bp15–200.tg2.0



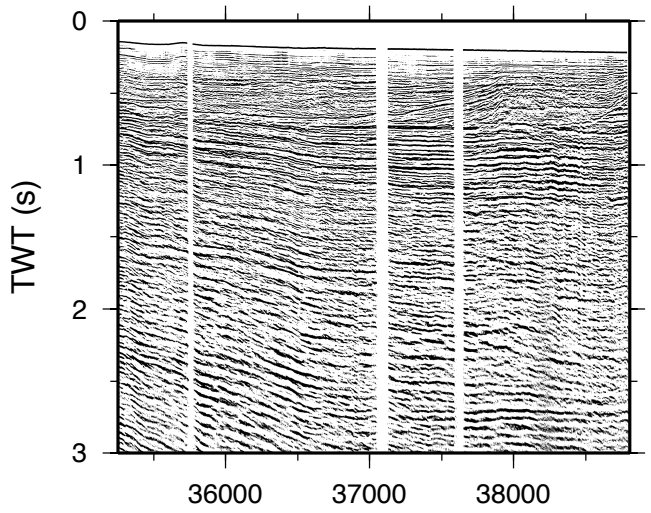
line7_gi_mcs.cdp−trc1−48.v1d.stk.dc.bp15−200.tg2.0



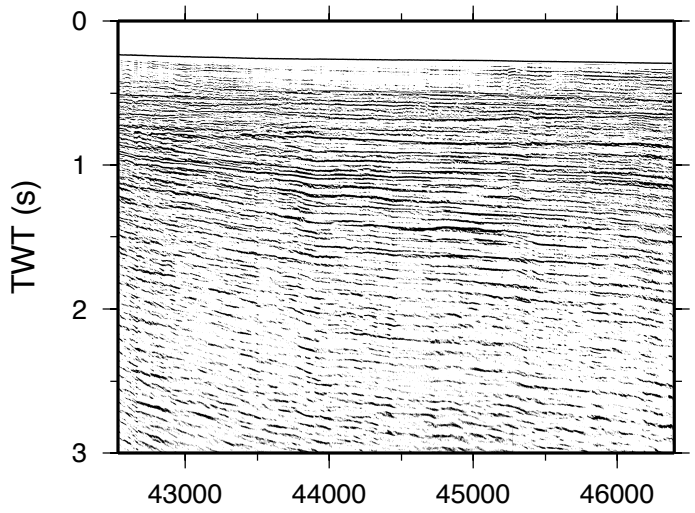
line8_gi_mcs.cdp–trc1–48.v1d.stk.dc.bp15–200.tg2.0



line9_gi_mcs.cdp–trc1–48.v1d.stk.dc.bp15–200.tg2.0



line10_gi_mcs.cdp−trc1−48.v1d.stk.dc.bp15−200.tg2.0



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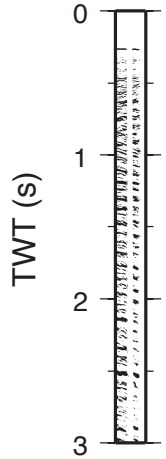

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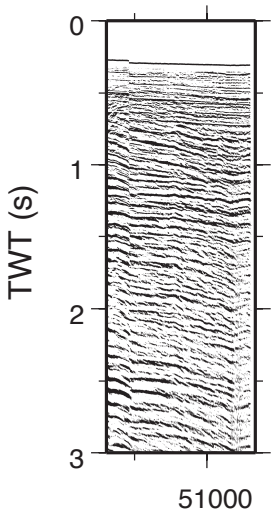

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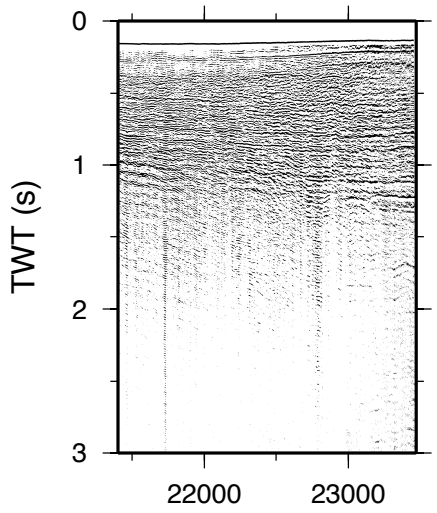

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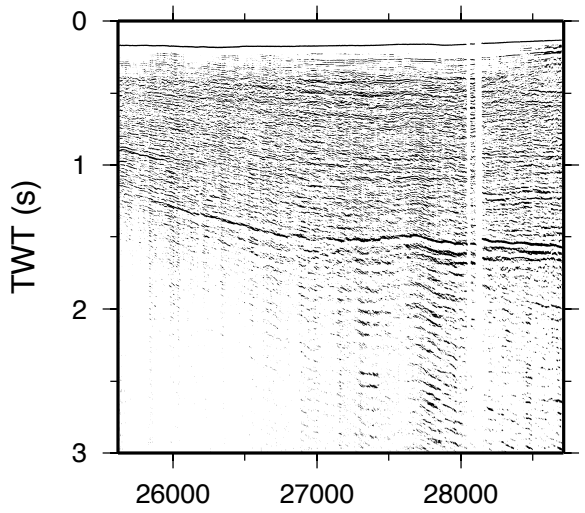

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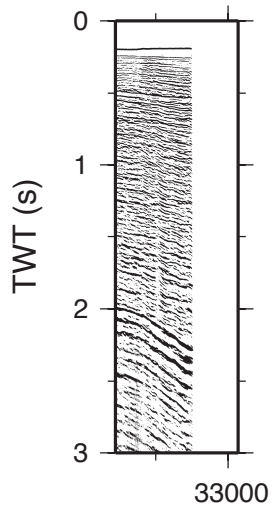

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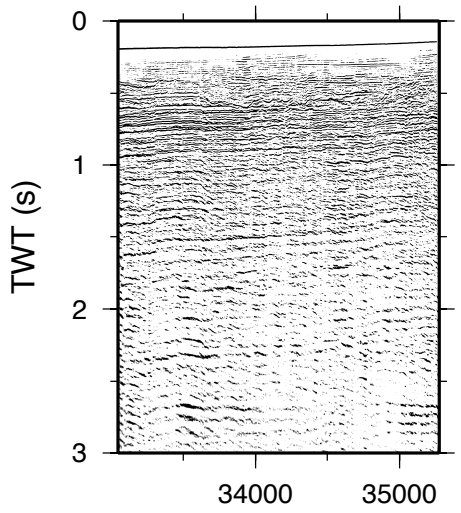

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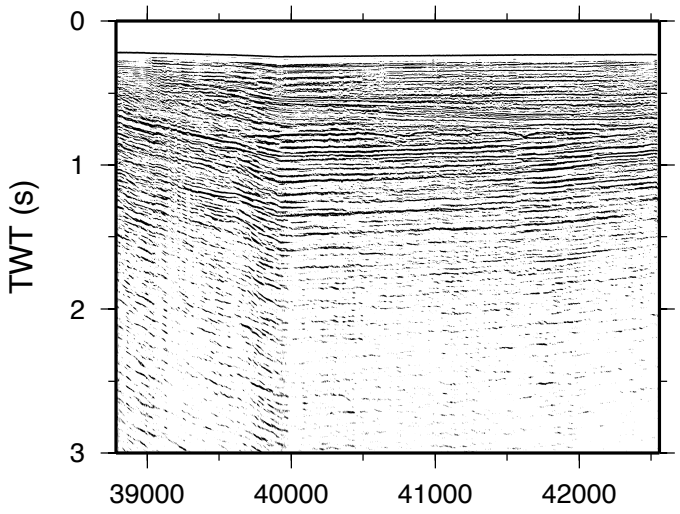

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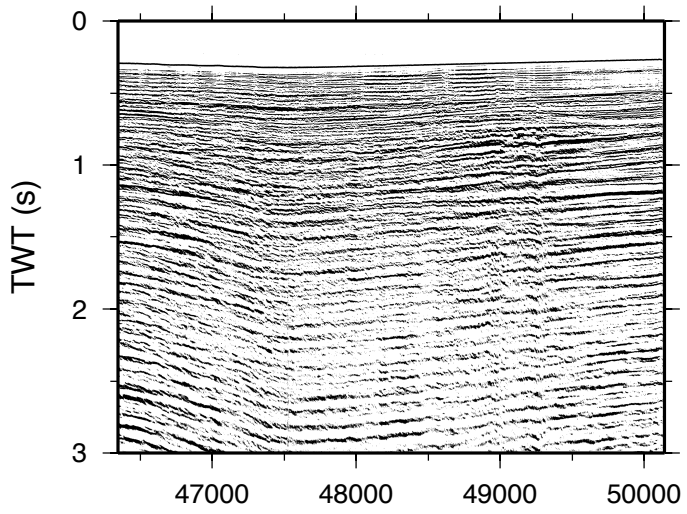

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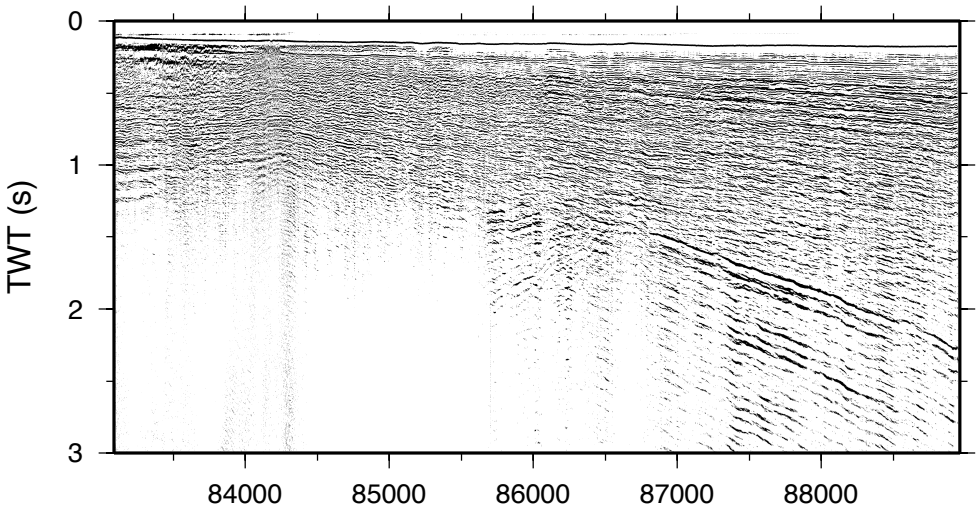

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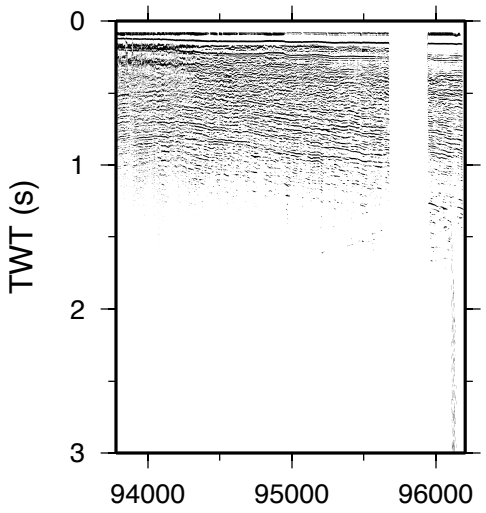

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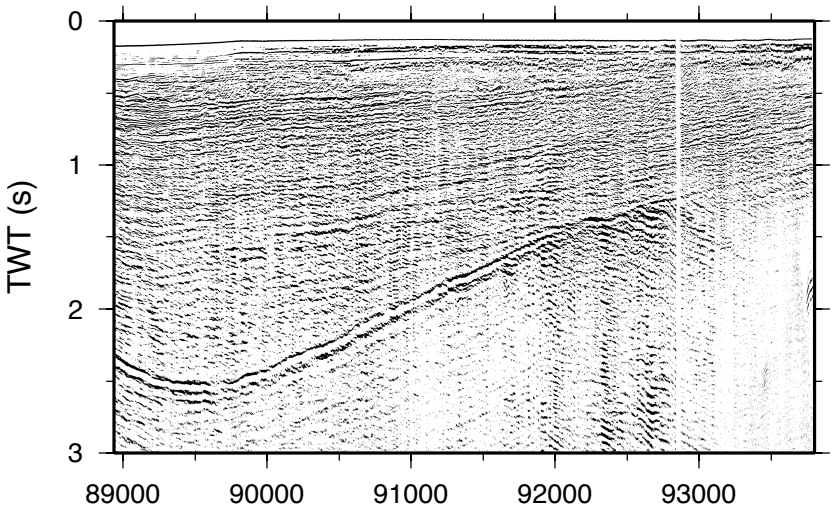

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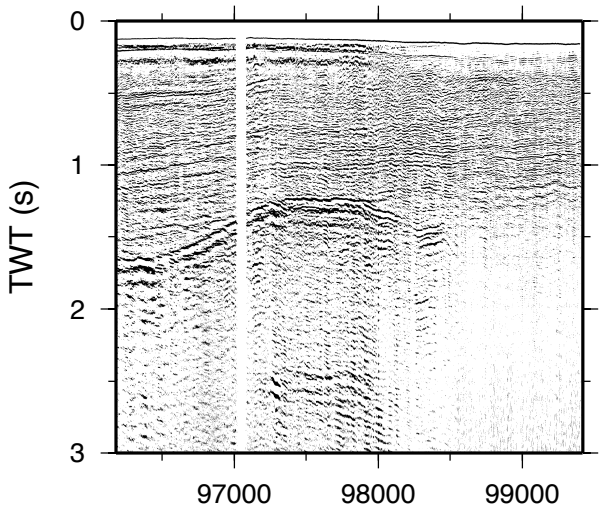

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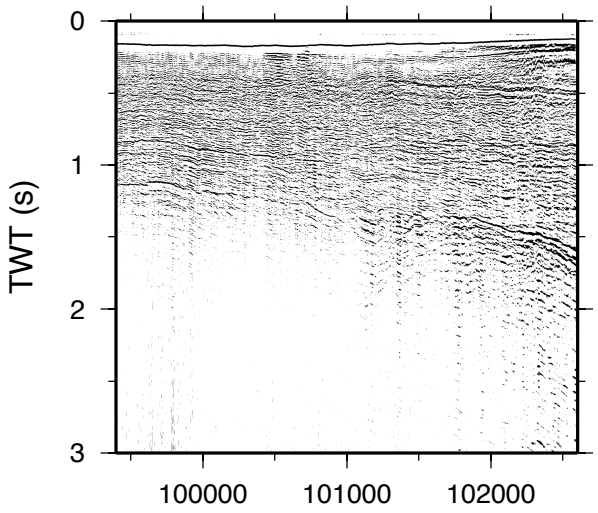

Appendix 5

Incidental Harassment Authorization for EN465

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

AUG 11 2009

Meagan Cummings
Marine Environmental & Safety Coordinator
Lamont-Doherty Earth Observatory
61 Route 9W
P.O. Box 1000
Palisades, New York 10964-8000

Dear Ms. Cummings:

Enclosed is an Incidental Harassment Authorization (IHA) issued to the Rice University, under the authority of Section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1361 *et seq.*), to harass species of marine mammals incidental to the R/V *Endeavor*'s low-energy seismic survey in the Northwest Atlantic Ocean during August, 2009.

You are required to comply with the conditions contained in the IHA. In addition, you must cooperate with any Federal, state, or local agency monitoring the impacts of your activity and submit a report to the National Marine Fisheries Service's (NMFS) Office of Protected Resources within 90 days of the completion of the cruise. The IHA requires monitoring of marine mammals by qualified individuals before, during, and after seismic activities and reporting of marine mammal observations, including species, numbers, and behavioral modifications potentially resulting from this activity.

If you have any questions concerning the IHA or its requirements, please contact Howard Goldstein or Jolie Harrison, Office of Protected Resources, NMFS, at 301-713-2289.

Sincerely,

James H. Lecky
Director
Office of Protected Resources

Enclosure

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Silver Spring, MD 20910

DEPARTMENT OF COMMERCE

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NATIONAL MARINE FISHERIES SERVICE

Incidental Harassment Authorization

Rice University (Rice), Department of Earth Science, 6100 Main Street, MS 126, Houston, Texas 77005, is hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (MMPA) (16 U.S.C. 1371(a)(5)(D)) and 50 CFR 216.107, to harass small numbers of marine mammals incidental to a low-energy marine seismic survey conducted by the R/V *Endeavor* (*Endeavor*) in the Northwest Atlantic Ocean, August, 2009:

1. This Authorization is valid from August 12, 2009 through September 12, 2009.

2. This Authorization is valid only for the *Endeavor*'s activities associated with low-energy seismic survey operations that will occur in the area 39.8 to 41.5° N, 69.8 to 70.6° W within the Exclusive Economic Zone of the United States, as specified in Rice's Incidental Harassment Authorization application and Environmental Assessment.

3. Species Authorized and Level of Takes

(a) The incidental taking of marine mammals, by Level B harassment only, is limited to the following species in the waters off of Nantucket and Martha's Vineyard:

(i) Mysticetes – see Table 2 (attached) for authorized species and take numbers.

(ii) Odontocetes – see Table 2 for authorized species and take numbers.

(iii) Pinnipeds – see Table 2 for authorized species and take numbers.

(iv) If any marine mammal species are encountered during seismic activities that are not listed in Table 2 (attached) for authorized taking and are likely to be exposed to SPLs greater than or equal to 160 dB re 1 μPa (rms), then the Holder of this Authorization must alter speed or course, power-down or shut-down the airguns to avoid take.

(b) The taking by Level A harassment (injury, serious injury or death), of any of the species listed in 3(a) above or the taking of any kind of any other species of marine

mammal is prohibited and may result in the modification, suspension or revocation of this Authorization.

4. The taking of any marine mammal in a manner prohibited under this Authorization must be reported immediately to the Office of Protected Resources, National Marine Fisheries Service (NMFS), at 301-713-2289.

5. The Authorization for taking by Level B harassment is limited to the following acoustic sources without an amendment to this Authorization:

(i) a single GI airgun array with a total capacity of 45 in^3;
(ii) a two GI airgun array with a total capacity of 90 in^3;
(iii) a sparker system;
(iv) a single 15 in^3 watergun;
(v) an echosounder; and
(vi) a sub-bottom profiler.

6. The Holder of this Authorization is required to cooperate with NMFS and any other Federal, state or local agency monitoring the impacts of the activity on marine mammals.

7. Mitigation and Monitoring Requirements

The Holder of this Authorization is required to:

(a) Utilize two NMFS-qualified, vessel-based marine mammal visual observers (MMVOs) (except during meal times, when at least one MMVO will be on watch) to survey and monitor for marine mammals near the seismic source vessel during daytime airgun operations (from civil twilight-dawn to civil twilight-dusk) and before and during start-ups of airguns day or night. The *Endeavor*'s vessel crew will also assist in detecting marine mammals, when practicable. MMVOs will have access to reticle binoculars (7x50 Fujinon), and night vision devices. MMVO shifts will last no longer than 4 hours at a time. MMVOs will also make observations during daytime periods when the seismic system is not operating for comparison of animal abundance and behavior, when feasible.

(b) MMVOs will conduct monitoring while the airgun array and streamers are being deployed or recovered from the water.

(c) Record the following information when a marine mammal is sighted:

(i) species, group size, age/size/sex categories (if determinable), behavior when first sighted and after initial sighting, heading (if consistent), bearing and distance from seismic vessel, sighting cue, apparent reaction to the airguns or vessel (e.g., none, avoidance, approach, paralleling, etc., and including responses to ramp-up), and behavioral pace; and

(ii) time, location, heading, speed, activity of the vessel (including number of airguns operating and whether in state of ramp-up or power-down), sea state, visibility, cloud cover, and sun glare; and

(iii) the data listed under 7(c)(ii) will also be recorded at the start and end of each observation watch and during a watch whenever there is a change in one or more of the variables.

(d) Visually observe the entire extent of the safety radius (190 dB for pinnipeds, 180 dB for cetaceans; see Table 1 [attached] for distances) using NMFS-qualified MMVOs, for at least 30 minutes prior to starting the airgun (day or night). If the MMVO finds a marine mammal within the safety zone, Rice must delay the seismic survey until the marine mammal(s) has left the area. If the MMVO sees a marine mammal that surfaces, then dives below the surface, the observer shall wait 30 minutes. If the MMVO sees no marine mammals during that time, they should assume that the animal has moved beyond the safety zone. If for any reason the entire radius cannot be seen for the entire 30 minutes (min) (i.e., rough seas, fog, darkness), or if marine mammals are near, approaching, or in the safety radius, the airguns may not be started up.

(e) Establish 180 dB and 190 dB safety zones for cetaceans and pinnipeds, respectively, before the single and two GI airgun array (45 in^3 and 90 in^3) is in operation. The relevant safety zones for the two GI airgun array will be used for the sparker system and watergun. See Table 1 (attached) for distances and safety radii.

(f) Alter speed or course during seismic operations if a marine mammal, based on its position and relative motion, appears likely to enter the relevant safety zone. If speed or course alteration is not safe or practicable, or if after alteration the marine mammal still appears likely to enter the safety zone, further mitigation measures, such as a shut-down, will be taken.

(g) Power-down or shut-down the airgun(s), watergun, and/or sparker if a marine mammal is detected within, approaches, or enters the relevant safety radius (as defined in Table 1, attached). A shut-down means the operating airgun is turned off. The relevant safety radii for the two GI airguns (90 in^3) will be used for the watergun (15 in^3) or sparker. A power-down means reducing the number of operating airguns to a single operating (45 in^3) airgun, which reduces the safety radius to the degree that the animal(s) is outside of it.

(h) During operations using the two GI airgun array, a single 45 in^3 GI airgun will be operated during turns between successive survey lines. The continued operation of one airgun is intended to alert marine mammals to the presence of the survey vessel in the area.

(i) Following a power-down, if the marine mammal approaches the smaller designated safety radius, the airguns must then be completely shut-down. Airgun activity shall not resume until the marine mammal has cleared the safety zone, which means it was visually observed to have left the safety zone, or has not been seen within the safety zone for 10 min for species with shorter dive durations (small odontocetes and pinnipeds) or 15 min for species with longer dive durations (mysticetes and large odontocetes, including sperm, pygmy sperm, dwarf sperm, killer, and beaked whales).

(j) Low-energy marine seismic surveys may continue into night and low-light hours if such segment(s) of the survey is initiated when the entire relevant safety zones are visible and can be effectively monitored.

(k) No initiation of airgun array or other sound source operations is permitted from a shut-down position at night or during low-light hours (such as in dense fog or heavy rain) when the entire relevant safety zone cannot be effectively monitored by the MMVOs on duty.

(l) When operating the sound source(s), minimize approaches to slopes, submarine canyons, seamounts, and other underwater geologic features, if possible, to avoid possible beaked whale habitat.

(m) If concentrations or groups of humpback (*Megaptera novaeangliae*), fin (*Balaenoptera physalus*), blue (*B. musculus*), sei (*B. borealis*), and sperm whales (*Physeter macrocephalus*) are observed (by visual detection) prior to or during the airgun operations, and do not appear to be traveling (i.e., feeding, socializing, breeding), then those operations will be powered-down, shut-down, delayed, and/or moved to another location, if possible, based on recommendations by the on-duty MMVO aboard the *Endeavor*. A typical concentration or group of whales for this survey consists of three or more individuals visually sighted. If the concentration or group of whales appears to be traveling, then Rice will power-down or shut-down seismic operations and wait for approximately 30 min for the individuals to move out of the study area before re-initiating seismic operations.

(n) If a North Atlantic right whale (*Eubalaena glacialis*) is visually sighted, the airgun array, watergun, or sparker will be shut-down regardless of the distance of the animal(s) to the sound source. The array will not resume firing until 30 min after the last documented whale visual sighting.

(o) To the maximum extent practicable, seismic surveys (especially inshore) will be conducted from the coast (inshore) and proceed towards the sea (offshore) in order to avoid trapping marine mammals in shallow water.

8. Reporting Requirements

The Holder of this Authorization is required to:

(a) Submit a draft report on all activities and monitoring results to the Office of Protected Resources, NMFS, within 90 days of the completion of the *Endeavor's* cruise. This report must contain and summarize the following information:

(i) Dates, times, locations, heading, speed, weather during, sea conditions (including Beaufort Sea State and Wind Force), and associated activities during all seismic operations and marine mammal sightings;

(ii) Species, number, location, distance from the vessel, and behavior of any marine mammals, as well as associated seismic activity (number of shut-downs), observed throughout all monitoring activities.

(iii) An estimate of the number (by species) of marine mammals that: (A) are known to have been exposed to the seismic activity (based on visual observation) at received levels greater than or equal to 160 dB re 1 μPa (rms) and/or 180 dB re 1 μPa (rms) with a discussion of any specific behaviors those individuals exhibited; and (B) may have been exposed (based on modeling results) to the seismic activity at received levels greater than or equal to 160 dB re 1 μPa (rms) and/or 180 dB re 1 μPa (rms) with a discussion of the nature of the probable consequences of that exposure on the individuals that have been exposed.

(iv) A description of the implementation and effectiveness of the: (A) terms and conditions of the Biological Opinion's Incidental Take Statement (ITS) (attached); and (B) mitigation measures of the Incidental Harassment Authorization. For the Biological Opinion, the report will confirm the implementation of each term and condition, as well as any conservation recommendations, and describe their effectiveness, for minimizing the adverse effects of the action on listed marine mammals.

(b) Submit a final report to the Chief, Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, within 30 days after receiving comments from NMFS on the draft report. If NMFS decides that the draft report needs no comments, the draft report will be considered to be the final report.

9. In the unanticipated event that any taking of a marine mammal in a manner prohibited by this Authorization occurs, such as an injury, serious injury, or mortality, and are judged to result from these activities, Rice will immediately report the incident to the Chief of the Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, at 301-713-2289. Rice will postpone the research activities until NMFS is able to review the circumstances of the take. NMFS will work with Rice to determine whether modifications in the activities are appropriate and necessary, and notified the permit holder that they may resume sound source operations.

In the event that Rice discovers an injured or dead marine mammal that is judged to not have resulted from these activities, Rice will contact and report the incident to the Chief of the Permits, Conservation, and Education Division, Office of Protected Resources, NMFS, at 301-713-2289 within 24 hours of the discovery.

10. Rice is required to comply with the Terms and Conditions of the ITS corresponding to NMFS' Biological Opinion issued to both NSF and NMFS' Office of Protected Resources (attached).

11. A copy of this Authorization and the ITS must be in the possession of all contractors and marine mammal monitors operating under the authority of this Incidental Harassment Authorization.

AUG 11 2009

James H. Lecky
Director
Office of Protected Resources
National Marine Fisheries Service
Attachments

Date

Attachment

Table 1. Safety Radii for Triggering Mitigation.

Source and Volume	Water Depth	Predicted rms Distances (m)		
		Shut-down Zone for Pinnipeds 190 dB	Shut-down Zone for Cetaceans 180 dB	Level B Harassment Zone 160 dB
Single GI Airgun (45 in^3)	Intermediate (100-1,000 m)	12	35	330
	Shallow (<100 m)	95	150	570
Two GI Airgun (90 in^3), Sparker, and Watergun (15 in^3)	Intermediate (100-1,000 m)	15	60	525
	Shallow (<100 m)	147	296	1,029

Table 2. Authorized Take Numbers for Each Marine Mammal Species in the Northwest Atlantic Ocean.

Species	Authorized Take in Northwest Atlantic Ocean
Mysticetes	
North Atlantic right whale (*Eubalaena glacialis*)	0
Humpback whale (*Megaptera novaeangliae*)	2
Minke whale (*Balaenoptera acutorostrata*)	0
Sei whale (*Balaenoptera physalus*)	0
Fin whale (*Balaenoptera borealis*)	11
Blue whale (*Balaenoptera musculus*)	0
Odontocetes	
Sperm whale (*Physeter macrocephalus*)	2
Pygmy sperm whale (*Kogia breviceps*)	0
Dwarf sperm whale (*Kogia sima*)	0
Unidentified *Kogia* sp. whale (pygmy and dwarf sperm whale)	0
Cuvier's beaked whale (*Ziphius cavirostris*)	0
Northern bottlenose whale (*Hyperodon ampullatus*)	0
True's beaked whale (*Mesoplodon mirus*)	0
Gervais' beaked whale (*Mesoplodon europaeus*)	0
Sowerby's beaked whale (*Mesoplodon bidens*)	0
Unidentified beaked whale	0
Bottlenose dolphin (*Tursiops truncatus*)	39
Pantropical spotted dolphin (*Stenella attenuata*)	0
Atlantic spotted dolphin (*Stenella frontalis*)	0

Striped dolphin (*Stenella coeruleoalba*)	0
Spinner dolphin (*Stenella longirostris*)	0
Short-beaked common dolphin (*Delphinus delphis*)	349
White-beaked dolphin (*Lagenorhynchus albirostris*)	0
Atlantic white-sided dolphin (*Lagenorhynchus albirostris*)	0
Risso's dolphin (*Grampus griseus*)	30
False killer whale (*Pseudorca crassidens*)	0
Killer whale (*Orcinus orca*)	0
Long-finned pilot whale (*Globicephala melas*)	-
Short-finned pilot whale (*Globicephala macrorhynchus*)	-
Unidentified pilot whale (*Globicephala* sp.)	50
Harbor porpoise (*Phocoena phocoena*)	0
Pinnipeds	
Harbor seal (*Phoca vitulina*)	10
Gray seal (*Halochoerus grypus*)	5
Harp seal (*Pagophilius groenlandicus*)	0
Hooded seal (*Cystophora cristata*)	0