

NBP0603

Paleohistory of the Larsen Ice Shelf Phase II, Year 3

Domack

Multibeam End of Cruise Report



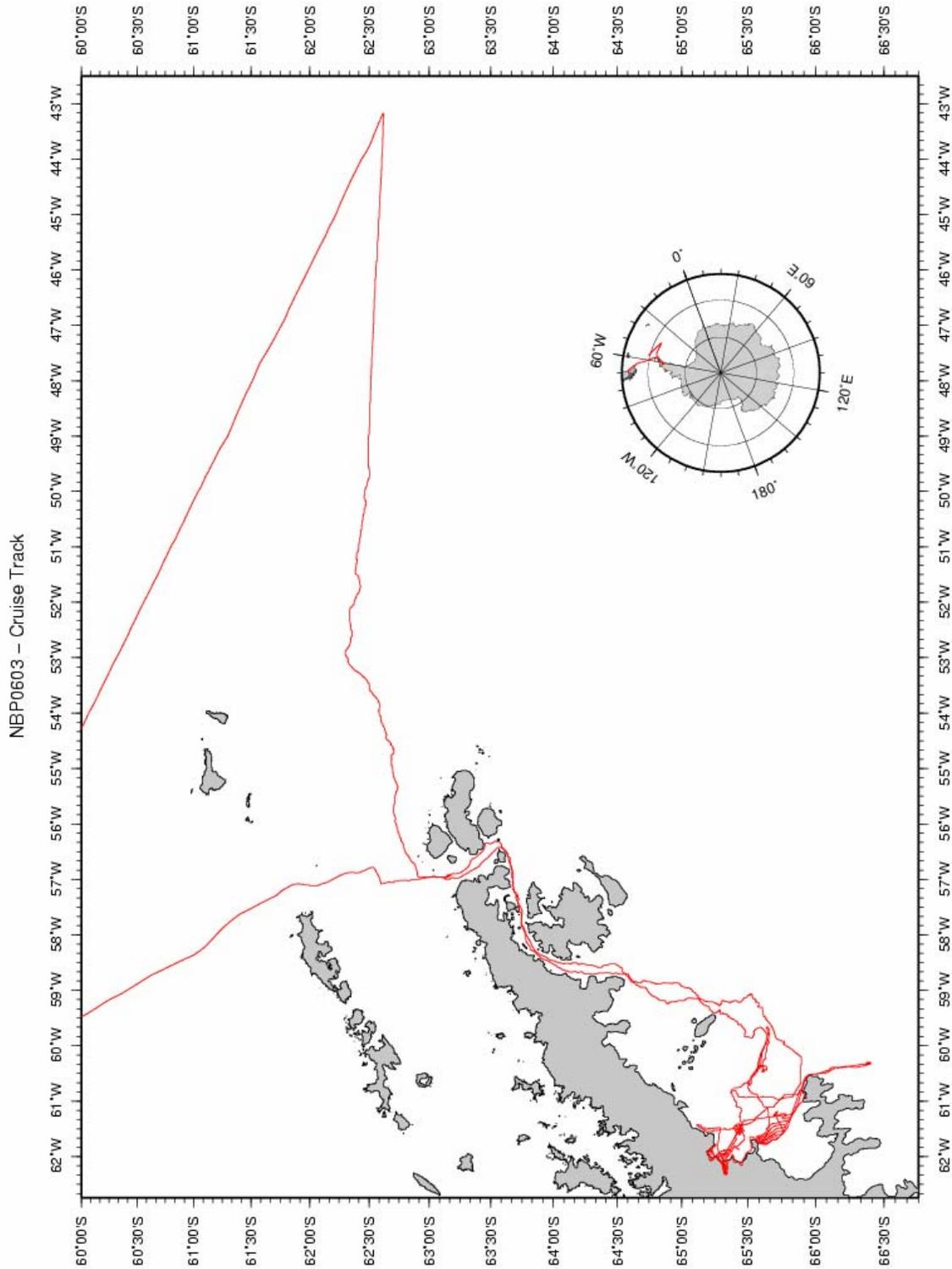
Photo: Nicky West

Prepared By Kathleen Gavahan
Monday, November 20, 2006

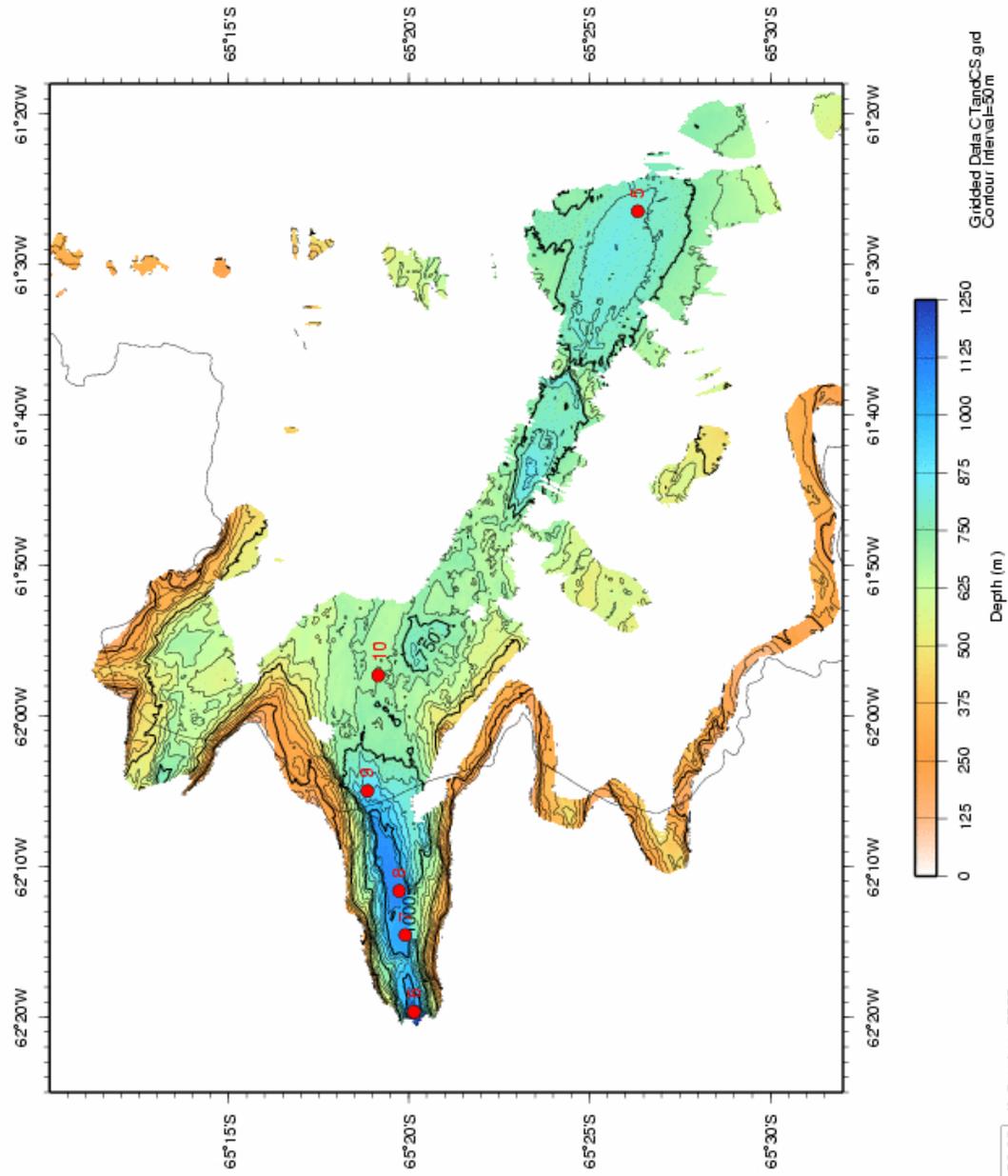
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Multibeam Work Area Plots

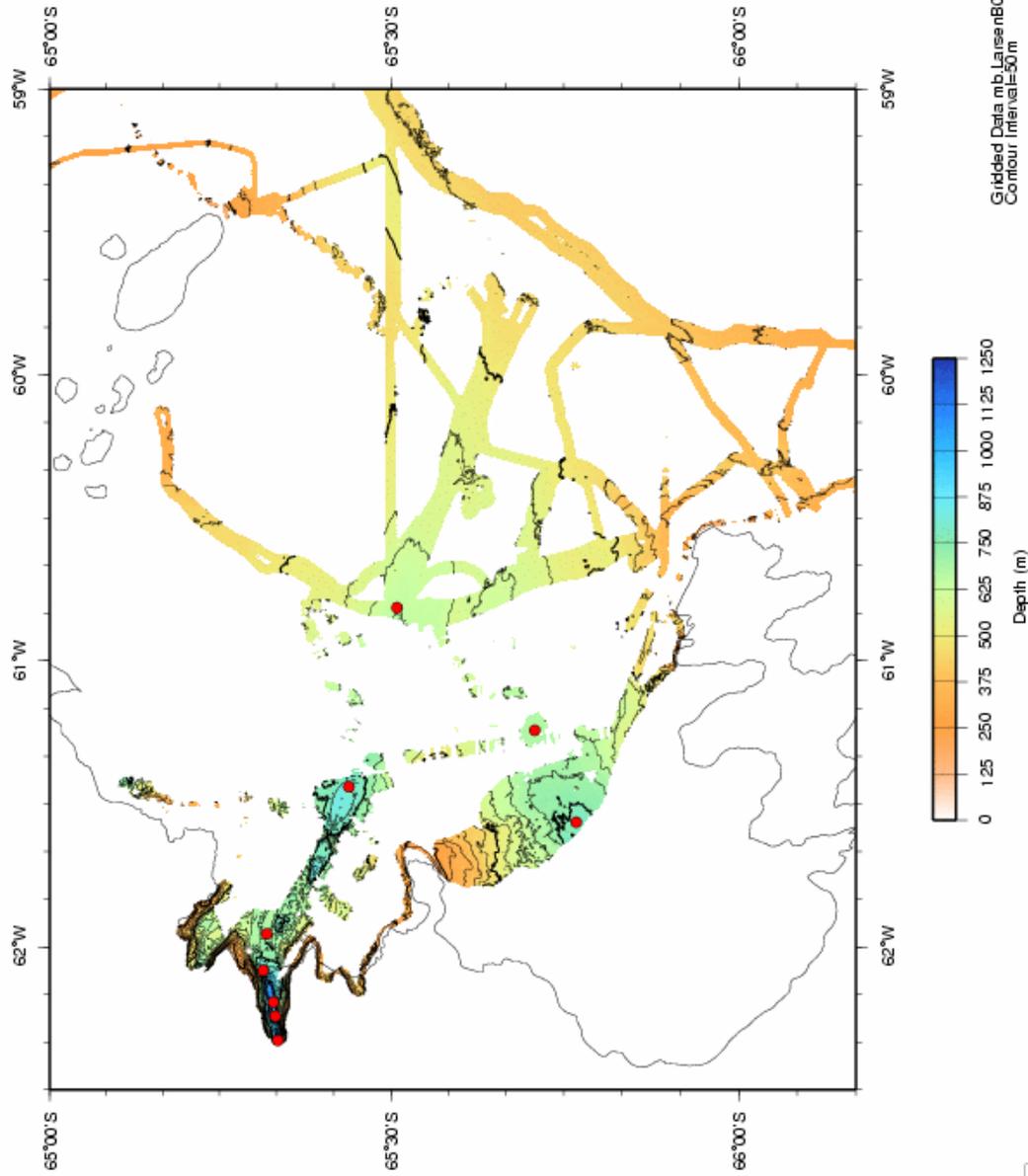


Multibeam Data - Crane Glacier and Cold Seep Basin, NBP0603



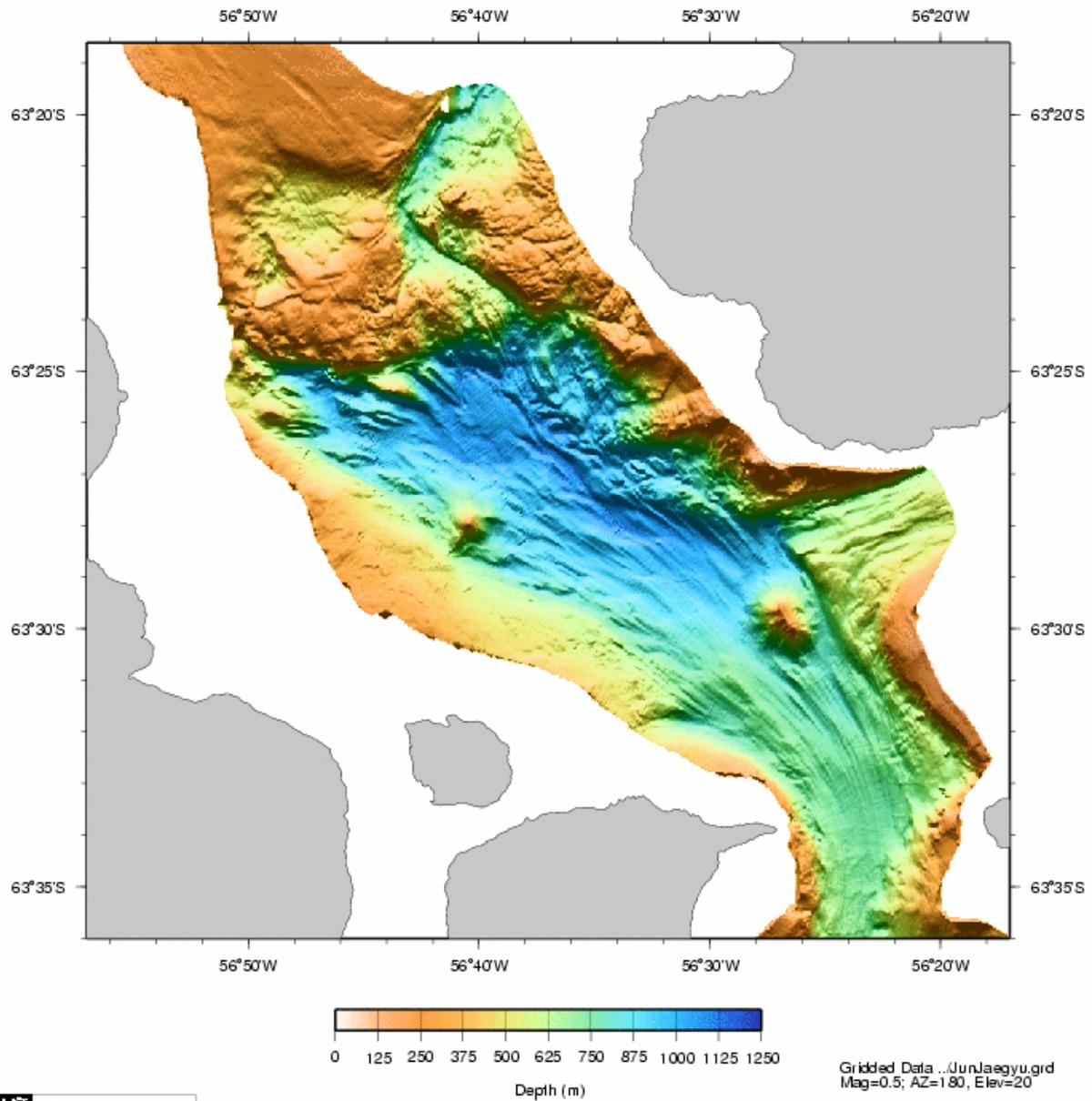
2006 May 1 18:50:03 K. Gavahan, RPSC

Multibeam Data – Multibeam Data – Larsen B, NBF0603



2006 May 4 20:17:39 K. Gavahan, RPSC

Multibeam Data – Antarctic Sound – NBP0603



NBP0603 Multibeam Description of Work

This report covers the Simrad EM120 Multibeam data collection and processing for the R/V Nathaniel B. Palmer cruise NBP0603. This cruise started at Punta Arenas, Chile on April 11th, 2006 and ended at Punta Arenas, Chile on May 6, 2006. The principle investigators were Eugene Domack, Amy Leventer, Bruce Huber, Stefanie Brachfeld, and Michele Rebesco. Kathleen Gavahan (RPSC) was responsible for Multibeam data acquisition, processing, and ping editing quality control. The science party stood a 24-hour watch. Data was collected from April 12, 2006 through May 5, 2006.

Data quality was good when in calm, ice free seas. However, much of the cruise was spent in ice and the data quality suffered greatly during those time periods. The Multibeam acquisition computer hard drive failed on April 30 at 10:03. The system was rebuilt and data collection resumed at 18:36 on April 30.

The raw Multibeam data were logged in approximately one hour-long files in the Kongsberg-Simrad EM120 raw format. This is a complex format that is not described in this report. The MB-System¹ software package may be used to access the files if additional work is to be done with the data. These raw data files are named xxxx_yyyymmdd_hhmmss_raw.all where xxxx is a consecutive line number within the survey, yyyy is the year, mm is the month, dd is the day, hh is the hour, mm is the minute, and ss is the seconds that the file was started.

The logged Multibeam data files were transferred from the data acquisition computer to a data storage area just after the end of each day. The raw hourly data files were converted from MB-System format 56 (the raw Simrad format) to format 57 using mbcopy and made available for manual editing. The format 57 files are named xxx_yyyymmdd_hhmmss.mb57 where the first part of the name is identical to the raw file. All data files were edited while at sea.

The science party was responsible for editing the Multibeam data. Mbclean was used to flag bad data points outside the valid depth range for each hour of data. Mbedit was used to manually remove bad data points from these files. Data files were edited with mbnavedit to correct navigational problems. Navigation corrections were made after the files were edited. If the velocity was observed to be incorrect, a new sound velocity was generated using mbvelocitytool and was applied to the data.

The edited files were checked using mbedit, the statistics from mbinfo, and hourly contour plots. If these checks failed, the files were re-edited. When the data quality was judged acceptable, the edits were applied to the data using mbprocess. The edited files are named xxxx_yyyymmdd_hhmmssp.mb57 where the p in the dataset name denotes a processed file. Page size plots were produced of the edited data. Daily plots were also produced which showed one days worth of gridded data.

The UNIX tar command was used to write the digital data to DDS4 tapes at the end of the cruise. These tapes were checked before distribution. The tapes contain the raw and processed data for the

¹ The MB-System software package was used for all Multibeam data handling. This package was developed at Lamont-Doherty Earth Observatory. This system is designed to manipulate, process, list and display many kinds of Multibeam bathymetry, amplitude, and sidescan data. IT has been successfully installed on many different computer platforms. To obtain more information about the MB-System programs or to obtain a copy of the current distribution, contact the authors David W. Caress (caress@mbari.org) and Dale N. Chayes (dale@lamont.ldeo.columbia.edu)

entire cruise. The processing scripts and gridded data for each survey are included in the processed data directory. The contents of these tapes and an itemized distribution list are located on separate pages of this report.

Speed of Sound Corrections

The travel time of sound in water was corrected at the surface by a sound velocity calculated from the Thermosalinograph (TSG). This value was supplied directly to the EM120 system serial port and the data was transmitted by the RVDAS program `rv_tsg`. Expendable BathyThermographs (XBTs) were used along with the levitus historical database to calculate a sound velocity profile. When CTD data was available, it was used to calculate a sound velocity profile.

NBP0603 Data Tape/CD Description

Multibeam data has been provided on 4mm DAT tape and DVD to the science party and RPSC. Each complete set of Multibeam data consists of 2 4mm DAT tapes and one DVD. The DAT tapes were created on UNIX computers using the command "tar cvf /dev/rmt/0" and verified to be sound on a UNIX machine before they were distributed. The DVD contains final plotting scripts and postscript files. It also includes TIFFs of the maps.

Each DDS4 tape contains the raw and processed daily MB data. The processed data is in mbio format 57. The raw data is in mbio format 56. The processed data includes gridded files, processing scripts and postscript plots divided into subdirectories for each day and map areas. The DVD contains a tar file of all the postscript plots and grids for the survey areas and a copy of this document.

Each Full Data Set Includes:

1. DDS4 Tape 1 - Raw and Processed data for 12 April through 30 April, 2006.
 - a. **Raw** has all raw data converted to MB57 and ancillary files. The files are divided into directories by days
 - b. **process** has all the edited data and daily processing divided into directories by days
2. DDS4 Tape 2 - Raw and Processed data for 1 May through 5 May, 2006.
 - a. **Raw** has all raw data converted to MB57 and ancillary files. The files are divided into directories by days
 - b. **process** has all the edited data and daily processing divided into directories by days. It includes all files for grids and maps as well as any additional work done by the MB staff or the science party. It also includes the svp directory that contains all sound velocity profiles used during cruise and the SideScan directory that contains all scripts and the hourly SideScan plots.
3. DVD - postscript plots and grids for all survey areas in a tar file. A copy of this report is also included. It also includes the svp directory that contains all sound velocity profiles used during cruise and the SideScan directory that contains all scripts and the hourly SideScan plots
4. Printed copy of this report

Data Distribution List

S/N	Who	Description	Type	Created on	Verified on
1	Domack	Raw, Edit, Process MB 04/12 thru 04/30 2006	DDS4	endurance	polarsea
2	Domack	Raw, Edit, Process MB 04/12 thru 04/30 2006	DDS4	Dup-2	polarsea
3	Domack	Raw, Edit, Process MB 04/12 thru 04/30 2006	DDS4	Dup-3	hero
4	NBP	Raw, Edit, Process MB 04/12 thru 04/30 2006	DDS4	Dup-4	endurance
5	Domack	Raw, Edit, Process MB 05/01 thru 05/05 200, Maps6	DDS4	endurance	polarsea
6	Domack	Raw, Edit, Process MB 05/01 thru 05/05 200, Maps6	DDS4	Dup-2	hero
7	Domack	Raw, Edit, Process Multibeam 02/02 thru 02/21 2006	DDS4	Dup-3	hero
8	NBP	Raw, Edit, Process Multibeam 02/02 thru 02/21 2006	DDS4	Dup-4	hero
9	O'Hara	Raw, Edit, Process MB 04/12 thru 04/30 2006	DDS4	Dup-2	endurance
10	DENHQ	Raw, Edit, Process MB 04/12 thru 04/30 2006	DDS4	Dup-3	endurance
11	O'Hara	Raw, Edit, Process Multibeam 02/02 thru 02/21 2006	DDS4	Dup-2	polarsea
12	DENHQ	Raw, Edit, Process Multibeam 02/02 thru 02/21 2006	DDS4	Dup-3	hero