# Ocean CLASS AGOR

## Integrated Survey System

15 April 2009

# Integrated Survey System (ISS)

*An integrated survey system is not stated in the SMR's.*

*In researching the scientific mission equipment we would like to consider including ISS-2000 for providing a uniform data collection and data format system on the new Ocean CLASS AGOR.*

# ISS Background

- Hydrographic survey software produced by SAIC Marine Science & Technology Division (MSTD) Newport, RI
  - **ISS-60** – NAVOCEANO's tactical shipboard acquisition software
  - **ISS-2000** – Commercial data acquisition package, similar to ISS-60
  - **SABER** – Data Processing software
- SAIC/ MSTD has performed over 45 high-resolution shallow water surveys for safety of navigation under contract to NOAA since 1995.
- SAIC/MSTD have consistently received and "Excellent" rating from NOAA for their services.
- All SAIC NOAA surveys use ISS-2000 for Survey Planning, Data Acquisition and Data Archiving.


# ISS & SABER on UNOLS Ships

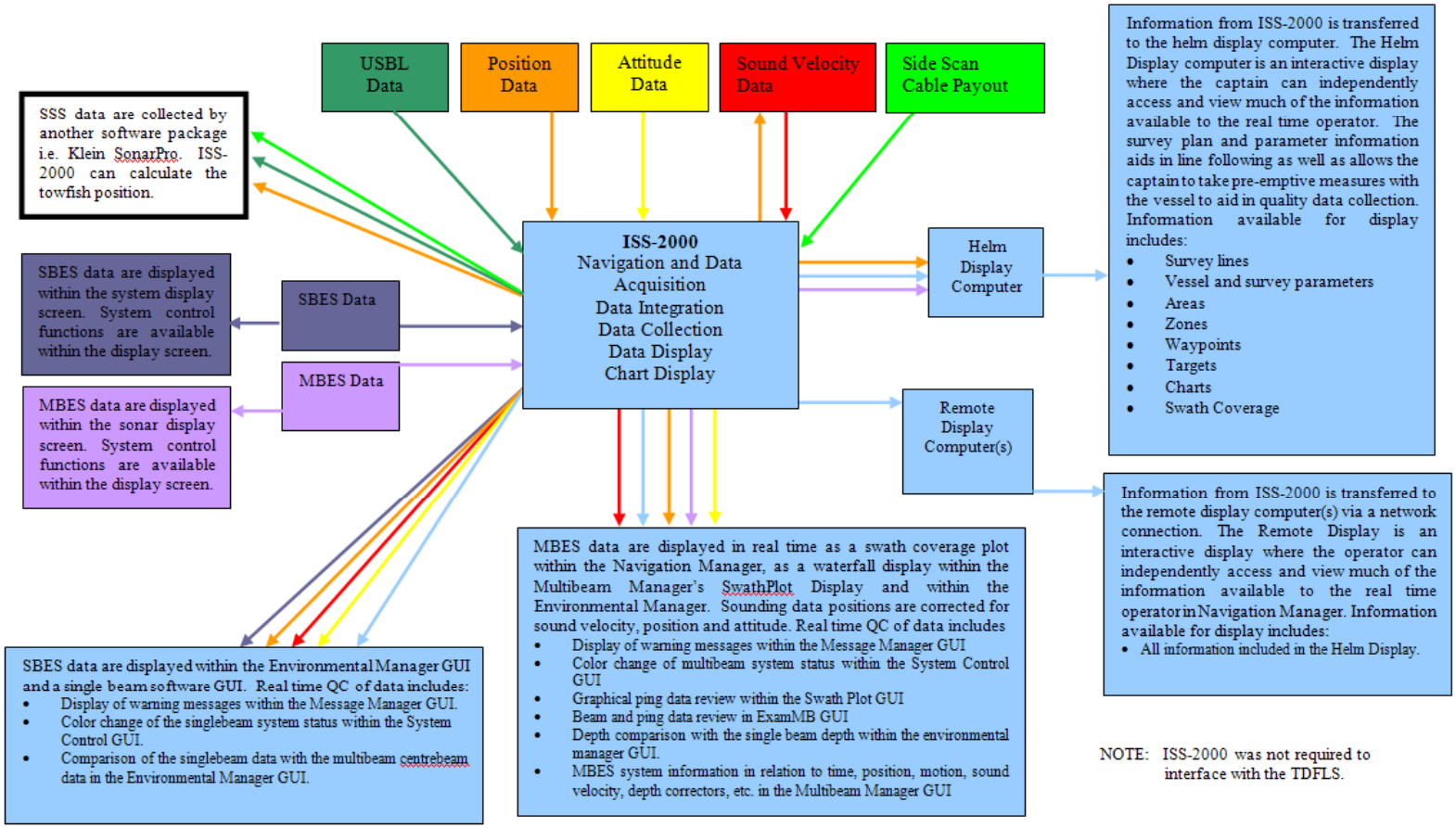
- *R/V KILO MOANA*
  - ISS-2000 was temporarily installed for a 2005 University of New Hampshire (UNH), Center for Coastal & Ocean Mapping , Exclusive Economic Zone (EEZ) survey in Alaska.
  - ISS-2000 was integrated with the sonar suite for hydrographic operations.

- *R/V ROGER REVELLE*
  - SABER was used during the 2008 SAIC survey for UNH EEZ survey.
  - SABER was brought aboard for post-processing of the hydrographic data.

# Integrated Survey System

*Why use ISS-2000?*

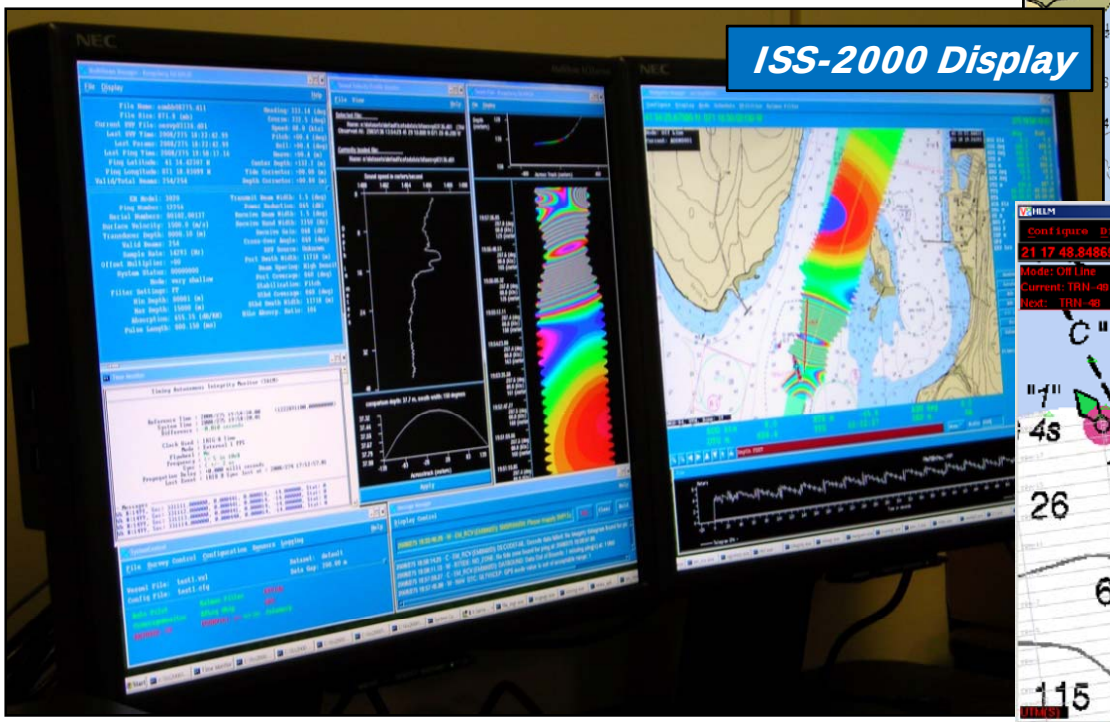
- Single monitoring workstation for multiple oceanographic equipment
- Real time navigation monitoring and editing
- Real time data analysis
- Data archiving to processing computers and Network Attached Storage (NAS)

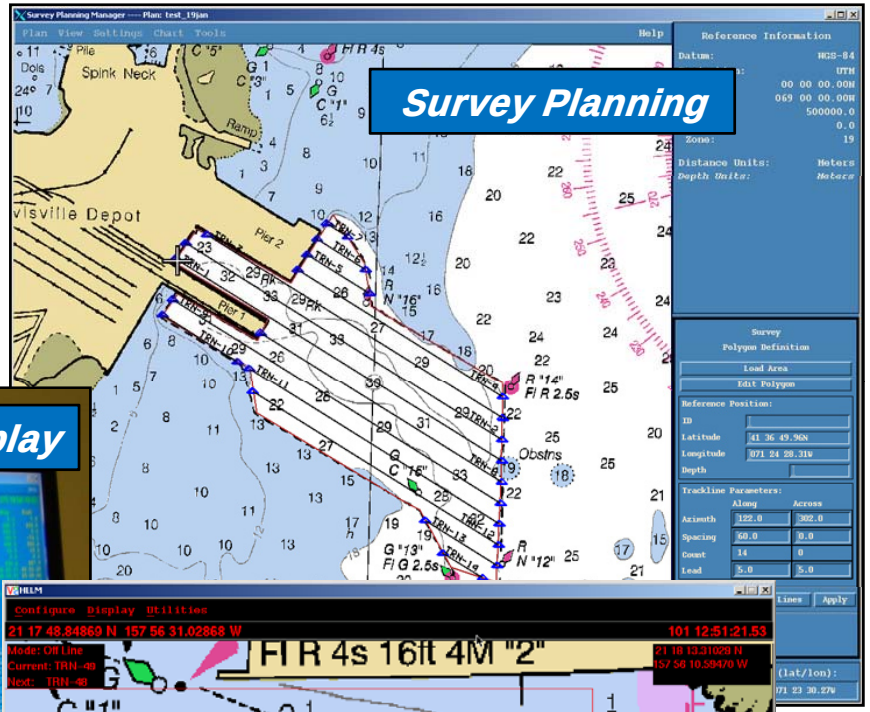


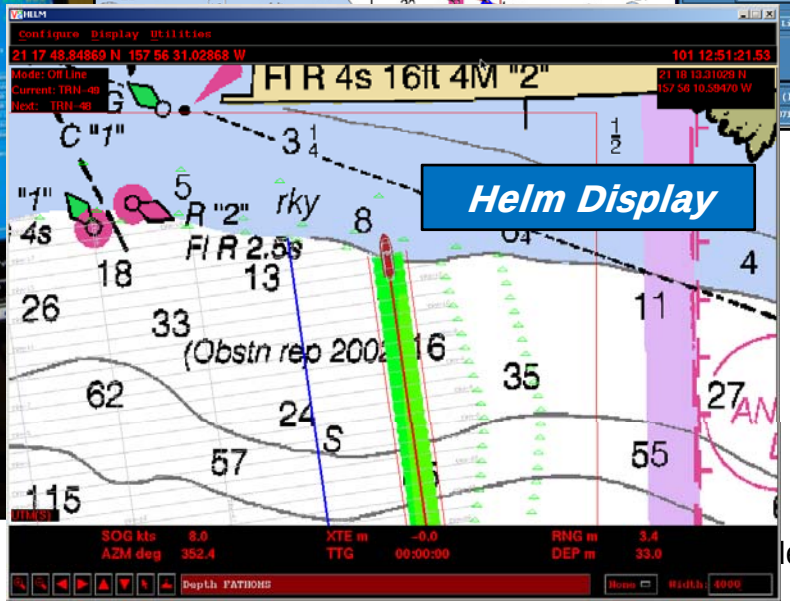
# ISS-2000 Components

ISS-2000 Real Time Data Acquisition

- ISS-2000 dual monitor display
- Survey Planning
- Helm Display located on the bridge
- All use Graphical User Interfaces (GUI)

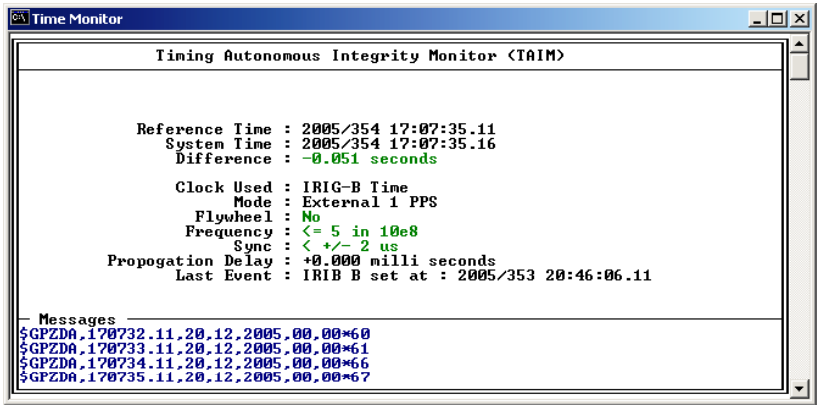


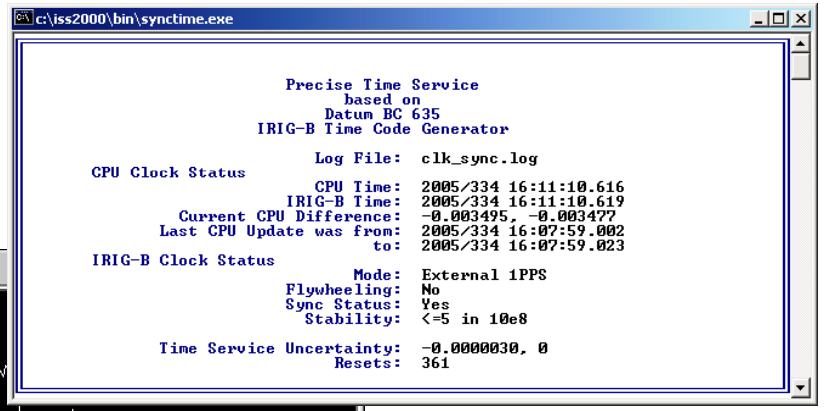



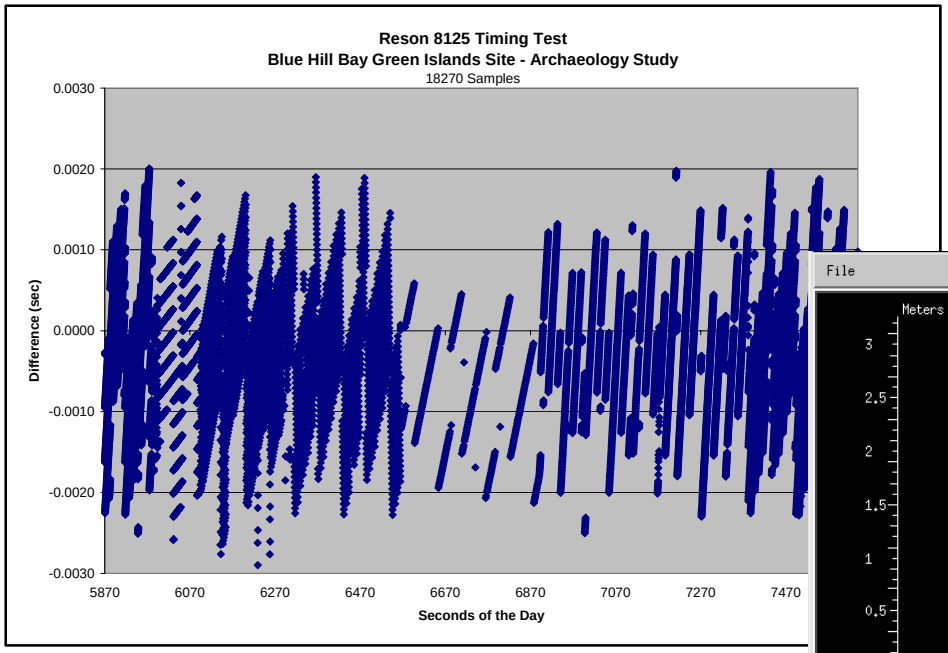



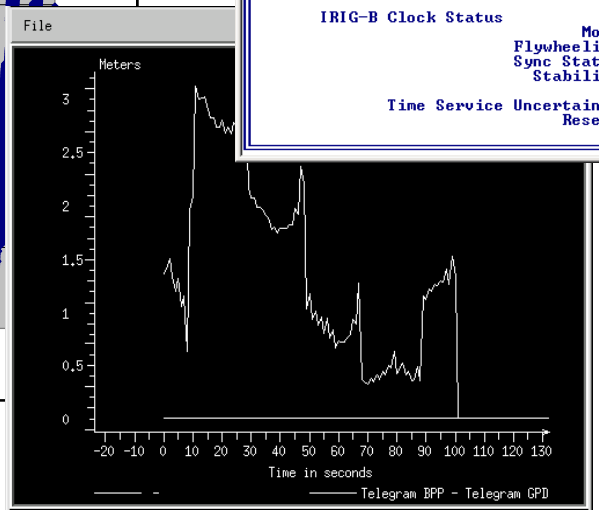
# ISS Timing Analysis

- The internal timing card receives the analog 1 PPS signal and serial time message to synchronize to the GPS receiver.
- The serial message options are NMEA ZDA, UTC and Novatel TM1B.



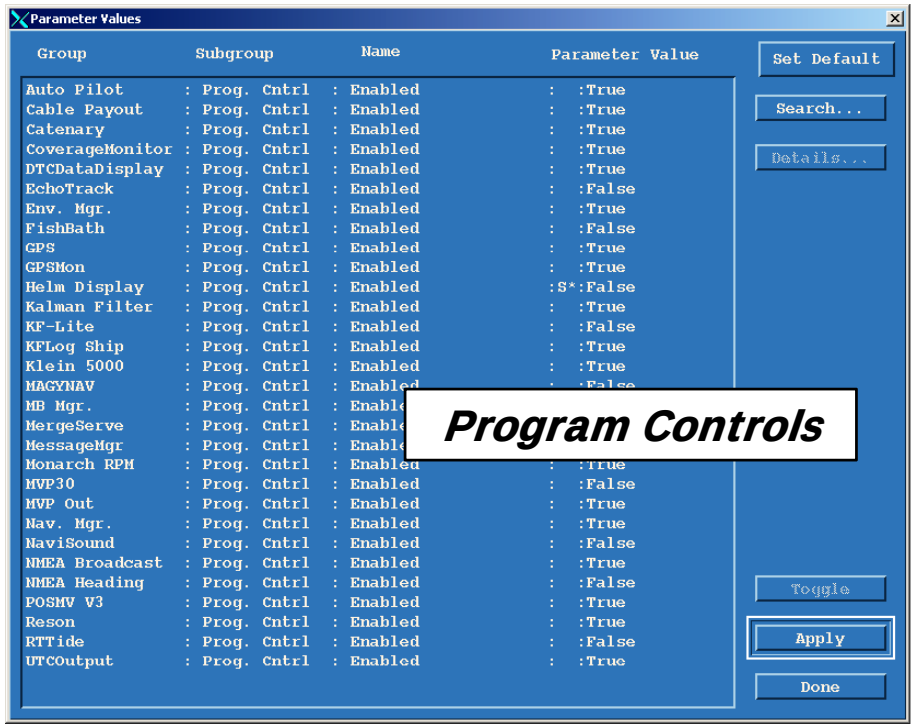



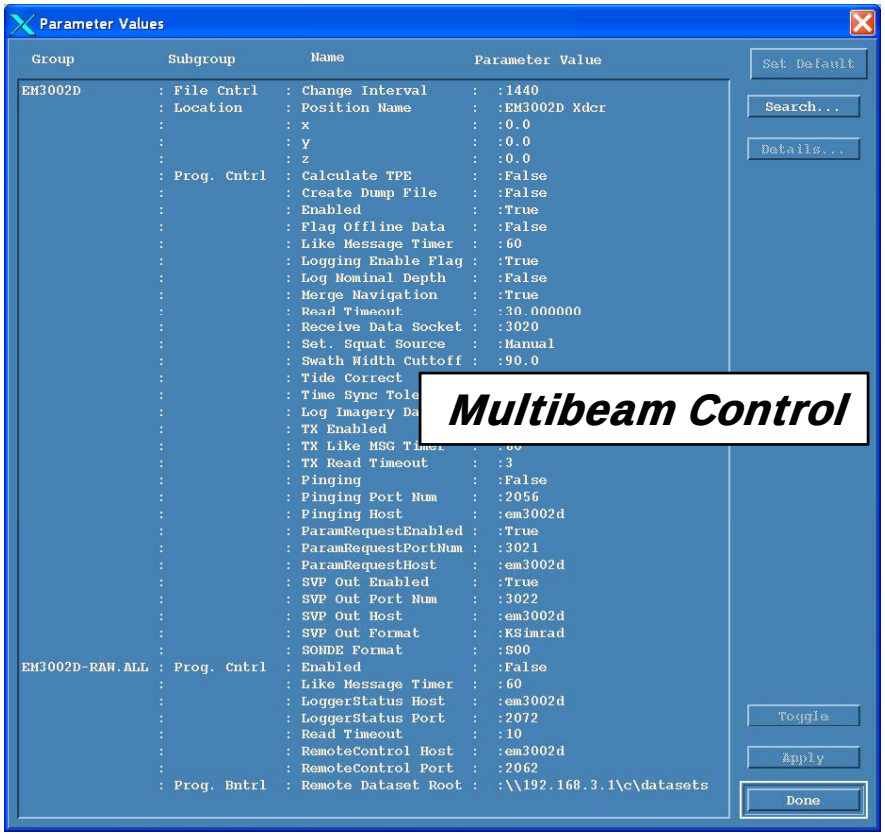



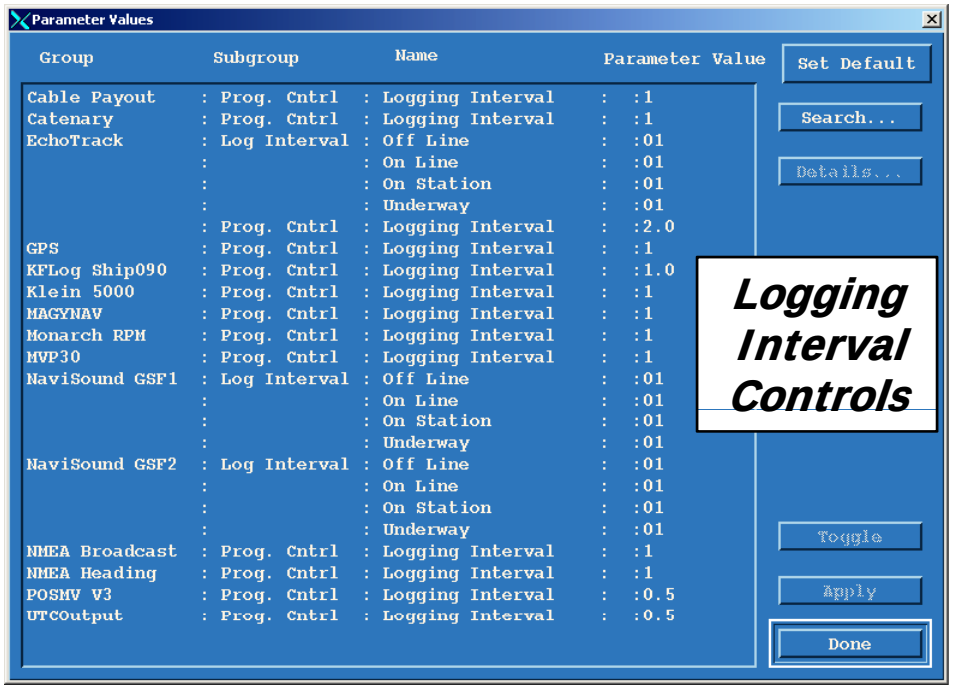
# ISS Parameter Controls

- The operator can control many of the equipment settings from ISS-2000 software through ***Parameter Control*** interfaces.
- Does not increase the number of operators required and provides a single control interface for different equipment.

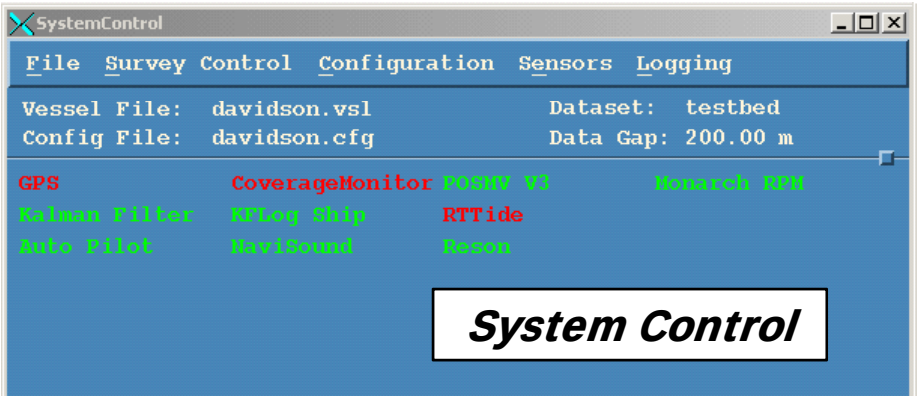


# ISS Message Manager

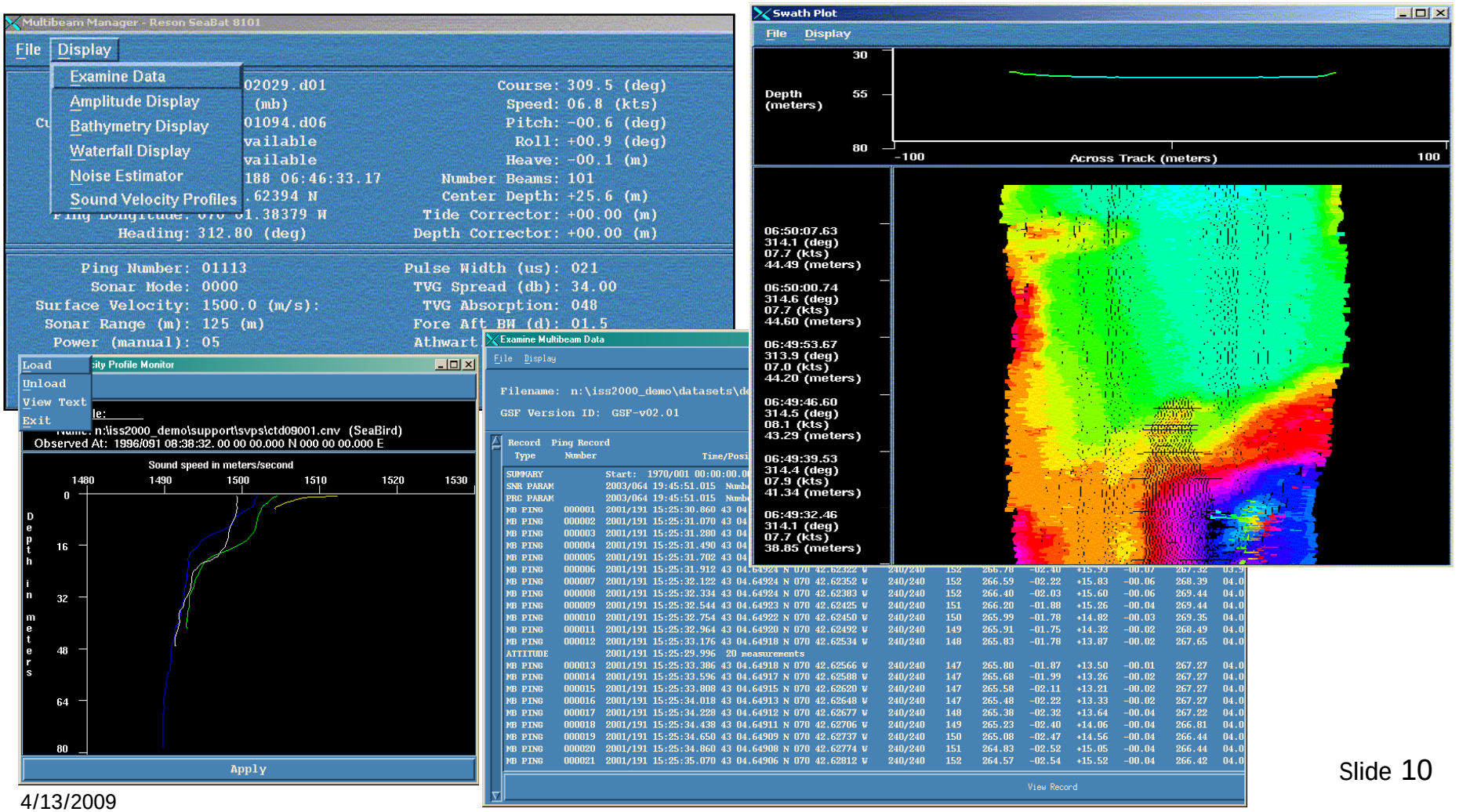



- Logging intervals can be set for each sensor.
- During ISS-2000 operations messages are generated and written to the Survey Report File.
- The ***Message Manager*** window is automatically started when ***System Control*** is initiated.



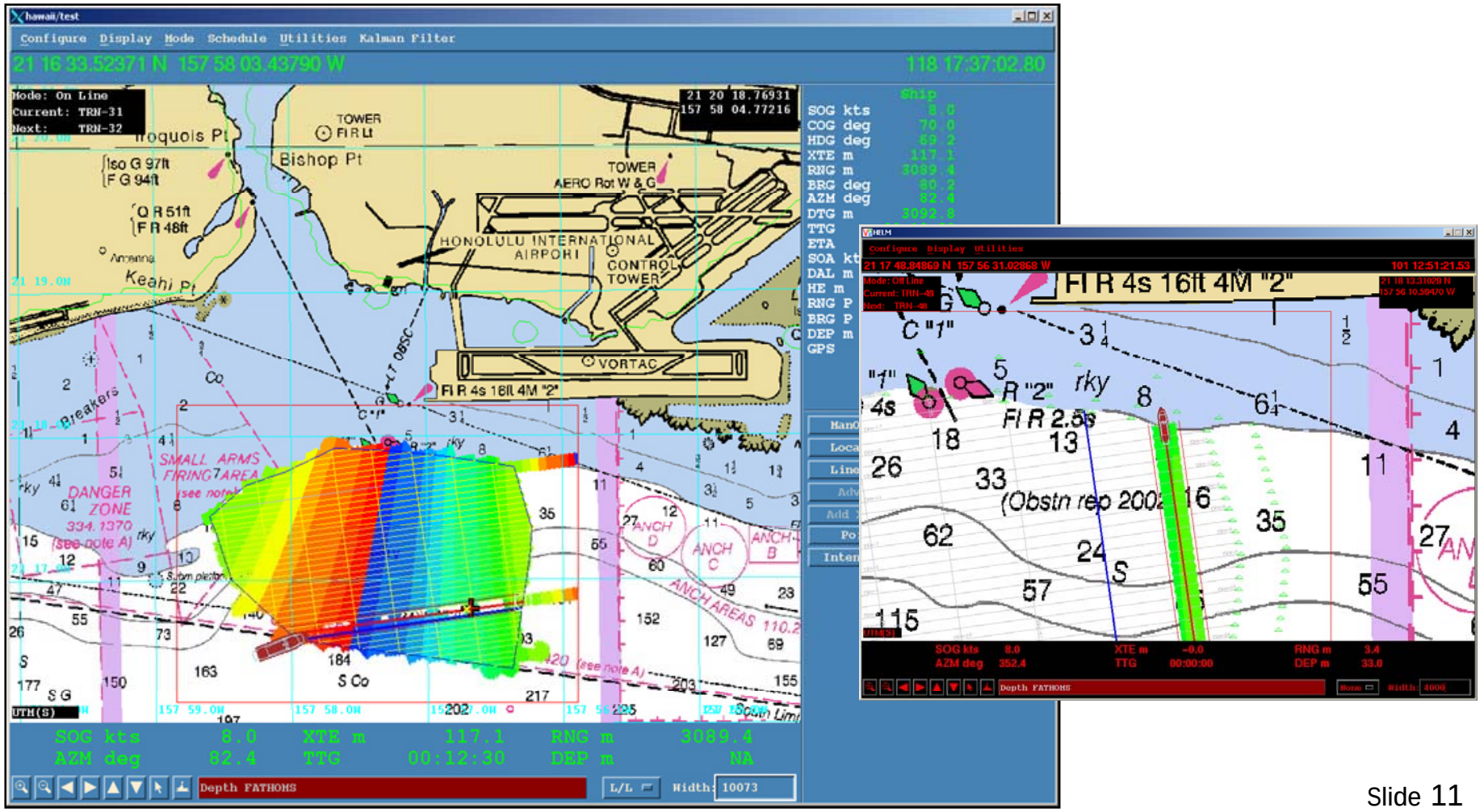

# ISS Multibeam Controls

- Multibeam data can be viewed in real time to verify data quality.
- Sound Velocity Profile (SVP) cast can be applied and verified in real time.



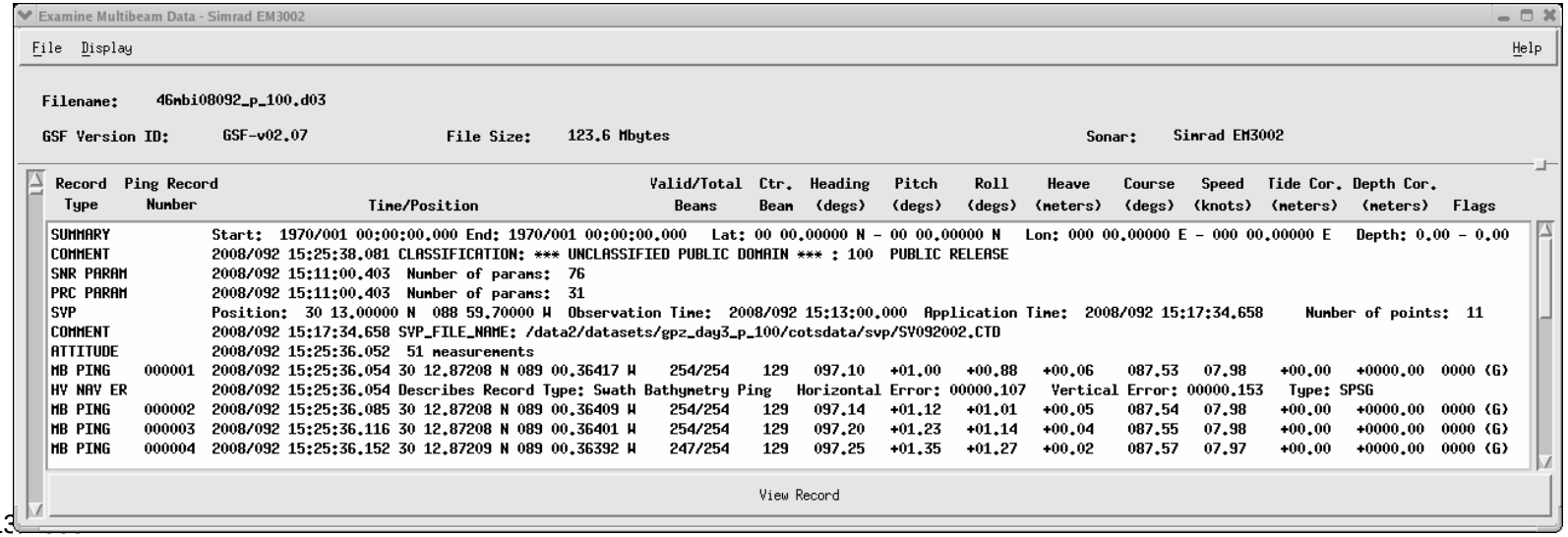
# ISS Navigation Controls

- The Navigation Display allows the operator to view the data in real time while monitoring the survey progress and navigation information.



# ISS-2000 GSF Format

- ISS-60 and ISS-2000 collect swath bathymetry and beam amplitude imagery data in GSF Format.
- GSF is designed to efficiently store and exchange information produced by geophysical measurement systems before it has been processed into either vector or raster form.
- Generic Sensor Format (GSF) is a standard file format for bathymetry data and widely used in the maritime community (US and the UK).
- Single-file format (one file saves all information)
  - Objective is to store all swath oriented information
  - Currently limited to one source of position
  - Currently limited to one source of motion
  - Not currently supporting the water column data



# ISS-2000 GSF Supported Equipment

- **Multibeam echo sounders**
  - Kongsberg EM100
  - Kongsberg EM120
  - Kongsberg EM121
  - Kongsberg EM121A
  - Kongsberg EM122
  - Kongsberg EM300
  - Kongsberg EM302
  - Kongsberg EM710
  - Kongsberg EM950
  - Kongsberg EM1000
  - Kongsberg EM1002
  - Kongsberg EM3000 and EM3000D
  - Kongsberg EM3002 and EM3002D
- **Interferrometric Side-Scan Systems**
  - GeoAcoustics GS+
- **Single-beam echo sounders**
  - Odom Echotrac
  - ODEC Bathy2000
  - Reson Navisound
- **Multibeam echo sounders**
  - RESON 8101
  - RESON 8111
  - RESON 8125
  - RESON 8150
  - RESON 8160
  - RESON 7125
  - RESON SEABAT 9001
  - RESON SEABAT 9002
  - RESON SEABAT 9003
  - Elac Bottomchart Mk II
  - SeaBeam 2100 series
- **Position & Orientation System**
  - Applanix POSMV
  - Kongsberg Seapath 200

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Thank You