NOAA FORM 76-35A

**U.S. DEPARTMENT OF COMMERCE**
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

# DATA ACQUISITION
# AND
# PROCESSING REPORT
# CHANGE NO. 1

## NOAA Ship THOMAS JEFFERSON

### August - November 2003

# LOCALITY

U.S. Atlantic Coast

# 2003

CHIEF OF PARTY
**LCDR Donald W. Haines**

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DATE

CHANGE NO. 1 to NOAA Ship THOMAS JEFFESON Data Acquisition and Processing Report (August – November 2003) submitted March 30, 2003

The following changes are made to clarify the text of the original document based on comments from the Atlantic Hydrographic Branch.

## B. DATA PROCESSING AND QUALITY CONTROL

B.1  MULTIBEAM ECHOSOUNDER DATA

Caris **HIPS** v5.3 was used for all (side scan and multibeam echosounder) initial data processing including data conversion, tide application, svp correction, and merging. Caris **HIPS** v5.4 was used for specific processes only, including TPE calculation, BASE surface creation, and BASE surface finalization.

All entries made in the Caris **HIPS** v5.3 vessel configuration file (VCF) were also entered into the Caris **HIPS** v5.4 HVF.  In addition to the basic sensor entries, the HVF also contained entries necessary for TPE calculation.

Combined Uncertainty and Bathymetry Estimator (CUBE)[1,2,3] was used initially to create weighted grids of the survey data.  TPE calculated by Caris **HIPS** v5.4 was used by CUBE for this process.  No CUBE generated products will be submitted to the Branch as a final product.

Caris **HIPS** v5.4 BASE surfaces were created using multiple field sheets.  This was done due to the limitations of available RAM on the processing computers.  These sub areas (BASE surface collection) were created following general depth areas.  Each field sheet was generated with sufficient overlap with it's neighbor to ensure the BASE surface collection did not have any unrepresentative gaps in coverage.

This Caris **HIPS** v5.4 BASE surface collection was then finalized in Caris **HIPS** v5.4. During the finalization step, these BASE surfaces were thresholded to user specified depth ranges (see Attachment 1).  Any soundings flagged as *designated* in Caris **HIPS** v5.4 were applied to the Caris **HIPS** v5.4 BASE surface during finalize (forcing the BASE surface to utilize the *designated* soundings in the model).

Soundings flagged as *designated* were done so at the discretion of the Hydrographer. Soundings were only flagged as *designated* when the Caris **HIPS** v5.4 BASE surface did not reflect least depths on discrete features or shoals.   It should be noted that at the time these surveys were processed, it was difficult to do a simultaneous comparison with the line-by-line shoal biased dataset in the **Pydro** PSS and Caris **HIPS** v5.4 BASE surface collection.

1.  Calder, B. and S. Smith, "A Time/Effort Comparison of Automatic and manual Bathymetric Processing in Real-Time Mode", Proc. US Hydro Conf. (Biloxi, MS), 2003

2.  B. R. Calder and L. A. Mayer, "Automatic processing of high-rate, high-density multibeam echosounder data", Geochemistry Geophysics Geosystems vol4, Number 6, 11 June 2003

3.  B. R. Calder, "Automatic Statistical Processing of Multibeam Echosounder Data", Center for Coastal and Ocean Mapping & Joint Hydrographic Center, University of New Hampshire, Durham NH 03824

Soundings flagged as *designated* had an effect both to Caris **HIPS** v5.4 BASE surfaces and **Pydro** PSS Features and grid bathymetry.  Those soundings flagged as *designated* in Caris HIPS v5.4 would be inserted into **Pydro** as features the next time those HDCS data were inserted into a **Pydro** PSS.  Similarly, features flagged as designated in Pydro would effect the Caris **HIPS** v5.4 BASE surface the next time that BASE surface was finalized in Caris **HIPS** v5.4.

**APPROVAL**

As Chief of Party, I have ensured that standard field surveying and processing procedures were adhered to during this project in accordance with the Hydrographic Manual, Fourth Edition; Hydrographic Survey Guidelines; Field Procedures Manual, and the NOS Hydrographic Surveys Specifications and Deliverables, as updated for March, 2003.

I acknowledge that all of the information contained in this report is complete and accurate to the best of my knowledge.

Submitted:                                        Approved and Forwarded:


_____         _____
LT Shepard Smith, NOAA                      LCDR Donald W. Haines, NOAA
Field Operations Officer                      Commanding Officer

ATTACHMENT 1

Depth ranges for finalize step in Caris **HIPS** v5.4.  Note the depth range overlap for each grid resolution.

| Grid resolution (meters) | Threshold Depth Range (meters) |
| --- | --- |
| 0.5 | 0.0 – 15.0 |
| 1.0 | 14.5 – 30.0 |
| 2.0 | 29.5 – 60.0 |
| 5.0 | 59.5 – 300.0 |