

F00550

<p>NOAA FORM 76-35A</p> <p>U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SURVEY</p> <p>DESCRIPTIVE REPORT</p>	
<i>Type of Survey:</i>	Field Examination
<i>Registry Number:</i>	F00550
LOCALITY	
<i>State:</i>	Massachusetts
<i>General Locality:</i>	Cape Cod Bay
<i>Sub-locality:</i>	Barnstable Harbor
2007	
<p>CHIEF OF PARTY LT(jg) Matthew Jaskoski, NOAA</p>	
DATE	LIBRARY & ARCHIVES

NOAA FORM 77-28 (11-72)	U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION	REGISTRY NUMBER: F00550
<h2 style="margin: 0;">HYDROGRAPHIC TITLE SHEET</h2>		
INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.		
State:	Massachusetts	
General Locality:	Cape Cod Bay	
Sub-Locality:	Barnstable Harbor	
Scale:	1:5,000	Date of Survey: 09/12/07 to 09/17/2007
Instructions Dated:	N/A	Project Number: OPR-A924-NRT5-07
Change No.1 Dated:	N/A	
Change No.2 Dated:	N/A	
Vessel:	NOAA NRT-5, S3002	
Chief of Party:	LT(jg) Matthew Jaskoski, NOAA	
Surveyed by:	NOAA Navigation Response Team 5 Personnel	
Soundings by:	Odom Echotrac CV/200	
Graphic record checked by:	N/A	
Protracted by:	N/A	Automated Plot: N/A
Verification by:	Atlantic Hydrographic Branch Personnel	
Soundings in:	Meters at MLLW	
Remarks: 1) All Times are UTC. 2) This is a Basic Navigable Area Hydrographic Survey. 3) Projection is UTM Zone 19.		

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APPENDICES

Appendices I – III are not relevant to this project and are not included in this report.

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DESCRIPTIVE REPORT
 to accompany
 HYDROGRAPHIC SURVEY F00550

Scale of Survey: 1:5,000
 Year of Survey: 2007
 NOAA Navigation Response Team 5
 LT(jg) Matthew Jaskoski, OIC

A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Instructions Memo for project OPR-A924-NRT5-07, F00550, Barnstable Harbor, MA. The original instructions memo is dated March 31, 2008.

This Descriptive Report pertains to an area of approximately 0.61 SNM of Cape Cod Bay, in the immediate vicinity of Barnstable Harbor. The assigned registry number for this sheet is F00550, as prescribed in the Instructions Memo.

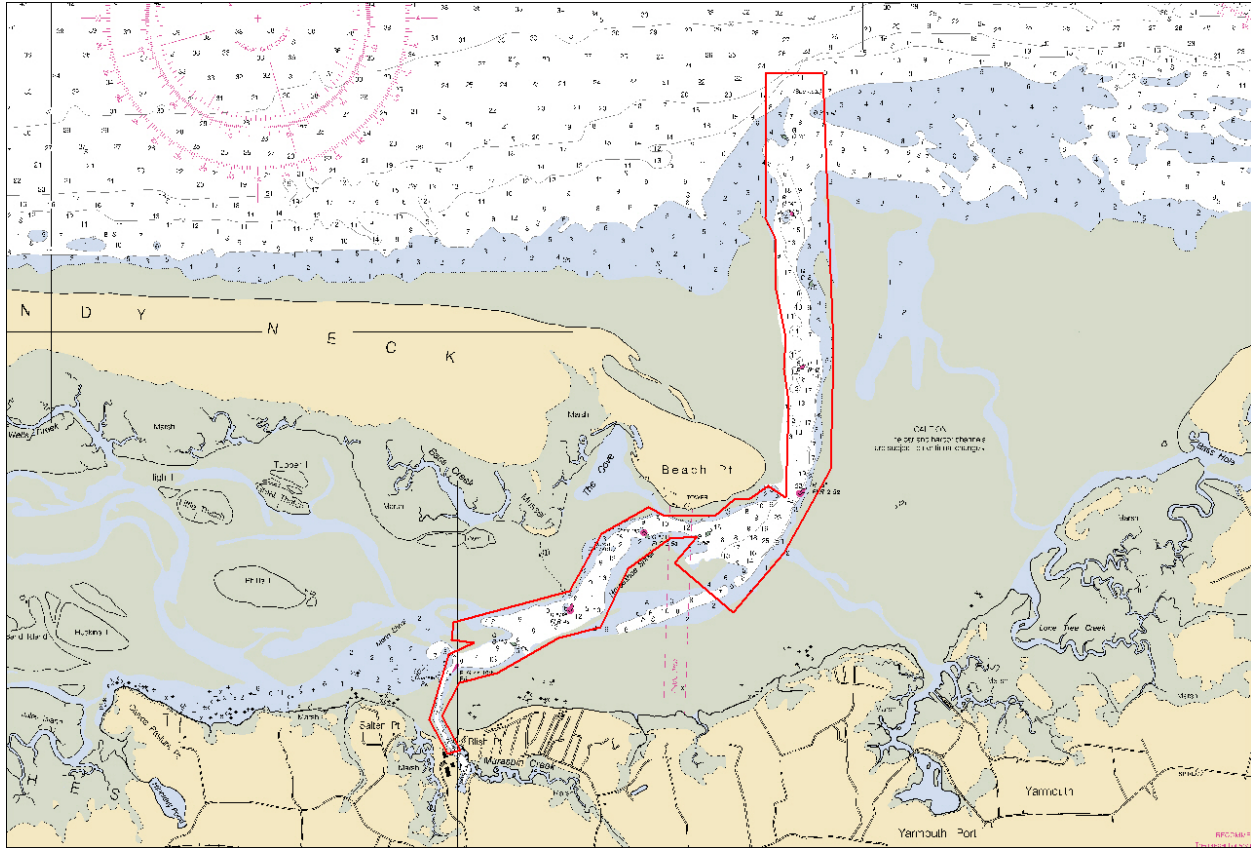
The purpose of the field examination was to aid the USCG in positioning floating navigational aids to correctly mark the natural channel. Single beam echosounder (VBES) data was gathered exclusively and is used for bathymetry. As no side scan sonar (SSS) imagery or multibeam echosounder (MBES) data were gathered for this survey, there were no item investigations. This project is also in support of updating the National Ocean Service (NOS) nautical charts.

For complete survey limits, see figure A-1 on the following page.

Linear nautical miles of single beam only sounding lines - mainscheme only	42.2
Linear nautical miles of multibeam only sounding lines - mainscheme only	0.0
Linear nautical miles of side scan sonar only lines - mainscheme only	0.0
Linear nautical miles of any combination of the above techniques	42.2
Linear nautical miles of crosslines from single beam and multibeam combined	3.6
Linear nautical miles of developments other than mainscheme lines	0.0
Linear nautical miles of shoreline/nearshore investigation	0.0
Number of bottom samples collected	0
Number of items investigated that required additional time/effort in the field beyond the above survey operations	0.0
 Total square nautical miles	 0.052

Dates of acquisition: September 12, 2007 to September 17, 2007

Figure A-1: Outline of survey area



B. DATA ACQUISITION AND PROCESSING

B.1 EQUIPMENT

Refer to the project DAPR

B.2 QUALITY CONTROL

B.2.1 Side Scan Sonar Quality Control

No SSS imagery data were acquired for this survey.

B.2.2 Multibeam Echosounder Quality Control

No MBES bathymetry data were acquired for this survey.

B.2.3 Total Propagated Error

Total Propagated Error (TPE) parameters as applied for sound speed and tide data for F00550 are shown in table B-1. At the time of data submission total tide error had not been provided by CO-Ops. Sound speed TPE values were used in accordance with HSTP guidelines regarding frequency of surface and water column sound speed measurements.

Table B-1. Total Propagated Error parameters.

Total Propagated Error Values			
Tide Values		Sound Speed Values	
Measured	Zoning	Measured	Surface
0.00	0.00	4.0	0.2

B.2.4 Fieldsheets and Navigation Surfaces

One Caris HIPS Swath angle surface was created for all VBES data at a 2m grid resolution. The Fieldsheet name is *F00550* and the Surface name is *F00550_Swath_Angle_2m*.

B.2.5 Single Beam Quality Control

Portions of VBES lines were unusually noisy and resulted in rejection of a large amount of spurious soundings. This is believed to be in part due to the shoal bottom and turbidity in the water column. Other than the above, there were no unusual events associated with the collection of the VBES data for this project. Refer to the DAPR for detailed discussion of VBES system calibrations, data acquisition, and data processing.

B.2.6 Crosslines

A total of 3.56 linear NM of VBES crosslines were run; this was approximately 8.4% of the total linear NM of VBES mainscheme lines run. Visual comparison of common areas showed general agreement to within 1-2 feet between crosslines and mainscheme VBES lines. For a list of all crosslines acquired for this project, tabulated by DN and line file name, please refer to the processing logs located in the separates section of this report.

B.2.7 Junctions

There were no contemporary surveys that junction with F00550, nor were any prior surveys included in the project instructions.

B.3 CORRECTIONS TO ECHO SOUNDING

All methods or instruments used were as described in the project DAPR. Raw and Processed sound speed data are included in the data submission package.

C. VERTICAL AND HORIZONTAL CONTROL

C.1 VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). The operating National Water Level Observation Network (NWLON) station at Boston (844-3970) served as datum control for the survey area. The Boston tide station was the closest station adjacent to Cape Cod Bay for which verified tides could be obtained.

This was an unplanned project, therefore a request for Approved Tides was not sent in to N/OPS1 (see Appendix IV). Verified tides from the N/OPS1 CO-OPS website were downloaded and applied to all sounding data.

C.2 HORIZONTAL CONTROL

The horizontal datum used for this survey is the North American Datum of 1983 (NAD 83), projected using UTM zone 19.

Sounding positional control was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The DGPS beacon used for this survey was Acushnet, MA. No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored during acquisition, and did not exceed 4.00. Adequate satellite coverage was maintained throughout the survey period.

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

According to the Project instructions, the charts affected by this survey are:

<i>Chart Number</i>	<i>Edition</i>	<i>Edition Date</i>	<i>Raster (.kap) Date</i>
13251	15th	2004-September	3/22/2008

<i>ENC Cell Name</i>	<i>Edition</i>	<i>Update Application Date</i>	<i>Issue Date</i>
US4MA14M	10th	2007-06-14	2008-02-11

D.1.1 General Agreement with Charted soundings

Sounding data showed marked differences from charted depths. Land area at Beach Point at the entrance to the harbor appears to have migrated eastward from its charted location. Similarly the northern portion of the channel has migrated to the east; sounding data showed 20-35ft depths in an area charted as being exposed at low tide. The western edge of the charted channel north of Beach Point has shoaled markedly; water depths of 0 and -1ft were observed in the vicinity of charted 13ft soundings. Horseshoe Shoal, south of Beach Point, is also migrating to the east and appears to be forming a bar across the channel. Data showed depths from 1-4ft to the east-northeast of Horseshoe Shoal in areas charted as being between 13-23ft. The inner portion of the harbor, west-southwest of Horseshoe Shoal, has deepened by between 4 to 8ft from charted depths. The Southwestern terminus of the channel leading into Blish Point has charted depths of between 7-8ft, data showed actual water depths of 3-5ft.

D.1.2 AWOIS Items and Significant Contacts

No item investigation was undertaken as part of this survey.

D.1.3 Dangers to Navigation

Although shoaling and land area shifting in the area is in cases considerable, the nature of traffic in the area (largely recreational with a max draft of approximately 5ft) and the purpose of the work, i.e. to assist in marking the channel, the hydrographer's opinion is that depth changes do not pose an immediate danger to navigation. As a result of the above considerations there were no DTONs submitted for survey F00550.

D.1.4 Charted Features

With the exception of the land area movement, and the changes in bathymetry mentioned in section D.1.1 of this report, the hydrographer has no recommendations for changes to charted features.

D.1.5 Charting Recommendations

The hydrographer recommends contemporary shoreline data be acquired in the area. Survey F00550 is complete and adequate to supersede charted soundings in their common areas.

D.2 ADDITIONAL RESULTS

D.2.1 Aids to Navigation

As this survey was conducted to aid the USCG in buoy placement, the hydrographer recommends current AToN position data be obtained from the USCG and applied to the chart. See Appendix V, section V.3 of this report.

D.2.2 Bridges and Overhead Cables

There were no bridges or overhead cables within the survey limits of F00550.

D.2.3 Submarine Cables and Pipelines

There are no charted submarine cable areas or pipelines within the survey limits of F00550.

E. APPROVAL SHEET

**OPR-A924
Cape Cod Bay
Massachusetts**

**Barnstable Harbor
Survey Registry No. F00550**

Field operations for this survey were conducted under my daily supervision with frequent checks of progress and adequacy. All field sheets, bathymetry models, this Descriptive Report, and all accompanying records and data are approved.

Submitted in association with this descriptive report has been a series of reports and data:

2007 Data Acquisition and Processing Report (submitted with this report)
2007 HSRR Memo (submitted with this report)

This survey is adequate to supersede all prior surveys in common areas, and for application to the relevant NOS nautical charts.

Respectfully,

LT(jg) Matthew Jaskoski, NOAA
OIC NRT-5

APPENDIX IV

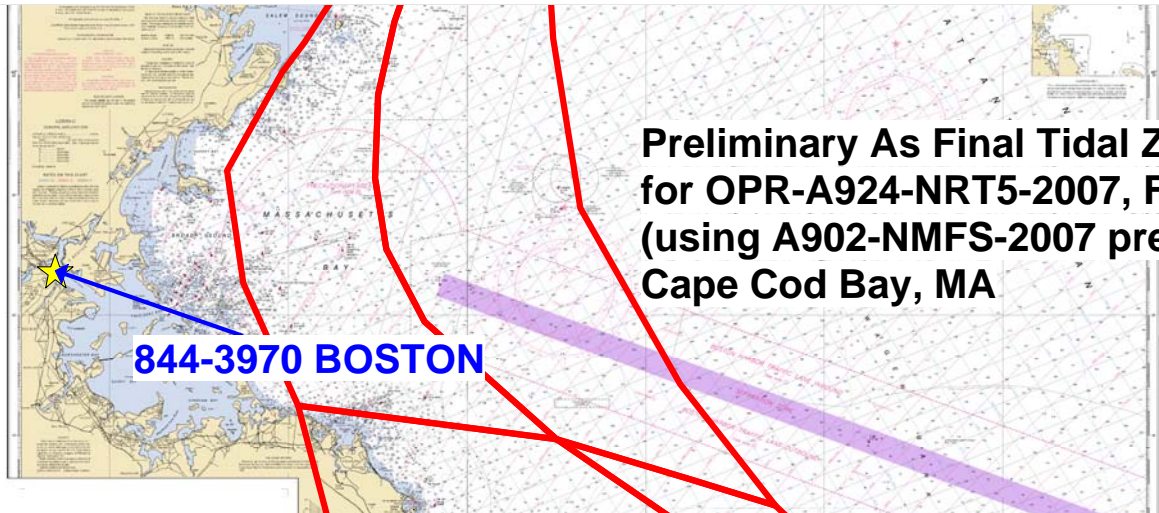
TIDES AND WATER LEVELS

This was an unplanned project, therefore a request for Approved Tides was not sent in to N/OPS1.

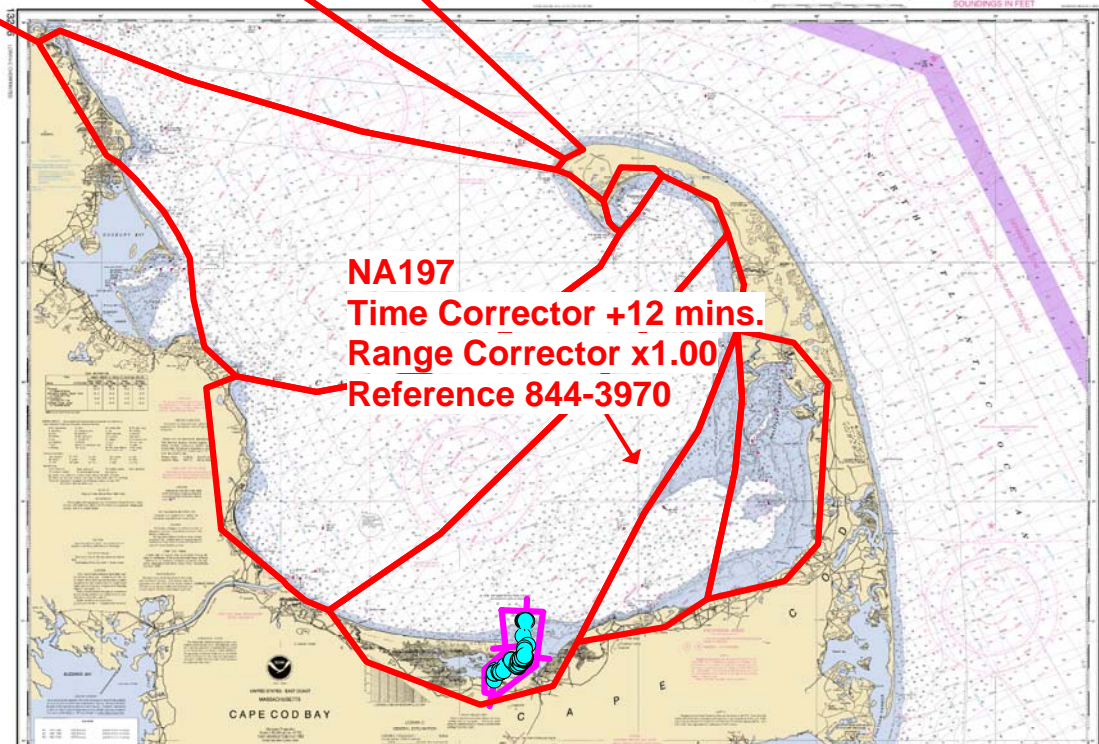
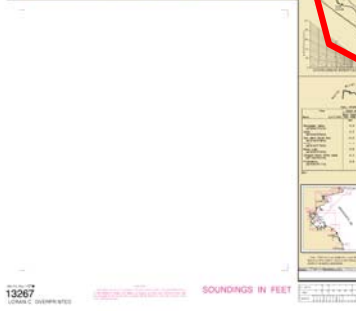


UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Service
Silver Spring, Maryland 20910





**Preliminary As Final Tidal Zoning
for OPR-A924-NRT5-2007, F00550
(using A902-NMFS-2007 preliminary zoning)
Cape Cod Bay, MA**



APPENDIX V
SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES

V.1. COAST PILOT REPORT, NOAA FORM 77-6

No corrections or additions required.

V.2. BOTTOM SAMPLE, NOAA FORM 75-44

No bottom samples were taken.










V.3. AIDS TO NAVIGATION, NOAA FORM 76-40

As this survey was conducted to aid the USCG in buoy placement, the hydrographer recommends current AToN position data be obtained from the USCG and applied to the chart.

iPlanet® Messenger Express Welcome Matthew Jaskoski help logout

Folders **Inbox** Sent Trash Drafts Addresses Options

Matthew.Jaskoski@noaa.gov: **Inbox**

         Move message to folder:

From: [Matt Wingate <matt.wingate@noaa.gov>](mailto:matt.wingate@noaa.gov)

Sent: Tuesday, April 1, 2008 10:43 am

To: [Matthew Jaskoski <Matthew.Jaskoski@noaa.gov>](mailto:Matthew.Jaskoski@noaa.gov)

Cc

Bcc

Subject: [Fwd: RE: [Fwd: Barnstable Harbor Survey]]

Matt-- This is the request that the Executive Petty Officer of Cape Cod Canal sent to Doug Baird.

Rgds,
Matt

----- Original Message -----

Subject: RE: [Fwd: Barnstable Harbor Survey]

Date: Tue, 23 Oct 2007 09:04:18 -0400

From: Coady, Mark BM1 <Mark.D.Coady@uscg.mil>

To: Doug Baird <Doug.Baird@noaa.gov>, Matt Wingate <matt.wingate@noaa.gov>

CC: Ed Martin <Ed.Martin@noaa.gov>, "Steve.Soherr" <Steve.Soherr@noaa.gov>, Lawrence T Krepp <Lawrence.T.Krepp@noaa.gov>, Mike Riddle <Michael.Riddle@noaa.gov>

Mr. Baird,
Barnstable Harbor contains approx 200-250 small vessel moorings (less than 20'). There are approx 6-8 sport fishing charter boats (30'-40' foot range) and a 130' Whale watch vessel. The Whale Watch boat has a draft of 5' and is a jet drive. The average max draft of the other vessels is about 4-5 feet, mostly because of a few sailboats. The channel has shifted to the East in recent years and our unit completed a rough survey two years ago, at which time the Aids to Navigation Team relocated some of the aids to better mark the channel. There are a fair amount of lobster traps in the area but mostly out side of the harbor entrance. If you require any further information please let me know what assistance I can provide.
v/r
Mark Coady, BM1
Executive Petty Officer
Station Cape Cod Canal
508-888-0020

-----Original Message-----

From: Doug Baird [<mailto:Doug.Baird@noaa.gov>]

Sent: Thursday, October 04, 2007 9:12 AM

To: Matt Wingate

Cc: Ed Martin; Steve.Soherr; Lawrence T Krepp; Mike Riddle

Subject: Re: [Fwd: Barnstable Harbor Survey]

Matt,

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT to Accompany
Survey F00550 (2007)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

B. DATA ACQUISITION AND PROCESSING

B.1 DATA PROCESSING

The following software was used to process data at the Atlantic Hydrographic Branch:

HSTP PYDRO version 7.3 r2252
CARIS HIPS/SIPS version 6.1 SP1 HF 1-6
CARIS Bathy Manager version 2.1 HF 1-3
DKART INSPECTOR, version 5.0 Build 732 SP1
CARIS HOM version 3.3
CARIS S57 Composer version 1.0

B.2. QUALITY CONTROL

B.2.1. H-Cell

The AHB source depth grid for the survey's nautical chart update product was the field's original 2m grid. The survey scale selected soundings were extracted from this 2m surface. The selected sounding set is approximately 10 to 20 times the number of charted depths. The chart scale selected soundings are a subset of the survey scale selected soundings. The surface model was referenced when selecting the chart scale soundings, to ensure that the selected soundings portrayed the bathymetry within the common area.

Depth curves were created from a 2m combined grid. The depth curves are forwarded to MCD for reference only. The curves were utilized during chart scale sounding selection and quality assurances efforts at AHB. The depth curves are incorporated into the US400550_CU.000 deliverable.

The pre-compilation products or components (Stand Alone HOB files (SAHOB)) included depth curves (DEPCNT), sounding selections (SOUNDG), features (OBSTRN), Meta objects (M_COVR, M_QUAL, M_NSYS), and cartographic Blue Notes. The individual SAHOB files were inserted into one BASE Manager feature layer and exported to S57 format in order to create the H-Cell deliverable.

The completed H-Cell was exported as a Base Cell File (ENC.000) in S-57 format with all values in metric units. The metric equivalent ENC.000 file was then converted to NOAA chart units (ENC_CU.000) with all values measured in feet following NOAA sounding rounding rules.

Chart compilation was performed by Atlantic Hydrographic Branch personnel in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.

The F00550 CARIS H-Cell final deliverables include the following products:

US400550_CU.000	1:20,000 Scale	F00550 H-Cell with Chart Scale Selected Soundings and Depth Curves
US400550_SS.000	1:5,000 Scale	F00550 Selected Soundings (Survey Scale)
US400550_BlueNotes.000	1:20,000 Scale	F00550 Cartographic Notes

D. RESULTS AND RECOMMENDATIONS

D.1 CHART COMPARISON

13251, 15th Edition, 09/2004
 Corrected through NM 09/04/2004
 Corrected through LNM 08/17/2004
 Scale 1:20,000

ENC Comparison

US4MA14M
 Cape Cod Bay
 Edition 10
 Update Application Date 2007-06-14
 Issue Date 2008-05-28
 References: Chart 13246

D.1.1 Hydrography

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in section “D” of the Descriptive Report. The following exceptions are noted:

1. Charted features were not addressed by this survey. Retain all charted features as charted.

D.3. MISCELLANEOUS

Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland. See Section D.1. of this report for a list of the Raster Charts and Electronic Navigation Charts (ENC) used for compiling the present survey:

D.4. ADEQUACY OF SURVEY

The present survey is adequate to supersede the charted bathymetry within the common area. Any features not specifically addressed either in the H-Cell BASE Cell File or the Blue Notes should be retained as charted. Refer to the Descriptive Report for further recommendations by the hydrographer.

APPROVAL SHEET
F00550

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, representation of critical depths, cartographic symbolization, and verification or disproval of charted data. All revisions and additions made to the H-Cell files during survey processing have been entered in the digital data for this survey. The survey records and digital data comply with National Ocean Service and Office of Coast Survey requirements except where noted in the Descriptive Report and the Evaluation Report.

All final products have undergone a comprehensive reviews per the Hydrographic surveys Division Office Processing Manual and are verified to be accurate and complete except where noted.

Sarah M. Eggleston
Physical Scientist
Atlantic Hydrographic Branch

I have reviewed the H-Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet National Ocean Service requirements and standards for products in support of nautical charting except where noted.

Approved: _____

Shepard Smith
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch