H11079

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey: **Navigable Area**

Registry Number: **H11079**

LOCALITY

State: Massachusetts

General Locality: South Coast of Massachusetts

Sub-locality: Great Round Shoal

2004

CHIEF OF PARTY
CDR Emily B. Christman, NOAA

LIBRARY & ARCHIVES

DATE

NOAA FORM 77-28 (11-72) U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REGISTRY NUMBER:

HYDROGRAPHIC TITLE SHEET

H11079

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:	**South Coast of Massachusetts**		
Sub-Locality:	**Great Round Shoal**		
Scale:	**1:20,000**	Date of Survey:	**8/26/04 to 11/02/04**
Instructions Dated:	**06/17/04**	Project Number:	**S-B904-TJ-04**
Vessel:	**NOAA Ship THOMAS JEFFERSON, S-222**		
Chief of Party:	**CDR Emily B. Christman, NOAA**		
Surveyed by:	**THOMAS JEFFERSON Personnel**		
Soundings by:	**Reson 8101 mutlibeam echosounder**		
	Reson 8125 multibeam echosounder		
Graphic record scaled by:	**N/A**		
Graphic record checked by:	**N/A**		
Protracted by:	**N/A**	Automated Plot:	**N/A**
			Hewlett Packard Design Jet 2500 CP (office)
Verification by:	**Atlantic Hydrographic Branch Personnel**		
Soundings in:	***Feet*** ~~**Meters**~~ **at MLLW**		

Remarks: ***Red, bold, italic notes in descriptive report were made during office processing.***

1) All Times are UTC.
2) This is a Navigable Area Hydrographic Survey.
3) Projection is UTM Zone 19.

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Data filed with original field records.

DESCRIPTIVE REPORT

to accompany
HYDROGRAPHIC SURVEY H11079

Scale of Survey: 1:20,000
Year of Survey: 2004
NOAA Ship THOMAS JEFFERSON
CDR Emily B. Christman, Commanding

A. AREA SURVEYED

This hydrographic survey was conducted in accordance with Hydrographic Survey Letter Instructions* for project S-B904-TJ-04, South Massachusetts Coast, Massachusetts. The original instructions are dated June 17, 2004.

This Descriptive Report pertains to sheet "D" of project S-B904-TJ-04. The assigned registry number for this sheet is H11079, as prescribed in the Letter Instructions. Due to poor weather conditions, acquisition was curtailed and 'blocked off' for an area with full multibeam echosounder coverage and partial side scan sonar coverage. Hydrographic data cleaning system (HDCS) side scan sonar and multibeam echosounder data acquired outside of this 'blocked' area were deleted.

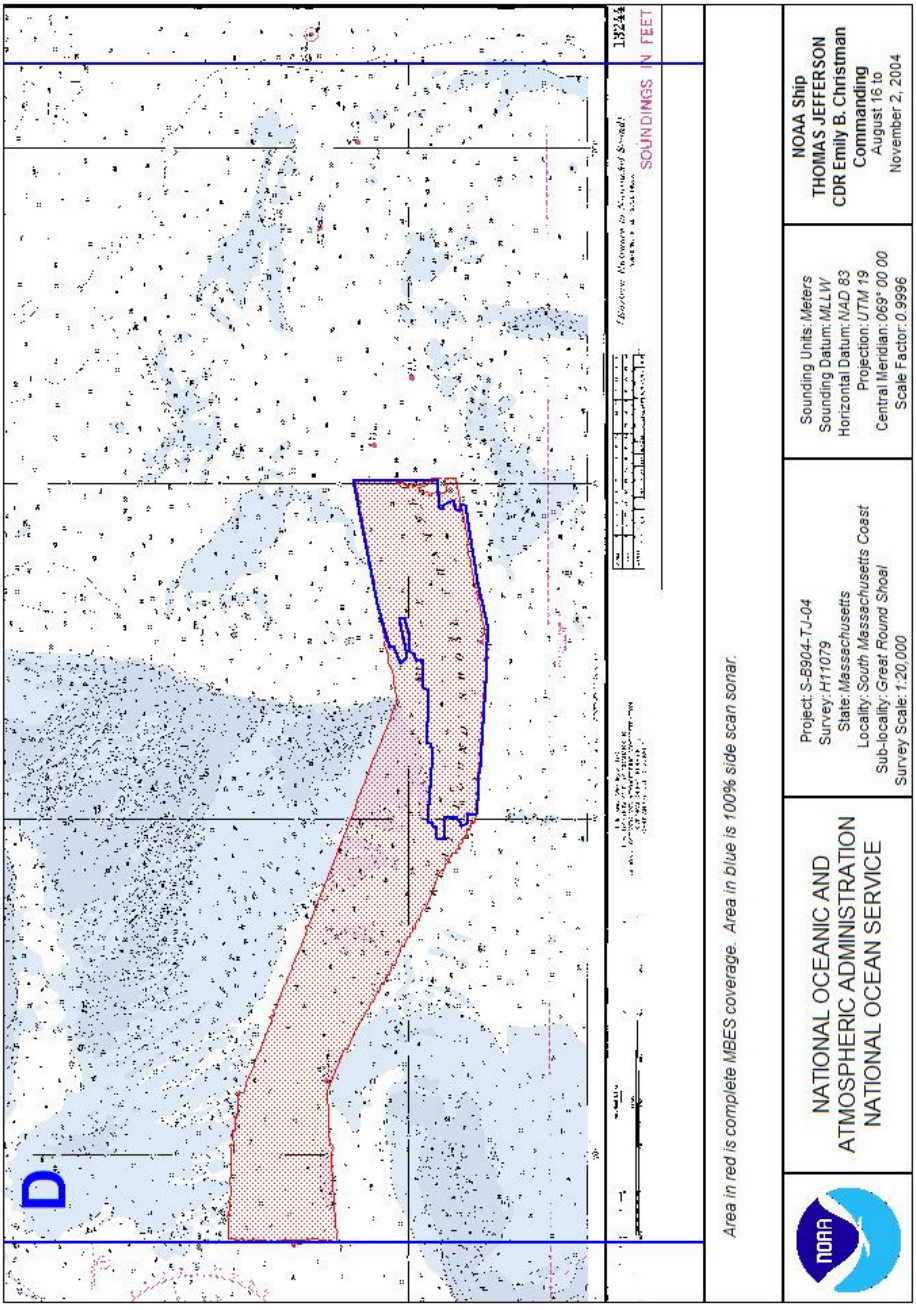
This project responds to requests from the U.S. Coast Guard and includes Quicks Hole, Edgartown Harbor and Great Round Shoal Channel. Quicks Hole is the only passage between Vinyard Sound and Buzzards Bay eastward of Cuttyhunk available for vessels of over 10-foot draft. This passage is narrow and tidal currents can approach a velocity of 3 knots. The latest hydrographic survey was accomplished in this passage in 1976 (Northern half).

Edgartown Harbor is an important destination for ferries both inter-island and those bound to and from Massachusetts mainland. Great Round Shoal Channel is used mainly by fishing vessels transiting between New Bedford to Georges Bank. This channel was last surveyed in 1957.

For complete survey limits, see the chartlet on the following page.

Data filed with original field records.

Figure 1: Complete Survey Limits & Data Coverage



B. DATA ACQUISITION AND PROCESSING

EQUIPMENT *See also the Evaluation Report.*

Data were acquired by NOAA Ship THOMAS JEFFERSON, NOAA Launch 1005 and Launch 1014. Both launches are NOAA standard 8.5-meter aluminum Jensen vessels with a 0.5-meter transducer draft. NOAA Ship THOMAS JEFFERSON is a 63.4-meter hydrographic survey vessel with an average transducer draft of 4.6 meters.

THOMAS JEFFERSON acquired side scan sonar (SSS) data with a towed Klein 5000 system.

Launch 1005 acquired multibeam echosounder (MBES) data with a keel-mounted RESON Seabat 8101 shallow-water multibeam system.

Launch 1014 acquired MBES bathymetry data with a RESON Seabat 8125 shallow-water multibeam system.

All platforms acquired positioning and attitude data with an on-board TSS POS/MV (version 3) GPS-aided inertial navigation system. Refer to the 2004 Fall Data Acquisition and Processing Report (DAPR*) for details related to each individual vessel.

Sound velocity data were acquired by both platforms. Launches 1014 and 1005 each used a Sea-Bird SBE19+ SEACAT conductivity, temperature, and depth profiler.

There were no vessel configurations or changes to the Hips Vessel File (HVF) for this survey that are not included in the 2004 Fall DAPR.* There were no survey-specific equipment problems on either survey launch. For all other acquisition or processing details related to this survey, refer to the 2004 Fall DAPR.*
Data filed with original field records.

QUALITY CONTROL

Side Scan Sonar Quality Control

There were no major faults with the SSS system which affected data integrity. Full side scan sonar coverage was not attained for the entire sheet due to time limitations. Full 100% SSS data* were acquired over the Eastern portion of this survey only. These data were acquired by THOMAS JEFFERSON. Daily confidence checks were performed by observing sand waves and other features in these data. ***Concur.***
Data filed with original field records.

Shallow Water Multibeam Quality Control

There were no major faults with the MBES system which affected data integrity. Daily confidence checks examining the internal consistency of the MBES data were made by comparing overlapping lines. Refer to this project's DAPR* for detailed discussion of MBES system calibrations, data acquisition, and data processing.
Data filed with original field records.
MBES data were acquired acquired over a period of 38 days. During this time there was very obvious movement of the sandwaves, horizontally and vertically (see figure 2). This survey is being submitted now rather than continuing acquisition next year due to this rapid bottom change in the survey area. Poor weather conditions caused the premature end of acquisition for the year. One area in the Eastern part of the sheet has minor gaps in MBES coverage. This MBES data gap overlaps the area of 100% SSS coverage. The hydrographer recommends updating the nautical charts based on the available data. ***Concur.***

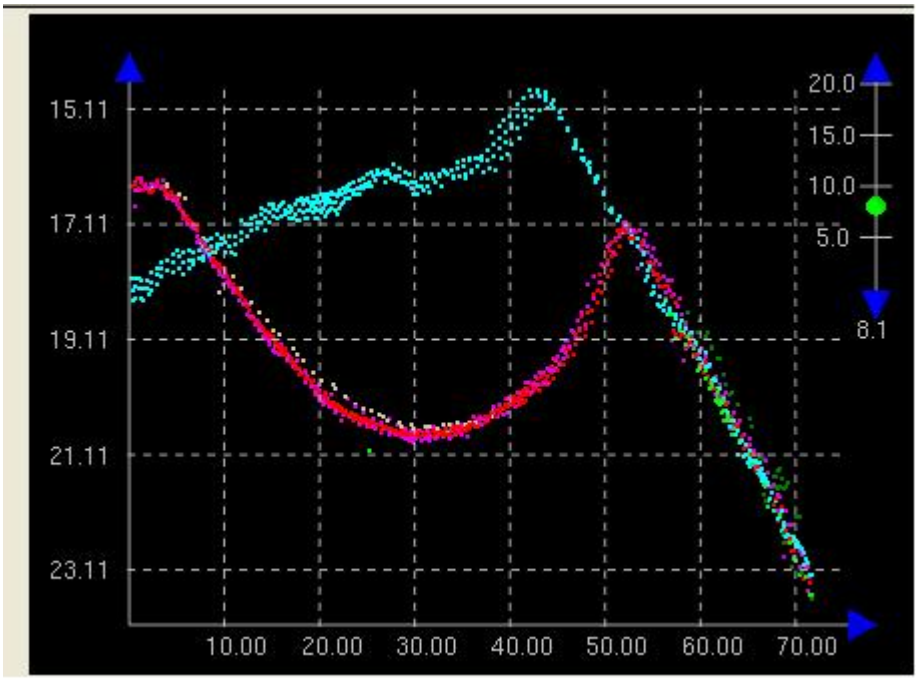


Figure 2: Bottom change on crest of sandwave over period of 21 days.

Crosslines ***See also the Evaluation Report.***

Thirty nine nautical miles of crosslines (about 6% of the 565 nm of mainscheme MBES data) were acquired. No traditional crossline comparison was performed on the multibeam data because quality control procedures have been incorporated into the depth and uncertainty models produced by CARIS 5.4. Crosslines compared favorably for data acquired in a similar time period. Those main scheme data acquired significantly after the crosslines were acquired showed minor differences. No significant portion of this survey is without significant sandwaves. ***Concur.***

Junctions

This survey does not junction with any contemporary surveys. ***Concur.***

CORRECTIONS TO ECHO SOUNDING

All methods or instruments used were as described in the project DAPR.* All sound velocity casts are included in the Pydro PSS. Sound velocity correctors were applied based on distance and time (four hours). ***Data filed with original field records.***

C. VERTICAL AND HORIZONTAL CONTROL

VERTICAL CONTROL

The tidal datum for this project is Mean Lower Low Water (MLLW). No temporary tide gauge was installed for this survey. The Nantucket, MA (844-9103) tide gauge was used for this survey.

A Request for Approved Tides letter was sent to N/OPS1 on November 5, 2004 (Appendix IV*). Verified tides from the N/OPS1 CO-OPS website for Nantucket, MA (844-9130) were downloaded and applied to all sounding data using preliminary zoning. Refer to the Fall 2004 DAPR* for a summary of the methods used to determine, evaluate, and apply tide corrections to sounding data. ***Verified tides using final tide zoning were re-applied by AHB. *Data filed with original field records.***

HORIZONTAL CONTROL

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

Horizontal position was determined using the Global Positioning System (GPS) corrected by U.S. Coast Guard differential GPS (DGPS) beacon stations. The primary DGPS beacon used for this survey was Acushnet (site ID = 772, transmission frequency = 306). Launch 1005 switched to Moriches, NY (site ID = 803, transmission frequency = 293) while solving POS/MV issues. No data were acquired while repairing the POS/MV. No horizontal control stations were established for this survey.

Horizontal dilution of precision (HDOP) was monitored daily on the ship and both launches. That value did not exceed 4.00, and adequate satellite coverage was maintained throughout the survey period.

D. RESULTS AND RECOMMENDATIONS *See also the Evaluation Report.*

CHART COMPARISON *See also the Evaluation Report.*

There are eight charts affected by this survey:

Table 1: Affected Charts

Number	Version	Edition Date	Scale
13244	39th Ed.	03/30/2002	1:40,000
13237	39th Ed.	05/01/2003	1:80,000
12300	44th Ed.	07/01/2004	1:400,000
13200	33rd Ed.	01/19/2002	1:400,000
13009	30th Ed.	08/01/2002	1:500,000
13006	31st Ed.	06/01/2003	1:675,000
5161	13th Ed.	10/01/2003	1:1,058,400
13003	47th Ed.	06/01/2003	1:1,200,000

General Agreement with Charted Soundings, Features, and Notes

Surveyed soundings showed significant change in some areas. Even the relatively brief period from the start and end of acquisition showed significant change. ***Concur.***

Item Investigation Reports

Three Dangers to Navigation (DtoN) were submitted November 8, 2004 for this survey in two separate e-mails (see Appendix I). There were no assigned AWOIS items for this survey. Four uncharted items are discussed in Appendix I. Some SSS contacts were selected to the East of this survey area but were not resolved. Although these SSS contacts are incorporated in the Pydro PSS, they are not addressed in this report, because they are outside the blocked survey area. ***Concur.***

ADDITIONAL RESULTS

Prior Surveys

The survey overlaps two prior surveys:

Survey	Scale	Year
H08171	25,000	1954
H08409	20,000	1956

The survey area was previously surveyed with only lead lines and single beam echosounder data without the aid of differential GPS. Note that survey acquisition for these prior surveys were also hampered by bad weather. This present survey is adequate to supersede all charted depths in the common area. ***Concur.***

Aids to Navigation and Other Detached Positions

Aids to navigation were positioned with detached positions. These aids to navigation were within 50 meters of charted positions. ***Concur. Defer to Marine Chart Division (MCD) Update Services Branch for charting recommendations for Aids to Navigation.***

Bridges and Overhead Cables

There were no bridges or overhead cables in the survey area to be considered. ***Concur.***

Ferry Routes

There were no ferry routes in the survey area to be considered. ***Concur.***

Submarine Cables and Pipelines

There were no submarine cables or pipelines in the survey area to be considered. ***Concur.***

E. APPROVAL SHEET

S-B904-TJ-04
South Massachusetts Coast, MA

Great Round Shoal
Survey Registry No. H11079

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

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

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

- SEPARATES TO ACCOMPANY PROJECT S-B904-TJ-04, SHEET D, H11079
- DATA ACQUISITION AND PROCESSING REPORT *(dated <pending>; submitted <pending>)*
- HORIZONTAL AND VERTICAL CONTROL REPORT *(dated <pending>; submitted <pending>)*

Respectfully Submitted:

LT Marc S. Moser, NOAA
Field Operations Officer

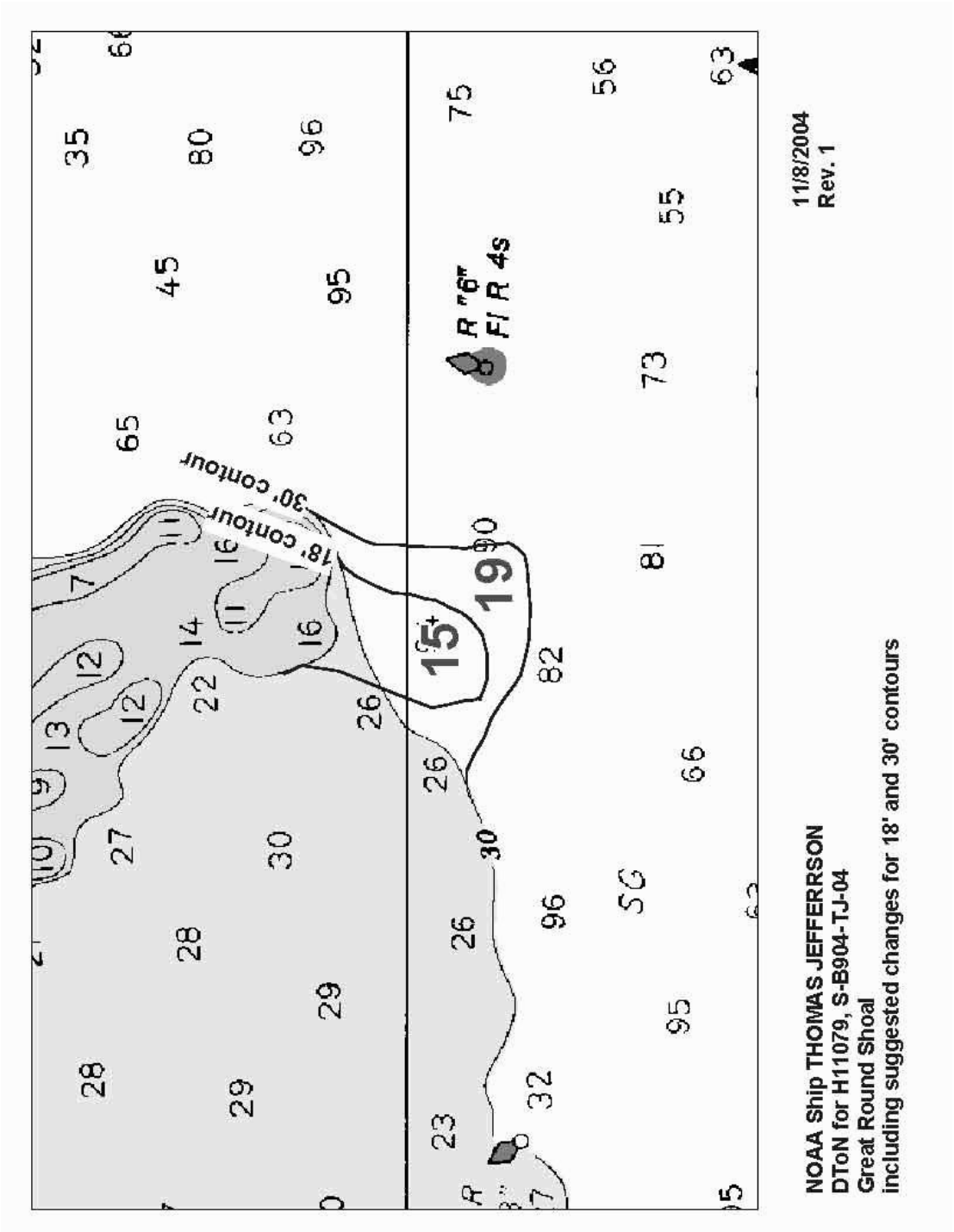
Approved and Forwarded:

CDR Emily B. Christman, NOAA
Commanding Officer

H11079 DToN Rev1

Subject: H11079 DToN Rev1
From: Marc Moser <marc.s.moser@noaa.gov>
Date: Mon, 08 Nov 2004 14:22:08 -0500
To: _NOS OCS MCD Navigation Dangers <mcd.dton@noaa.gov>
CC: Lyn Preston <Lyn.Preston@noaa.gov>, Emily B Christman <Emily.B.Christman@noaa.gov>

Attached is the H11079 Dton including chartlet with suggested 18' and 30' contour changes.


18' contour
30' contour
R "6"
Fl R 4s
15
19
11/8/2004
Rev. 1
NOAA Ship THOMAS JEFFERRSON
DToN for H11079, S-B904-TJ-04
Great Round Shoal
including suggested changes for 18' and 30' contours

1.1) Profile/Beam - 2543/4 from h11079 / 1005_mb / 2004-284 / 648_1410

DANGER TO NAVIGATION

Survey Summary

Survey Position: 041° 24' 56.538" N, 69° 53' 27.539" W

Least Depth: 4.73 m

Timestamp: 2004-284.14:14:51.027 (10/10/2004)

Survey Line: h11079 / 1005_mb / 2004-284 / 648_1410

Profile/Beam: 2543/4

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Shoaling by shifting sand waves. Dton submitted 11/8/2004.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_mb/2004-284/648_1410	2543/4	0.00	000.0	Primary

Hydrographer Recommendations

Chart as per digital data. Modify 30 foot contour.

Cartographically-Rounded Depth (Affected Charts):

15ft (13244_1, 13237_1)

2 ½fm (12300_1, 13200_1, 13009_1, 13006_1, 13003_1)

4.7m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: INFORM - Shoaling by shifting sand waves. Dton submitted 11/8/2004.

Office Notes

Concur with clarification. The 15 ft. sounding is presently charted on chart 13244, 40th Ed. Jul/05. A 14 ft sounding located 3.6 mm at chart scale from this surveyed position takes charting precedence over the 15 ft sounding. Chart a 14 foot sounding in 41-24-59.241N Latitude, 69-53-31.813W Longitude.

1.2) Profile/Beam - 520/93 from h11079 / 1005_mb / 2004-283 / 615_2004

DANGER TO NAVIGATION

Survey Summary

Survey Position: 041° 25' 03.525" N, 69° 53' 38.389" W

Least Depth: 3.77 m

Timestamp: 2004-283.20:04:57.983 (10/09/2004)

Survey Line: h11079 / 1005_mb / 2004-283 / 615_2004

Profile/Beam: 520/93

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Shoaling created by shifting sand waves. Dton submitted 11/8/2004.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_mb/2004-283/615_2004	520/93	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital. Modify 30 foot contour.

Cartographically-Rounded Depth (Affected Charts):

12ft (13244_1, 13237_1)

2fm (12300_1, 13200_1, 13009_1, 13006_1, 13003_1)

3.7m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: INFORM - Shoaling created by shifting sand waves. Dton submitted 11/8/2004.

Office Notes

Concur. The shoal depth has been applied to chart 13244, 40th Ed. Jul/05, retain as charted.

1.3) Profile/Beam - 893/1 from h11079 / 1005_mb / 2004-242 / 647_1838

DANGER TO NAVIGATION

Survey Summary

Survey Position: 041° 24' 54.771" N, 69° 53' 16.095" W

Least Depth: 5.89 m

Timestamp: 2004-242.18:58:04.222 (08/29/2004)

Survey Line: h11079 / 1005_mb / 2004-242 / 647_1838

Profile/Beam: 893/1

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Shoaling created by shifting sand waves. Dton submitted 11/8/2004.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_mb/2004-242/647_1838	893/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital. Modify 18 and 30 foot contour.

Cartographically-Rounded Depth (Affected Charts):

19ft (13244_1, 13237_1)

3 ¼fm (12300_1, 13200_1, 13009_1, 13006_1, 13003_1)

5.9m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: INFORM - Shoaling created by shifting sand waves. Dton submitted 11/8/2004.

Office Notes

Concur. The 19-ft shoal depth has been applied to chart 13244, 40th Ed. Jul/05, retain as charted.

H11079 Features Report

Registry Number: H11079

State: Massachusetts

Locality: South Coast of Massachusetts

Sub-locality: Great Round Shoal Channel

Project Number: S-B904-TJ-04

Survey Dates: 08/26/2004 - 08/29/2004

Charts Affected

Number	Version	Date	Scale
13241	16th Ed.	11/01/2005	1:40000
13244	40th Ed.	07/01/2005	1:40000
13237	39th Ed.	05/01/2003	1:80000
12300	45th Ed.	03/01/2005	1:400000
13200	34th Ed.	12/01/2005	1:400000
13009	31st Ed.	10/01/2004	1:500000
13006	32nd Ed.	02/01/2005	1:675000
5161	13th Ed.	10/01/2003	1:1058400
13003	48th Ed.	10/01/2004	1:1200000

Features

No.	Name	Feature Type	Survey Depth	Survey Latitude	Survey Longitude	AWOIS Item
1.1	start rips	Sounding	[None]	041° 24' 58.388" N	69° 52' 44.288" W	---
1.2	end rips	Sounding	[None]	041° 24' 33.269" N	69° 54' 28.566" W	---
1.3	6300/99	Sounding	34.72 m	041° 24' 33.367" N	69° 54' 38.669" W	---
1.4	3261/117	Sounding	22.32 m	041° 24' 51.471" N	69° 50' 39.911" W	---
1.5	259/81	Sounding	22.44 m	041° 24' 16.917" N	69° 54' 54.751" W	---

1.1) Profile/Beam - 3/1 from h11079 / 1005_dp / 2004-239 / 08262004

Survey Summary

Survey Position: 041° 24' 58.388" N, 69° 52' 44.288" W

Least Depth: [None]

Timestamp: 2004-239.16:28:06.000 (08/26/2004)

DP Dataset: h11079 / 1005_dp / 2004-239 / 08262004

Profile/Beam: 3/1

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Start point of tide rips observed in area.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_dp/2004-239/08262004	3/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

S-57 Data

Geo object 1: Water turbulence (WATTUR)

Attributes: CATWAT - 4:tide rips

Office Notes

Concur. Defer to MCD Chart Update Services Branch for final recommendation of charting of tidal rip notations.

1.2) Profile/Beam - 2/1 from h11079 / 1005_dp / 2004-240 / 08272004

Survey Summary

Survey Position: 041° 24' 33.269" N, 69° 54' 28.566" W

Least Depth: [None]

Timestamp: 2004-240.13:38:02.000 (08/27/2004)

DP Dataset: h11079 / 1005_dp / 2004-240 / 08272004

Profile/Beam: 2/1

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Tide rips observed.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_dp/2004-240/08272004	2/1	0.00	000.0	Primary

Hydrographer Recommendations

Chart per digital data.

S-57 Data

Geo object 1: Water turbulence (WATTUR)

Attributes: CATWAT - 4:tide rips

Office Notes

Concur. Defer to MCD Chart Update Services Branch for final recommendation of charting of tidal rip notations.

1.3) Profile/Beam - 6300/99 from h11079 / 1005_mb / 2004-240 / 676_1354

Survey Summary

Survey Position: 041° 24' 33.367" N, 69° 54' 38.669" W

Least Depth: 34.72 m

Timestamp: 2004-240.14:08:43.516 (08/27/2004)

Survey Line: h11079 / 1005_mb / 2004-240 / 676_1354

Profile/Beam: 6300/99

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Possible item identified with 100%sss and MBES.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_mb/2004-240/676_1354	6300/99	0.00	000.0	Primary
h11079/s222_100/2004-240/103_1717	0001	15.26	267.4	Secondary

Hydrographer Recommendations

Chart per digital data.

S-57 Data

Geo object 1: Sounding (SOUNDG)

Attributes: INFORM - Possible item identified with 100%sss and MBES.

Office Notes

Do not concur. No feature present at the documented location. Chart present survey soundings in the common area.

1.4) Profile/Beam - 3261/117 from h11079 / 1014_mb / 2004-242 / 052_1919

Survey Summary

Survey Position: 041° 24' 51.471" N, 69° 50' 39.911" W

Least Depth: 22.32 m

Timestamp: 2004-242.19:30:05.874 (08/29/2004)

Survey Line: h11079 / 1014_mb / 2004-242 / 052_1919

Profile/Beam: 3261/117

Charts Affected: 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Rock identified with 100% SSS and RESON 8125 MBES.

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1014_mb/2004-242/052_1919	3261/117	0.00	000.0	Primary
h11079/s222_100/2004-242/002_1916	0001	10.02	356.5	Secondary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

73ft (13244_1, 13237_1)

12fm (12300_1, 13200_1, 13009_1, 13006_1, 13003_1)

22m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

Office Notes

Do not concur. A rock is present in both SWMB and SSS, but is of insignificant height compared to surrounding depths . Chart present survey soundings in the common area.

common area.

1.5) Profile/Beam - 259/81 from h11079 / 1005_mb / 2004-240 / 670_1605

Survey Summary

Survey Position: 041° 24' 16.917" N, 69° 54' 54.751" W

Least Depth: 22.44 m

Timestamp: 2004-240.16:23:28.646 (08/27/2004)

Survey Line: h11079 / 1005_mb / 2004-240 / 670_1605

Profile/Beam: 259/81

Charts Affected: 13241_1, 13244_1, 13237_1, 12300_1, 13200_1, 13009_1, 13006_1, 5161_1, 13003_1

Remarks:

Items identified with 100% SSS and RESON 8101 MBES. Near RW"GRC" buoy (possible buoy block).

Feature Correlation

Address	Feature	Range	Azimuth	Status
h11079/1005_mb/2004-240/670_1605	259/81	0.00	000.0	Primary
h11079/s222_100/2004-242/100_1231	0001	5.60	304.3	Secondary
h11079/s222_100/2004-242/100_1231	0004	28.56	326.6	Secondary

Hydrographer Recommendations

Chart per digital data.

Cartographically-Rounded Depth (Affected Charts):

73ft (13241_1, 13244_1, 13237_1)

12fm (12300_1, 13200_1, 13009_1, 13006_1, 13003_1)

22m (5161_1)

S-57 Data

Geo object 1: Sounding (SOUNDG)

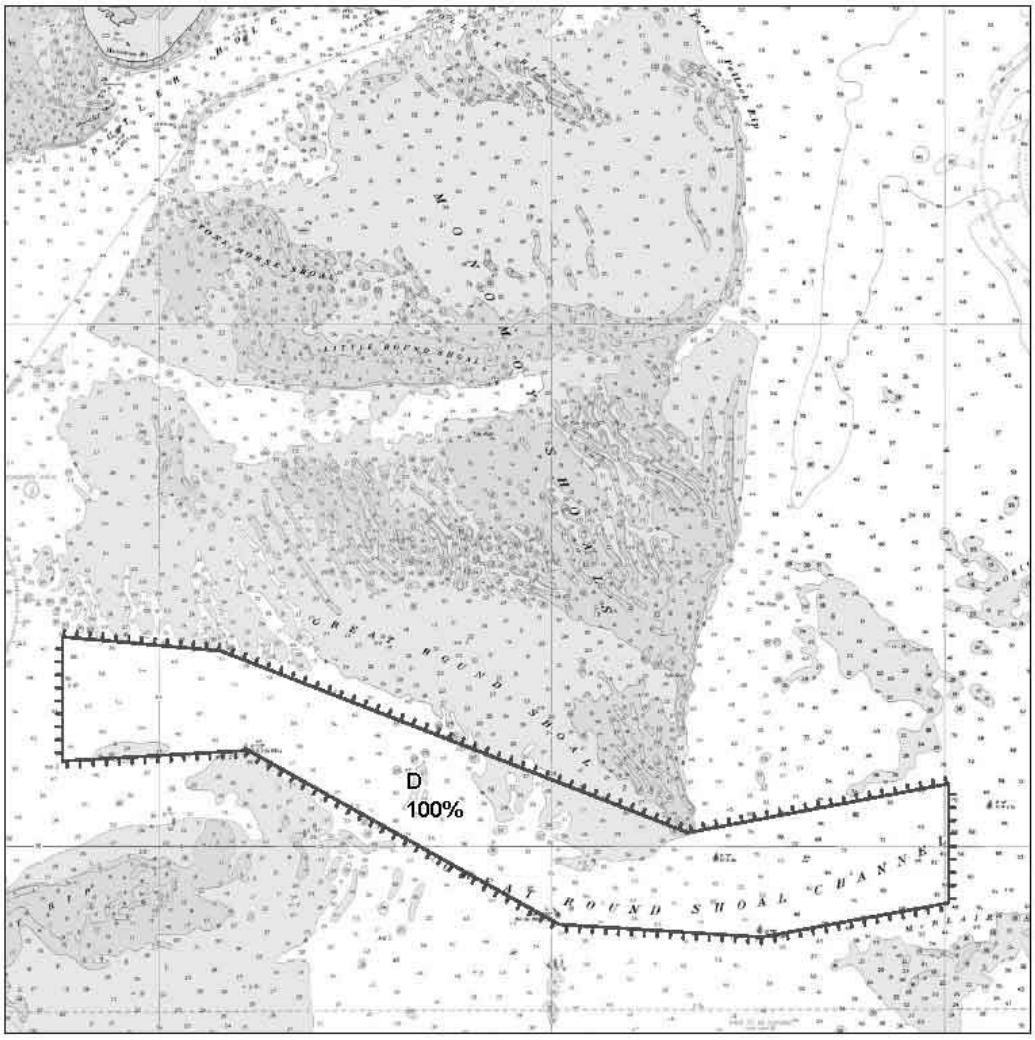
Office Notes

Do not concur. Feature is present in SWMB and SSS; it was determined not to be the nearby buoy block. The height of this feature is insignificant compared to the depths within the common area. Chart present survey soundings in the common area.

APPENDIX II

LIST OF GEOGRAPHIC NAMES

Geographic names as displayed on chart were observed in common usage. Hydrographer has no particular recommendation on geographic names.



Project	Sheet_Letter	H_num	HQ_Est_SNM	CumlPercCompPrev	CumlPercCompCur	SNM_CompCurM	CumSNMcom
S-B904-TJ-	D	H11079	15	33	100	4	10

Project	Month	LNM_Hydr	LNM_MB	SV_Casts	Bottom_Sampl	AWOIS_Items	Tide_Guage_Inst	DAS	DTime_equip_H	DTime_Weather_	D_Time_other_t
S-B904-0	August	476.00	697.50	72.00	0.00	3.00	2.00	21.00	40.00	32.00	0.00
S-B904-0	October	0.00	262.00	20.00	0.00	0.00	0.00	5.00	0.00	0.00	0.00
S-B904-T	November	0.00	64.00	3.00	0.00	0.00	0.00	2.00	0.00	0.00	0.00

Progress Sketch S-B904-TJ-04
November, 2004

APPENDIX IV

TIDES AND WATER LEVELS

1) Field Tide Note (Section 5 of Project Instructions)

2) Smooth Tide Request (November 6, 2003)

3) Times of Hydrography

Tide Requirements for S-B904-TJ-2004
Southern Massachusetts Coast, MA
ALS 4/20/2004

5.0. TIDES

5.1. Purpose: All tide requirements in these instructions are in direct support of hydrographic survey operations.

5.2 through 5.6. Refer to Standing Instructions.

5.7. Vertical Datums:

Refer to Standing Instructions.

5.7.1. The operating National Water Level Observation Network (NWLON) stations at Nantucket, MA (844-9130) and Newport, RI (845-2660) will serve as datum control for the survey area as well as control for datum determination at the subordinate stations. Therefore, it is critical that these stations remain in operation during all periods of hydrography.

5.7.1.1. Water level data acquisition monitoring:

Refer to Standing Instructions.

5.7.1.2. Water level station operation and maintenance:

Refer to Standing Instructions.

5.7.1.3. No leveling is required at Nantucket, MA (844-9130) or Newport, RI (845-2660) by NOAA Ship THOMAS JEFFERSON personnel.

5.8. Water Level Station Requirements: The operating water level stations at Nantucket, MA (844-9130) and Newport, RI (845-2660) will also provide water level reducers for this project, reiterating the importance of their operation during all periods of hydrography. See Sections 5.7.1.1. and 5.7.1.2. concerning responsibilities.

5.8.1. Subordinate Water Level Stations:

Refer to Standing Instructions.

5.8.1.1. 30-Day Station(s): Install the following water level stations. Operate the stations for a minimum of 30 days, from 4 hours before to 4 hours after the period of hydrography and/or shoreline verification for the sheet(s) or area(s) specified in

Section 5.8.4. of these instructions. However, if the period of hydrography is less than 30 days, this 30-day requirement is waived beyond the 4 hours after the period of hydrography.

Station Number	Station Name	Latitude(N)	Longitude(W)
844-8251	Quicks Hole North	41° 26.9'	70° 51.4'
844-8558	Edgartown	41° 23.3'	70° 30.7'
844-8833	Wauwinet	41° 20.0'	70° 00.0'

Section 5.8.1.2. is not applicable for this project.

Section 5.8.1.3. Tide Component Error Estimation :

The estimated tidal error contribution to the total survey error budget in the vicinity of Quicks Hole North, MA can not be computed due to a lack of available water level time series data.

The estimated tidal error contribution to the total survey error budget in the vicinity of Edgartown, MA can not be computed due to a lack of available water level time series data.

The estimated tidal error contribution to the total survey error budget in the vicinity of Wauwinet, MA can not be computed due to a lack of available water level time series data.

5.8.2. GOES Satellite Enabled Subordinate Stations

Refer to Standing Instructions.

The following preliminary satellite antenna pointing angles are provided for the stations in Section 5.8.1.1. to facilitate GOES satellite transmission. Complete GOES information will be provided after the station location is finalized and reported to CO-OPS/RDD. If a suitable site for transmitting via satellite cannot be found within the required area, then a station should be established within the area and the data downloaded onto diskette and forwarded to CO-OPS/RDD. As a backup for all stations, data must be forwarded to CO-OPS/RDD on diskette.

STATION	GOES EAST-EAST	GOES EAST-CENTRAL
844-8251	ELEV. 41.9°	38.3°
	AZIMUTH(T) 186.2°	207.7°
844-8558	ELEV. 42.0°	38.2°
	AZIMUTH(T) 186.8°	208.2°
844-8833	ELEV. 42.0°	38.0°
	AZIMUTH(T) 187.5°	208.9°

5.8.3. Recovering Historical bench marks:

Refer to Standing Instructions.

5.8.3.1. This section provides GPS requirements for all bench marks recovered. Refer to the "Basic GPS Observation Guidelines for NOAA In-House Hydrographic Surveying" document from CO-OPS and accompanying manuals provided on the project CD-ROM. If GPS equipment is not available for this survey, GPS requirements from this section are waived.

5.8.4. Operate the water level stations listed in Section 5.8.1.1. of these instructions for the following hydrographic area(s) or zone(s).

Station Number	Hydrographic Area(s) or Zone(s)
844-8251	Sheet C
844-8558	Sheet A
844-8833	Sheet B

5.9. **Zoning**: For hydrography in the area of Southern Massachusetts Coast, Nantucket, MA (844-9130) and Newport, RI (845-2660) are the reference stations for predicted tides. Predictions may be retrieved in one month increments over the Internet from the CO-OPS Home Page at http://www.co-ops.nos.noaa.gov/ and then clicking on "Predictions." Predictions are six-minute time series data relative to MLLW in metric units on Greenwich Mean Time. Apply the following time and height correctors to the predicted tides at Nantucket and Newport during the acquisition and preliminary processing phases of this project for correcting all sounding data.

Zone Name	Time Corrector(mins)	Range Ratio	Predicted Reference
NA289	-42	x1.75	844-9130
NA290	-30	x1.75	844-9130
NA291	-24	x1.68	844-9130
NA292	-42	x1.68	844-9130
NA311	-42	x1.62	844-9130
NA312	-24	x1.62	844-9130
NA313	-24	x1.55	844-9130
NA314	-42	x1.55	844-9130
NA332	-54	x1.49	844-9130
NA333	-42	x1.49	844-9130
NA334	-42	x1.42	844-9130

NA334A	-36	x1.42	844-9130
NA352	-54	x1.35	844-9130
NA353	-42	x1.35	844-9130
NA354	-36	x1.35	844-9130
NA355	-30	x1.29	844-9130
NA356	-42	x1.29	844-9130
NA357	-54	x1.29	844-9130
NA374	-54	x1.42	844-9130
NA374A	-54	x1.22	844-9130
NA375	-42	x1.22	844-9130
NA376	-30	x1.22	844-9130
NA377	-30	x1.16	844-9130
NA378	-42	x1.16	844-9130
NA379	-54	x1.16	844-9130
NA396	-54	x1.09	844-9130
NA397	-42	x1.09	844-9130
NA398A	-48	x1.02	844-9130
NA585	-48	x0.78	844-9130
NA585A	-36	x0.78	844-9130
NA586	-60	x0.78	844-9130
NA587	-72	x0.78	844-9130
SCM2	+12	x0.99	845-2660
SCM3	+12	x1.02	845-2660
SCM12	+6	x0.95	845-2660
SCM13	+6	x0.89	845-2660
SCM14	+6	x0.84	845-2660
SCM15	+6	x0.79	845-2660
SCM16	0	x0.81	845-2660
SCM17	+12	x0.81	845-2660
SCM22	+24	x0.76	845-2660
SCM23	+12	x0.76	845-2660
SCM24	+6	x0.78	845-2660
SCM116	-36	x0.61	844-9130
SCM117	-36	x0.63	844-9130
SCM122	-30	x0.69	844-9130
SCM122A	-30	x0.64	844-9130
SCM122B	-18	x0.66	844-9130
SCM122C	-6	x0.66	844-9130
SCM122D	-30	x0.71	844-9130
SCM123	-24	x0.69	844-9130
SCM130	-24	x0.76	844-9130
SCM149	-24	x1.06	844-9130
SCM159	-18	x1.29	844-9130
SCM160	-18	x1.35	844-9130
SCM164	-24	x1.42	844-9130
SCM165	-24	x1.49	844-9130

NOTE: The tide corrector values referenced to Nantucket, MA (844-9130) and Newport, RI (845-2660) are provided in the zoning file "B904TJ2004CORP" for this project and are in the fourth set of

correctors designated as TS4. Longitude and latitude coordinates are in decimal degrees. Negative (-) longitude is a MapInfo representation of west longitude.

NOTE: For time corrections, a negative (-) time correction indicates that the time of tide in that zone is earlier than (before) the predicted tides at the reference station, whereas, a positive (+) time correction indicates that the time of tide in that zone is later than (after) the predicted tides at the reference station. For height corrections, the water level heights **relative to MLLW** at the reference station are multiplied by the range ratio to estimate the water level heights relative to MLLW in the applicable zone.

5.9.1. A zoning diagram, created in MapInfo, is provided in both digital and hard copy format to assist with the zoning provided in Section 5.9.

5.10. Tidal Records:

Refer to Standing Instructions on what data records, reports and requests to submit to CO-OPS and the address where these documents should be submitted too.

November 05, 2004

MEMORANDUM FOR: Chief, Requirements and Development Division, N/OPS1

FROM: CDR Emily B. Christman, NOAA Ship THOMAS JEFFERSON

SUBJECT: Request for Approved Tides/Water Levels

Please provide the following data:

1. Tide Note
2. Final zoning in MapInfo and .MIX format
3. Six Minute Water Level data (Co-ops web site)

Transmit data to:

NOAA/NOS/Atlantic Hydrographic Branch
N/CS33, Building #2
439 West York Street
Norfolk, VA 23510
ATTN: Chief AHB

These data are required for the processing of the following hydrographic survey:

Project No.:	S-B904-TJ-04
Registry No.:	H11079
State:	Massachusetts
Locality:	South Coast of Massachusetts
Sublocality:	Great Round Shoal Channel

Attachments containing:
1) an Abstract of Times of Hydrography,
2) digital MID MIF files of the track lines from pydro on CD/diskette

cc: N/CS33

Generated by Pydro v4.9.3 on Sat Nov 06 01:54:41 2004 [UTC]

Request for Approved Tides Times of Hydrography

Year_DOY	Min Time	Max Time
2004_239	13:16:23	20:36:47
2004_240	12:47:15	21:26:04
2004_242	12:26:47	19:59:10
2004_281	13:01:32	18:49:58
2004_282	13:04:58	20:32:51
2004_283	13:18:34	21:22:39
2004_284	12:47:12	19:28:39
2004_307	13:16:20	19:52:22

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: March 1, 2005

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: S-B904-TJ-2004
HYDROGRAPHIC SHEET: H11079

LOCALITY: Great Round Shoal Channel, MA

TIME PERIOD: August 26 - November 2, 2004

TIDE STATION USED: 844-9130 Nantucket Island, MA
Lat. 41° 17.1'N Lon. 70° 05.8'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.985 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: SCM159, SCM160, SCM164, SCM165, NA314, NA332, NA333, NA334, NA334A, NA352, NA353, NA354, NA355, NA356, NA374, NA375 & NA376

Refer to attachments for zoning information.

Note 1: Provided time series data are tabulated in metric units (meters), relative to MLLW and on Greenwich Mean Time on the new 1983-2001 National Tidal Datum Epoch (NTDE).

Thomas K. Meo 3/8/05

CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

APPENDIX V

SUPPLEMENTAL SURVEY RECORDS AND CORRESPONDENCES

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

Coast Pilot 2, 33rd Edition was consulted and the hydrographer has no recommendations.

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

No bottom samples were acquired during this survey.

V.3. NONFLOATING AIDS OR LANDMARKS FOR CHARTS, NOAA FORM 76-40

No nonfloating aids or landmarks were positioned during this survey.

Re: H11079 outline

Subject: Re: H11079 outline
From: Marc Moser <marc.s.moser@noaa.gov>
Date: Mon, 08 Nov 2004 14:24:29 -0500
To: Michael Riddle <Michael.Riddle@noaa.gov>

Yes, we will submit as a completed sheet. Due to the great rate of change in the area, it would not make sense to sit on the data for a year.

Michael Riddle wrote:

> Hi Marc,
> I think that makes sense. Just to be sure; you will submit this as a completed survey, correct? We can assign a smaller sheet for the eastern
> section at a later date.
> Mike
>
> > Marc Moser wrote:
> >
> > Thomas Jefferson acquired as much data as we could on H11079. We blocked of a section and will submit as H11079.
> >
> > H11079outline.zip
> > Name: H11079outline.zip
> > Type: Zip Compressed Data (application/x-zip-compressed)
> > Encoding: base64

BASE SURFACE COLLECTION

This list contains all of the used BASE surfaces for H11079.

Fieldsheet	BASE Surface	Depth Range	Resolution (meters)
B904_TJ_04_H11079D_A	B904_TJ_04_H11079D_A_05m	0-15	0.5
	B904_TJ_04_H11079D_A_1m	14-60	1.0
B904_TJ_04_H11079D_B	B904_TJ_04_H11079D_B_05m	0-15	0.5
	B904_TJ_04_H11079D_B_1m	14-60	1.0
B904_TJ_04_H11079D_C	B904_TJ_04_H11079D_C_05m	0-15	0.5
	B904_TJ_04_H11079D_C_1m	14-60	1.0
B904_TJ_04_H11079D_D	B904_TJ_04_H11079D_D_05m	0-15	0.5
	B904_TJ_04_H11079D_D_1m	14-60	1.0
B904_TJ_04_H11079D_E	B904_TJ_04_H11079D_E_05m	0-15	0.5
	B904_TJ_04_H11079D_E_1m	14-60	1.0
B904_TJ_04_H11079D_F	B904_TJ_04_H11079D_F_05m	0-15	0.5
	B904_TJ_04_H11079D_F_1m	14-60	1.0
B904_TJ_04_H11079D_G	B904_TJ_04_H11079D_G_05m	0-15	0.5
	B904_TJ_04_H11079D_G_1m	14-60	1.0
B904_TJ_04_H11079D_H	B904_TJ_04_H11079D_H_1m	14-60	1.0
B904_TJ_04_H11079D_combined	B904_TJ_04_H11079D_combined_3m	N/A	3.0

Sixteen BASE surfaces were used for the BASE surface collection. B904_TJ_04_H11079D_combined__3m was inserted into the Pydr6o PSS.

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H11079 (2004)

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 Equipment

The following software was used to process and review data at the Atlantic Hydrographic Branch (AHB):

CARIS HIPS/SIPS version 6.0 service pack 2
CARIS BASE Editor 1.0
CARIS HOM 3.3 service pack 3
PYDRO, version 6.4.9 HF 12
dKart Inspector 5.0 SP1 build 732

B.2 Crosslines

The field unit acquired the required amount of cross line data for quality assurances and system assessment as specified in the NOS Hydrographic Surveys Specifications and Deliverables (NOS HHSSD), 2003 Edition, but did not perform the traditional CARIS Checkline QC. In lieu of the Checkline QC, visual inspection of the Standard Deviation layer in BASE Surface was performed. This method does not technically meet the conventional standards set forth in the NOS HHSSD. However, an OCS and Hydrographic Surveys Division (HSD) memorandum from Captain Parsons, dated 12/11/03, has given approval that NOAA field units vary from the established procedures and documentation with respect to CARIS HIPS 5.4 BASE Surface processing methods.

B.3 HOM Processing

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

H-Cell layers and attributes

One H-cell was created covering the entire survey area for chart 13244 at a 1:40,000 scale. H-cell layers in CARIS HOM are organized as follows:

Layer 100	Sounding Objects, survey scale
Layer 200	Skin of the Earth
Layer 300	Seabed area (Bottom Descriptions or Characteristics)
Layer 310	Tide Rip Notations
Layer 600	Metadata Objects

Attributes:

Inform: H11079, S-B904-TJ-04, NOAA Ship Thomas Jefferson, CDR Emily B. Christman
SorDat: 20041102
SorInd: US,US,graph,H11079

H-Cell generation

A 2m combined finalized BASE surface was created from the multibeam data using 0.5m, 1.0m and 2.0m office generated BASE surfaces at 1:20000 survey scale. Survey scale sounding data set is normally extracted from the survey surface at the survey scale of 1:20000. The 1:20000 scale sounding set was not used because the sounding density could not account for the environmental variability of the survey area. As a result, a sounding data set was extracted from the 2m combined finalized surface with a sounding spacing of 5mm at 1:10000 scale.

Shoal biased chart scale sounding compilation was accomplished through the CARIS HOM sounding suppression routine using the table (0,999, 20m). However, the sounding suppression routine could not properly attribute soundings due to the dramatic environmental variability of the survey area and left areas devoid of soundings. As a result, chart scale soundings were selected, edited and finalized by hand in areas of dramatic environmental variability. Soundings were checked for conflicts, corrected to remove conflicts, and edited to allow for proper sounding compilation placement with respect to existing charted depths outside the survey area.

Seabed classified areas (seafloor descriptors or characteristics) were transferred to the H-cell from the raster chart. Charted bottom characteristics that were classified as S57 SBDARE objects with the acronym NATSUR are visible in the H-cell as an S-57 object: NATSUR (nature of surface) i.e. - mud, sand, rock. However, those seafloor descriptions that were classified seabed area with the acronym NATQUA are NOT visible in the H-cell as a separate S-57 object, thus you do not know where an area is classified hard within in the H-cell: NATQUA (nature of surface – qualifying terms) IE – hard, soft, sticky.

Contour and Depth Area Feature Objects

No contours were created for this H-Cell based on HSD H-Cell Draft Specifications (December 2006). A single depth area was created covering the entirety of the survey area ranging in depth from 0m to 999m.

H-Cell Processing

Prior to the H-cell export to S-57 format, the file was converted from metric to NOAA chart units. This conversion renames the DRVAL1 and DRVAL2 attributes (for depth areas), VALDCO attributes (for the contours), and sounding values from the metric equivalent values to the standard NOAA chart unit values to accommodate NOAA traditional rounding standards on charts. This renaming convention assures all soundings fall on the shoal side of the properly charted contour.

Soundings during HOM processing were selected with the CARIS GIS Environmental Variable set to a metric scale (-1,-1,T) to accommodate millimeter precision of the sounding value. This environmental variable was reset to NOAA standard charting values (0,0,N) to convert the metric sounding values to whole feet.

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 values (ENC_CU.000) with all values measured in feet.

dKart Inspector

The final H1079_CU.000 BASE cell file was examined using dKart Inspector. Warnings received were all inconsequential. The DSPM.HUNI and DSPM.DUNI were reported to have illegal values, but these errors were expected as originating during ENC conversion to NOAA chart values, so they can be ignored. Reported by dKart was the warning a seabed area has inconsistent qualifiers between natsur and natqua. This result was expected as one seabed area brought forward from the chart was classified hard. The classification ‘hard’ has no nature of surface attribute to accompany the natqua ‘hard’ so the natsur used is ‘unknown’. This warning should be recorded among those that can be ignored in future surveys.

C. VERTICAL AND HORIZONTAL CONTROL

Office processing of this survey as an ENC required translating the datum to meet S-57 ENC requirements. During CARIS HOM processing the horizontal geodetic datum was translated from the survey datum (NAD83, UTM Zone 19) to Latitude and Longitude (LLDG) World Geodetic System-84 (WGS-84). The S-57 ENC format serves as the exchange file submitted to the Marine Chart Division.

Final tides and approved zoning were received at AHB in March, 2005 and reapplied to the survey during office processing.

D. RESULTS AND RECOMMENDATIONS

D.1. CHART COMPARISONS

13244 40th Ed., Jul. /05
Corrected through NM Mar.20/07
Corrected through LNM Mar. 24/07

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 should be noted:

1) It is recommended an additional notation Tide Rips be charted in 41°24'54.114"N Latitude, 69°53'08.886"W Longitude. The field unit visually observed tidal rips and obtained detached positions at the specific locations.

2) It is recommended an additional notations Sand Waves be charted in 41°25'30.601"N Latitude, 69°54'57.673"W Longitude and 41°25'09.063"N Latitude, 69°54'55.320"W Longitude.

3) The Great Round Shoal is a natural feature that changes frequently and rapidly. Observations from the field unit show that the shape and least depth of this shoal changed dramatically over a 21 day period (H11079 Descriptive Report, Pg 4, Figure 2). It is recommended to add a note to the chart alerting the mariner of the dynamic seafloor condition which is subject to continual change. Defer final charting recommendations to Marine Chart Division.

4) Evidence of shoaling was observed in the vicinity of 41°25-09.089" N, 69°55-28.897" W. The 30 foot contour has migrated approximately 500m to the south. The office processor recommends charting present survey soundings in the common area.

5) A charted 30-foot shoal in the vicinity of 41°25-55.687" N, 70°00'19.723" W has migrated out of the survey area, leaving only two small regions shoaler than 30 feet. These shoals are located in the vicinity of 41°25-57.019" N, 70°00-18.618" W and 41°25-58.692" N, 70°00'05.265" W. The office processor recommends charting present survey soundings in the common area.

It is also recommended the 60 ft and 120 ft contours be added to this chart. The addition of these depth contours would assist in navigation and help better define the

environmental variability of the area. In addition, the recommended locations of the two tide rip notations correspond with areas with deep soundings below 120 ft., so the addition of the 60 and 120 ft contours would highlight and bring the attention of the mariner to such areas of concern.

Comparison with Prior Surveys

A comparison with prior surveys was not done during office processing in accordance with section 4. of the memorandum titled "Changes to Hydrographic Survey Processing", dated May 24, 1995.

Junctions

There were no surveys to junction with H11079.

Adequacy of Survey

Except as noted above, the present survey is adequate to supersede the charted hydrography within the common area. This is an adequate hydrographic/multibeam/side scan sonar survey. No additional field work is recommended.

Bryan Chauveau

Digitally signed by Bryan Chauveau
DN: cn=Bryan Chauveau, c=US, o=NOAA - National Ocean Service, ou=Office of Coast Survey - Atlantic Hydrographic Branch, email=bryan.chauveau@noaa.gov
Date: 2007.02.05 11:29:14 -05'00'

_____

Bryan Chauveau
Physical Scientist
Verification of Data
Evaluation and Analysis Report

APPROVAL SHEET
H11079

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development 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 NOS requirements except where noted in the Evaluation Report.

Bryan Chauveau

Digitally signed by Bryan Chauveau
DN: cn=Bryan Chauveau, c=US, o=NOAA - National Ocean Service, ou=Office of Coast Survey - Atlantic Hydrographic Branch, email=bryan.chauveau@noaa.gov
Date: 2007.02.05 14:56:21 -05'00'

Bryan Chauveau

Date: 2/5/07

Bryan Chauveau
Physical Scientist,
Atlantic Hydrographic Branch

All final products have undergone a comprehensive review as per the Atlantic Hydrographic Branch Processing Manual and are verified to be accurate and complete except where noted in the Evaluation Report.

Helen Stewart
2007.04.24 08:37:52
-04'00'

Date: _____

Helen Stewart and
Castle Eugene Parker
Physical Scientist,
Atlantic Hydrographic Branch

Date: Castle Eugene Parker 2007.04.24 08:30:32 -04'00'

I have reviewed the Base Cell files, accompanying data, and reports. This survey and accompanying Marine Chart Division deliverables meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Approved: Digitally signed by CDR P. Tod Schattgen
DN: cn=CDR P. Tod Schattgen, c=US, o=NOAA Office of Coast Survey, ou=Atlantic Hydrographic Branch, email=tod.schattgen@noaa.gov
Date: 2007.04.30 10:36:19 -04'00'

Date: _____

Commander P. Tod Schattgen, NOAA
Chief, Atlantic Hydrographic Branch

Jeremy McHugh
AWOIS / SURF check for H-cell is complete
2007.05.07 11:17:10 -04'00'