

**H10556**

NOAA FORM 76-35A

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

**DESCRIPTIVE REPORT**

Type of Survey **HYDROGRAPHIC/  
SIDE SCAN SONAR**  
Field No. **WH-10-6-94**  
Registry No. **H-10556**

**LOCALITY**

State **MASSACHUSETTS**  
General Locality **VINEYARD SOUND**  
Sublocality **MIDDLE GROUND  
AND VICINITY**

**19 94**

**CHIEF OF PARTY  
CDR J. D. WILDER, NOAA**

**LIBRARY & ARCHIVES**

**APR 20 1996**

**DATE** .....

**DIAGRAM 1209-4**

**Charts**

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RE: BP 142801-805

**PRODUCTS**

13235

13238 + INS

13229 C + E

13233

13237

13218

13200 NC

12300 NC



**DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY  
OPR-B616-WH  
WH-10-6-94  
H-10556**

**NOAA SHIP WHITING  
CDR John D. Wilder, NOAA  
Commanding Officer**

**A. PROJECT**

Project OPR-B616-WH is a basic hydrographic survey with 200-percent side scan sonar (SSS) bottom coverage of Vineyard and Nantucket Sounds. The project stems from requests from the Woods Hole, Martha's Vineyard and Nantucket Steamship Authority to survey the approaches to Hyannis Harbor and Oak Bluffs Harbor and the channel between Martha's Vineyard and Hyannis Harbor, and the Northeast Marine Pilots, who asked that the area in Vineyard Sound, from the Mo (A) buoy "NA" (southeast of Nashawena Island) extending northeast to Lucas Shoal, be surveyed.

Survey operations were conducted in accordance with Hydrographic Project Instructions OPR-B616-RU/WH dated February 23, 1994. Two changes, dated March 9 and July 29, 1994, affect these instructions. No other changes to the original project instructions or the Automated Wreck and Obstruction (AWOIS) listings were made.

Project OPR-B616-WH was designed to consist of five survey sheets. The survey described in this report addresses sheet "G". The survey was assigned field sheet number WH-10-6-94 and registry number H-10556.

**B. AREA SURVEYED**

H-10556 covers the waters in the vicinity of the Middle Ground shoal in Vineyard Sound. Sheet limits are bounded by  $41^{\circ} 31' 10.4''$  N and  $41^{\circ} 27' 06.0''$  N to the north and south respectively, and by  $070^{\circ} 30' 05.5''$  W and  $070^{\circ} 42' 57.5''$  W to the east and west respectively. 33 00

Survey operations commenced on July 23, 1994 (DN 204), and were completed on September 9, 1994 (DN 252).

### C. SURVEY VESSELS

WHITING (VESNO 2930) was used for main-scheme side scan sonar, sounding data acquisition, and velocity casts. Launch 1014 (VESNO 2932) was used for crosslines, sounding data development, SSS contact investigations, aids-to-navigation detached positions, bottom samples, and as a platform for diver and echosounder least depth determination on significant contacts. Launch 1015 (VESNO 2931) was used for SSS main-scheme and contact investigations.

No unusual vessel configurations were used nor were any problems encountered.

### D. AUTOMATED DATA ACQUISITION AND PROCESSING - SEE ALSO EVALUATION REPORT

Survey data acquisition and processing were accomplished using the HDAPS system with the following software:

<u>PROGRAM NAME</u>	<u>VERSION</u>	<u>DATE INSTALLED</u>
BACKUP	2.00	March 07, 1994
BASELINE	1.14	March 07, 1994
BIGABST	2.07	March 07, 1994
BIGAUTOST	3.01	March 07, 1994
BLKEDIT	2.02	March 07, 1994
CARTO	2.12	April 17, 1994
CARTO	2.13	August 30, 1994
CLASSIFY	1.01	March 07, 1994
CONTACT	2.34	August 30, 1994
CONVERT	3.62	March 07, 1994
DAS_SURV	6.67	April 17, 1994
DAS_SURV	6.70	August 30, 1994
DIAGNOSE	3.03	April 17, 1994
DIAGNOSE	3.04	August 30, 1994
DISC_UTIL	1.00	March 07, 1994
DP	2.14	March 07, 1994
DP	2.15	August 30, 1994
DPCONVERT	1.01	June 17, 1994
DSNEDITS	1.02	August 30, 1994
EXCESS	4.21	March 07, 1994
EXCESS	4.31	August 30, 1994
FILESYS	3.21	April 17, 1994
FILESYS	3.24	August 30, 1994
GRAFEDIT	1.06	March 07, 1994
HIPSTICK	1.01	March 07, 1994
HPRAZ	1.26	March 07, 1994

INVERSE	2.01	March 07, 1994
LISTDATA	1.02	March 07, 1994
LOADNEW	2.10	March 07, 1994
LSTAWOIS	3.07	August 30, 1994
MAINMENU	1.20	March 07, 1994
MAN_DATA	2.01	March 07, 1994
NEWPOST	6.01	March 07, 1994
NEWPOST	6.12	August 30, 1994
PLOTALL	2.27	April 17, 1994
PLOTALL	2.30	August 30, 1994
POINT	2.10	March 07, 1994
PREDICT	2.01	March 07, 1994
PRESURV	7.08	April 17, 1994
PRESURV	7.09	August 30, 1994
PRINTOUT	4.03	March 07, 1994
PRINTOUT	4.04	August 30, 1994
QUICK	2.04	April 17, 1994
QUICK	2.05	August 30, 1994
RAMSAVER	1.02	March 07, 1994
REAPPLY	2.10	March 07, 1994
REAPPLY	2.11	August 30, 1994
RECOMP	1.02	March 07, 1994
SCANNER	1.00	March 07, 1994
SELPRINT	2.04	March 07, 1994
SELPRINT	2.05	August 30, 1994
SYMBOLS	2.00	March 07, 1994
VERSIONS	1.00	March 07, 1994
ZOOMEDIT	2.24	April 17, 1994
ZOOMEDIT	2.30	August 30, 1994

*SHIPDIM* version 1.2 was used for DGPS performance checks. Sound velocity corrections were determined using *CAT* version 2.00 and *VELOCITY* version 2.10.

There were no nonstandard automated acquisition or processing methods used.

#### **E. SIDE SCAN SONAR EQUIPMENT**

Side scan sonar (SSS) operations were conducted using an EG&G model 260 slant-range corrected SSS recorder and an EG&G 272-TH dual-channel, single frequency towfish. The towfish was operated on the 100 kHz frequency and configured with a 20° beam depression. Data were collected using the 50, 75 and 100-meter range scales. The following sonar equipment was used throughout the survey:

<u>VESNO</u>	<u>Type</u>	<u>S/N</u>	<u>DN</u>
2930	Towfish	16699	204
2930	Towfish	16835	205-252
2930	Recorder	16670	204-252
2931	Towfish	16699	205-252
2931	Recorder	160492	204-252
2932	Towfish	16630	204-252
2932	Recorder	16671	204-237
2932	Recorder	16942	238-252

On WHITING, the SSS towfish was deployed from a Reuland winch (model number 8377-XF5461A, S/N 814861A-1) using armored cabling in conjunction with an A-frame on the stern. The armored cable was connected to the SSS recorder via a slip-ring assembly.

On launches 1014 and 1015, the SSS towfish was deployed using a Superwinch Model W115 in conjunction with an adjustable davit arm on the stern of each launch. The SSS towfish was towed with vinyl-coated Kevlar cable and was connected to the recorder via a slip ring assembly.

Side scan sonar data were collected utilizing the 75-meter range and 100-meter scales. In order to acquire the required 200% SSS coverage, main-scheme lines were run at a spacing of 60 and 75-meters. Adequate coverage was determined by producing an 'A' and 'B' swath plot and ensuring 100% coverage on each plot. Main scheme lines were split or re-run in all areas where 200% coverage was questionable due to a degraded sonagram. Degraded sonagrams were usually caused by surface noise or propeller wash in shallow water areas.

The SSS towfish was maintained at a height off the bottom of 8 to 20 percent of the range scale in use. SSS operations were limited to a speed-over-ground of 6.0 knots.

Confidence checks were performed on a routine basis, primarily by noting changes in bottom texture on the outer edges of the sonagram.

All potentially significant contacts in the survey area were measured off the sonagram and entered into an HDAPS contact table. Using the contact utility program WHITING hydrographers determined contact heights, positions and correlations to one another. Significant items were then further developed by echosounder investigation. Refer to Section N and to Separate V for more information. *DATA FILED WITH FIELD RECORDS.*

## F. SOUNDING EQUIPMENT

A Raytheon Digital Survey Fathometer (DSF 6000N) echo sounder was used to measure water depths during the survey. The DSF-6000N produced a graphic record of the high frequency (100 kHz) and low frequency (24 kHz) depth. The high and low frequency digital

depths were recorded by the HDAPS acquisition system. The high frequency depths were selected as the primary depths as shown on the sounding plots. In addition, echograms were carefully reviewed for significant features along the track line. Any features on the graphic record that were not selected as primary soundings were manually selected.

The following fathometers were used during this survey:

<u>Vessel</u>	<u>S/N</u>	<u>Dates Used (DN)</u>
2930	A106N	204-252
2931	B050N	204-224
	A109N	225-232
	A105N	233-252
2932	A106N	204-252

## G. CORRECTIONS TO SOUNDINGS

Sound velocity profiles of the water column were determined using a Seacat Conductivity, Temperature and Depth (CTD) profiler (model SBE-19, S/N 286). The profiler was calibrated on December 17, 1993, during WHITING's winter inport period. A copy of the calibration report is included in Separate IV. \*

After the CTD cast, programs *CAT 2.00* and *VELOCITY 2.10* were used to process the data, select significant data points, and create a corrector table. The velocity correctors were manually entered into an HDAPS velocity table. The correctors were reapplied to both high (100 kHz) and low (24 kHz) frequency beams following acquisition. Velocity profile data are in Separate IV submitted with this survey. \*

Data Quality Assurance (DQA) for the Seacat CTD profiler was performed by using a hydrometer and a thermometer to measure the density and temperature of a surface water sample taken during the CTD cast; program *CAT* compared these values to the CTD surface values, and confirmed that the velocity probe was working properly.

Five velocity casts were taken as described below:

<u>DN</u>	<u>Vel. Table#</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Depth</u>
204	20, 21	41° 29' 36"N	070° 34' 27"W	22.5 m
215	30, 31	41° 29' 33"N	070° 34' 34"W	27.1 m
228	32, 33	41° 29' 42"N	070° 34' 48"W	21.4 m
237	38, 39	41° 29' 48"N	070° 35' 06"W	25.1 m
249	44, 45	41° 29' 32"N	070° 38' 37"W	23.7 m

There were no variations in instrument initials.



Bar checks were performed on launch 1014 and launch 1015 in accordance with the requirements stated in the Field Procedures Manual (FPM). No corrections to soundings were applied based on bar check data.

Leadlines were made on April 10, 1993. Calibrations were performed on March 17, 1994 and the leadline error was negligible. A leadline/DSF-6000N comparison was performed on WHITING on July 20, 1994 (DN 201). On average, the leadline reading was less than 0.1 meters deeper than the high frequency digitized reading and less than 0.2 meters shoaler than the low frequency digitized reading. No corrections for the differences were applied to the survey data. The leadline/DSF-6000N comparison performed during H-10556 is on file at N/CG244. \*

The correction for the static draft for launches 1014 and 1015 is 0.55 meters, as measured on July 28, 1993. The correction for WHITING's static draft is 3.2 meters, a historical value that WHITING divers confirmed by pneumatic depth gauge on May 20, 1993.

Settlement and squat measurements for launch 1014 (Offset Table 2) and launch 1015 (Offset Table 1) were conducted and correctors determined on April 4, 1994. The correctors were applied in real time throughout the survey. Settlement and squat measurements for WHITING (Offset Table 9) were conducted and correctors determined on November 10, 1993. The settlement and squat correctors were applied to the sounding data in real time on each survey platform. Settlement and squat corrector tables are in Separate IV. \*

For data acquired by WHITING, the HDAPS data acquisition computer logged heave data from a Datawell b/v heave, roll, and pitch sensor (HIPPI, S/N 19109-C). Heave correctors were applied in processing. Heave correctors were applied during processing for launches 1014 and 1015 by manually scanning the echograms.

The tidal datum for this project is Mean Lower Low Water. The operating tide stations at Nantucket, Massachusetts (844-9130) and Newport, Rhode Island (845-2660) served as the reference stations for predicted tides. The survey area falls within two tide correction zones. Predicted tides were applied to data using the following zoning and corrections:

<u>Zone</u>	<u>Reference Station</u>	<u>Time Correction</u>	<u>Height Ratio</u>
East of 70° 40.00' W	Nantucket	-1 hr 00 min	x0.52
West of 70° 40.00' W	Newport	+1 hr 24 min	x0.61

Tidal data used during data acquisition were taken from Table 2 of the East Coast of North and South America Tide Tables and were applied to the digital data during acquisition by HDAPS. Digital tidal data were received on floppy disk from N/CG24, Hydrographic Surveys Branch.

WHITING was responsible for three tide stations for datum control on H-10556: Oak Bluffs, MA (844-8208), Vineyard Haven, MA (844-8157), Cape Higgon, MA (844-

8533). NOAA Ship RUDE installed and leveled a tide gauge at Menemsha, Ma (844-8725). The station at Oak Bluffs used an ADR gauge and a NEXGEN tide gauge; Vineyard Haven, Cape Higgon and Menemsha use a single ADR tide gauge. Opening and closing levels were run as follows:

<u>Station</u>	<u>Opening Levels</u>	<u>Closing Levels</u>
Oak Bluffs	May 19, 1994	September 7, 1994
Vineyard Haven	June 14, 1994	September 9, 1994
Cape Higgon	June 25, 1994	September 9, 1994
Menemsha	June 1, 1994	<i>Performed by RUDE</i>

A request for smooth tides was submitted to the Product and Services Branch, N/OES231, Datums Section, on September 15, 1994. *APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING.*

#### H. CONTROL STATIONS - *SEE ALSO EVALUATION REPORT*

The horizontal datum for this project is the North American Datum of 1983 (NAD-83). Two B-order horizontal control stations were used as DGPS reference stations for this survey: one at Montauk Point, New York and one at Portsmouth, New Hampshire. The adjusted NAD-83 positions, computed by GPS methods, were provided by the Hydrographic Surveys Branch, N/CG24, on April 23, 1993. The positions are as follows:

	<u>Latitude</u>	<u>Longitude</u>	<u>Frequency</u>
Montauk Point	41° 04' 02.088" N	071° 51' 38.484" W	293 kHz
Portsmouth	43° 04' 15.066" N	070° 42' 36.804" W	288 kHz

#### I. HYDROGRAPHIC POSITION CONTROL

A Differential Global Positioning System (DGPS) was used as the navigation system for this survey. WHITING used two Ashtech Sensor GPS receivers with two Communications Systems International, Inc. (CSI) model MBX1 differential radio receivers supplying correctors for DGPS navigation. Launches 1014 and 1015 used a similar system, but with only one Ashtech/CSI set each. Ashtech receivers were initialized by HDAPS and CSI receivers were initialized with CSI firmware via controls on the front of each unit. On board WHITING, only one DGPS receiver drawer sent navigational output to HDAPS; the secondary drawer was used in conjunction with the primary drawer for DGPS performance checks.

DGPS positioning was accomplished in accordance with the FPM, section 3.4. Horizontal Dilution of Precision (HDOP) limits were computed as required in section 3.4.2 of the FPM. The HDOP limits for a 1:10,000 scale survey for the Montauk Point and Portsmouth Harbor beacons were 3.4 and 2.6, respectively. No position flyers were encountered.

The serial numbers of the Ashtech Sensor and MBX1 receivers used are as follows:

	<u>Device</u>	<u>Serial Number</u>
WHITING (Primary)	Ashtech Sensor CSI MBX1	700417B1193 1081
WHITING (Secondary)	Ashtech Sensor CSI MBX1	700417B1194 1079
Launch 1014	Ashtech Sensor CSI MBX1	700417B1203 1078
Launch 1015	Ashtech Sensor CSI MBX1	700417B1191 1080

DGPS performance checks for WHITING were conducted using the program *SHIPDIM*. *SHIPDIM* uses the two reference station method as described in the FPM, section 3.4.5. All DGPS performance checks confirmed that WHITING's DGPS positioning systems were operating properly. Performance checks for each launch's DGPS positioning system were conducted with each launch securely housed in WHITING's davits. Simultaneous HDAPS positions were compared between WHITING and each launch; an offset in distance and azimuth was then calculated between the ship and each launch system. A summary of the DGPS performance checks is in Separate III. \*

DGPS antenna offsets and laybacks were measured on March 19, 1993, for WHITING, and on July 28, 1993, for launches 1014 and 1015. Offsets and laybacks were measured using the 100 kHz (high frequency) echosounder transducer as the reference. Antenna heights were also measured on the same respective dates shown above, using the water line as the reference. The offsets and laybacks were applied by HDAPS on-line. A minimum of four satellites were used during survey H-10563498 (1:10,000), providing altitude unconstrained positioning.

Offsets and laybacks for WHITING's SSS towfish A-frame were measured on July 27, 1992, using the forward 100 kHz (high frequency) transducer as the reference. The A-frame height was measured from the water line on the same date.

Offset, layback, and height corrections for each launch's SSS aft towing boom were measured on July 28, 1993, and verified on April 5, 1994.

All offset, layback, and height data were applied by HDAPS on-line. These data are on file at AHS.\*Correctors from offset table 1 were applied to all data acquired from launch 1015's stern mount. Correctors from offset table 2 were applied to all data acquired from launch 1014's stern mount. Correctors from offset table 3 were applied to all data acquired from

launch 1015's bow mount. Correctors from offset table 9 were applied to all data acquired from WHITING.

**J. SHORELINE** - SEE ALSO EVALUATION REPORT

Shoreline DP's were taken on charted items in the survey area, such as piers around East Chop.

**K. CROSSLINES**

A total of 22.4 nautical miles of crosslines were run for H-10556. This amounts to 10.3% of the 100% mainscheme miles run. Crosslines and main-scheme agreement, with predicted tides applied, was good. Most soundings agreed to within 0.2 meters. The only errors greater than 0.4 meters are in areas known to have large sand waves.

Note that Launch 1014 was used to acquire most of the crosslines, even in areas where WHITING acquired the mainscheme soundings.

**L. JUNCTIONS** - SEE ALSO EVALUATION REPORT

Survey H-10556 junctions with H-10504 (WH-10-2-93) to the east and H-10563 (WH-10-7-94) to the west. The general agreement between both field sheets is adequate. All sounding agree to within 0.4 meters.

**M. COMPARISONS WITH PRIOR SURVEYS** - SEE ALSO EVALUATION REPORT

Four prior surveys, H-6350, H-8821, H-8902, and H-8903, have soundings which fall within the survey limits for H-10556.

Survey H-6350 (1938-1942, 1:20,000) covers the northern portion of the survey area. Soundings agree to within 0.5 meters, except in the immediate vicinity of Hedge Fence. Differences in soundings indicate that Hedge Fence has migrated to the northeast. To the west is an area where L'Hommideau Shoal dips south. Current survey depths indicate shoaling there. Specifically, a 5.3 meter sounding was found at  $41^{\circ} 30' 15.764''$  N,  $070^{\circ} 34' 48.136''$  W, where H-6350 shows 8.8 meters of water. A Notice to Mariners was forwarded to the Coast Guard regarding this shoaling.

Soundings compared to those from survey H-8821 (1964, 1:10,000) agree to within 0.5 meters.

Surveys H-8902 and H-8903 (1966, 1:10,000) covers the southern-most area of the present

survey, from Vineyard Haven westward. Most of the soundings agree within 0.3 meters with the present survey. However, Middle Ground has changed dramatically. Middle Ground has shifted and changed shape, and is more compact (steeper sides). On the east end (070° 37' W) the shoal has drifted south. To the west (070° 39.5' W) the shoal has drifted north. Further west Middle Ground has completely changed. From 070° 40' W to 070° 42' W, current survey soundings are up to 7 meters shoaler than prior survey depths. West of 070° 42' W, however, current soundings are anywhere from 7 meters shoaler to 9 meters deeper. A Notice to Mariners was forwarded to the Coast Guard, citing a 3.5-meter sounding at 41° 27' 47.353" N, 070° 41' 33.654" W.

## N. ITEM INVESTIGATIONS

The following table shows all assigned AWOIS items and the most significant SSS contacts found within a 200-meter grid overlay of the survey area:

N.1	AWOIS 2613	Examined as part of H-10504
N.2	AWOIS 6861	Disproved
N.3	AWOIS 6862	Disproved
N.4	AWOIS 7206	Verified
N.5	AWOIS 8139	Disproved
N.6	AWOIS 8141	Disproved
N.7	AWOIS 8148	Disproved
N.8	Alleghany Rock	Disproved
N.9	6761.41P	Diver least depth acquired
N.10	7329.02P	Diver least depth acquired
N.11	886.04S	Diver least depth acquired
N.12	981.01P	Diver least depth acquired
N.13	993.04P	Diver least depth acquired
N.14	4364.05S	Diver least depth acquired
N.15	4324.18S	Diver least depth acquired
N.16	6137.46P	Diver least depth acquired
N.17	7104.25S	Diver least depth acquired
N.18	3506.07P	Diver least depth acquired
N.19	6001.48P	Diver least depth acquired
N.20	3461.41P	Diver least depth acquired
N.21	3529.12S	No least depth acquired
N.22	6921.09S	No least depth acquired
N.23	7139.51S	Echosounder least depth acquired
N.24	994.45S	Echosounder least depth acquired
N.25	7401.23P	Echosounder least depth acquired
N.26	7364.32P	Echosounder least depth acquired
N.27	7359.44S	Echosounder least depth acquired
N.28	824.55S	Echosounder least depth acquired

N.29	775.16S	Echosounder least depth acquired
N.30	7298.06S	Echosounder least depth acquired
N.31	7313.14P	Echosounder least depth acquired
N.32	3794.55P	Echosounder least depth acquired
N.33	3824.26P	Echosounder least depth acquired
N.34	994.14S	Echosounder least depth acquired
N.35	980.19P	Echosounder least depth acquired
N.36	968.39P	Echosounder least depth acquired
N.37	879.34S	Echosounder least depth acquired
N.38	3126.08P	Echosounder least depth acquired
N.39	3125.20P	Echosounder least depth acquired
N.40	3124.41S	Echosounder least depth acquired
N.41	6220.10P	Echosounder least depth acquired
N.42	3806.04P	Echosounder least depth acquired
N.43	3819.43S	Echosounder least depth acquired
N.44	4382.59P	Echosounder least depth acquired
N.45	3651.56S	Echosounder least depth acquired
N.46	6600.15P	Echosounder least depth acquired
N.47	6307.09P	Echosounder least depth acquired
N.48	3908.55P	Echosounder least depth acquired
N.49	4120.19S	Echosounder least depth acquired
N.50	6982.34P	Echosounder least depth acquired
N.51	6984.25S	Echosounder least depth acquired
N.52	6889.07P	Echosounder least depth acquired
N.53	6804.27S	Echosounder least depth acquired
N.54	6920.27P	Echosounder least depth acquired
N.55	6968.02S	Echosounder least depth acquired
N.56	3910.03P	Echosounder least depth acquired
N.57	6975.30P	Echosounder least depth acquired
N.58	6949.25P	Echosounder least depth acquired
N.59	6869.14S	Echosounder least depth acquired
N.60	4305.14S	Echosounder least depth acquired
N.61	6416.20P	Echosounder least depth acquired
N.62	7452.31S	Echosounder least depth acquired
N.63	6044.52P	Echosounder least depth acquired
N.64	6061.41S	Echosounder least depth acquired
N.65	6030.25P	Echosounder least depth acquired
N.66	6002.22S	Echosounder least depth acquired
N.67	276.00P	Echosounder least depth acquired
N.68	6106.27P	Echosounder least depth acquired
N.69	258.59S	Echosounder least depth acquired
N.70	6122.35S	Echosounder least depth acquired
N.71	265.46P	Echosounder least depth acquired
N.72	261.21P	Echosounder least depth acquired

N.73	3083.15S	Echosounder least depth acquired
N.74	3082.35S	Echosounder least depth acquired
N.75	3473.29S	Echosounder least depth acquired
N.76	3481.52S	Echosounder least depth acquired
N.77	4592.53S	Echosounder least depth acquired
N.78	4586.26S	Echosounder least depth acquired
N.79	3478.18P	Echosounder least depth acquired
N.80	3497.36S	Echosounder least depth acquired
N.81	3859.17S	Echosounder least depth acquired
N.82	312.24S	Echosounder least depth acquired
N.83	307.53P	Echosounder least depth acquired
N.84	7005.29P	Echosounder least depth acquired
N.85	7207.58S	Echosounder least depth acquired
N.86	6656.38P	Echosounder least depth acquired
N.87	7212.36P	Echosounder least depth acquired
N.88	7503.08S	Echosounder least depth acquired
N.89	7503.52P	Echosounder least depth acquired
N.90	7322.18S	Echosounder least depth acquired
N.91	7322.37S	Echosounder least depth acquired
N.92	7321.38S	Echosounder least depth acquired
N.93	7357.00P	Echosounder least depth acquired
N.94	7413.00P	Echosounder least depth acquired
N.95	7509.18P	Echosounder least depth acquired
N.96	7445.30S	Echosounder least depth acquired
N.97	7445.14P	Echosounder least depth acquired
N.98	7379.21S	Echosounder least depth acquired
N.99	7379.00P	Echosounder least depth acquired
N.100	7358.29P	Echosounder least depth acquired
N.101	7381.00P	Echosounder least depth acquired
N.102	7343.22S	Echosounder least depth acquired
N.103	7336.09S	Echosounder least depth acquired
N.104	7314.28P	Echosounder least depth acquired
N.105	7380.15S	Echosounder least depth acquired
N.106	7511.19P	Echosounder least depth acquired
N.107	7533.39S	Echosounder least depth acquired

N.1 AWOIS 2613

Reported Latitude:	41° 29' 50.06" N
Reported Longitude:	070° 33' 14.61" W
Source:	NM 33/48, CL 576/49, CL 65/50
Name:	PORT HUNTER
Datum:	NAD 83
Reported Depth:	10.0 feet
	<i>cleared</i>

Survey Requirements: S2 (400 meter radius), DI, ES, SD

The wreck PORT HUNTER was investigated and verified during survey operations for H-10504, WH-10-2-93. Refer to the Descriptive Report for H-10504 for details of the investigation, *AND CHARTING RECOMMENDATION*

N.2 AWOIS 6861

Reported Latitude: 41° 29' 12.39" N  
Reported Longitude: 070° 37' 28.10" W  
Source: NM 34/58  
Name: MARGIE L.  
Datum: NAD 83  
Reported Depth: Unknown  
Survey Requirements: ES, S2 (500 meter radius), BD, DI, SD

The search radius was covered with 200% side scan sonar up to the 5-meter line at Middle Ground. No contacts were found. *WHITING* recommends the removal of this item from the chart. *CONCUR*

N.3 AWOIS 6862

Reported Latitude: 41° 29' 30.39" N  
Reported Longitude: 070° 37' 28.10" W  
Source: LNM 34/68  
Name: FLYING DUTCHMAN  
Datum: NAD 83  
Reported Depth: Unknown  
Survey Requirements: ES, S2 (1000 meter radius), BD, DI, SD

The search radius was covered with 200% side scan sonar up to the 5-meter line at Middle Ground. All contacts within the radius were examined. Nothing resembling the FLYING DUTCHMAN was located. *WHITING* recommends the removal of this item from the chart. *CONCUR*

N.4 AWOIS 7206

Reported Latitude: 41° 29' 00.39" N  
Reported Longitude: 070° 39' 34.10" W  
Source: LNM 33/85  
Name: Obstruction  
Datum: NAD 83  
Reported Depth: Unknown  
Survey Requirements: S2 (1000 meter radius), DI



The entire search radius was covered with 200% side scan sonar. Contact 6395.39S and its cross reference, 6444.00P, were chosen for further examination. Divers examined the item on DN 240 and found three sections of 22" diameter pipe. Two were butted together, 160 feet long total, and the third was 200 feet long. All pieces of pipe are two feet off the bottom or less. Because of the large area covered by this item, the position computed represents the middle of the obstruction area and not directly over any pieces of pipe.

Fix 4440 represents the center of the obstruction area. It is 342 meters northeast of the charted position of AWOIS 7206, and in 24 meters of water. Although the item is not hazardous to navigation, it could cause trouble for trawl nets. Consequently, WHITING recommends charting a non-dangerous obstruction at 41° 29' 09.507" N, 070° 39' 42.568" W. CONCUR

NOT A HAZARD TO SURFACE NAVIGATION CHART 78 OBSTN  
IT IS ALSO RECOMMENDED THAT THE CHARTED OBSTN, PA, AND A DANGER CURVE,  
BE DELETED FROM THE CHART.  
N.5 AWOIS 8139

Reported Latitude:	41° 30' 37.00" N
Reported Longitude:	070° 35' 35.00" W
Source:	CL 57/24, H-6350
Name:	RUTH E. MERRILL
Datum:	NAD 83
Reported Depth:	Unknown
Survey Requirements:	S2 (1000 meter radius), ES, DI, SD

The entire search radius was covered with 200% side scan sonar. Although there were significant contacts in the search radius (N.43, N.44, N.45, N.60), none of them remotely resembled the RUTH E. MERRILL. WHITING recommends the removal of this item from the chart. CONCUR

#### N.6 AWOIS 8141

Reported Latitude:	41° 30' 44.40" N
Reported Longitude:	070° 39' 30.30" W
Source:	NM 18/67
Name:	Unknown Wreck
Datum:	NAD 83
Reported Depth:	Unknown
Survey Requirements:	S2 (150 meter radius), ES, DI, SD

The entire search radius was covered with 200% side scan sonar. Although there were significant contacts in the search radius (N.77, N.78), none of them remotely resembled a wreck. WHITING recommends the removal of this item from the chart. CONCUR

N.7 AWOIS 8148

Reported Latitude: 41° 30' 05.39" N  
Reported Longitude: 070° 33' 33.10" W  
Source: NM 30/24, H-6350  
Name: Unknown Wreck  
Datum: NAD 83  
Reported Depth: Unknown  
Survey Requirements: S2 (500 meter radius), ES, DI, SD

The entire search radius was covered with 200% side scan sonar. No significant contacts were found in the search radius. WHITING recommends the removal of this item from the chart. *CONCUR*

N.8 Alleghany Rock

Charted Latitude: 41° 29' 08.491" N  
Charted Longitude: 070° 36' 02.598" W  
Source: H-8902

Local knowledge has it that Alleghany Rock, a charted 6 foot rock in 15 to 20 feet of water, no longer exists. The Woods Hole Steamship Authority received reports that divers could not find the rock. The entire area was covered with 200% side scan sonar. Rocks were found, but nothing close to the height of Alleghany Rock. On DN 244, WHITING dropped a dive buoy on the charted location. Divers performed a 30-meter circle search, and could not find anything. Survey depths in the area are 6.2 meters. WHITING recommends the removal of this rock from the chart. *CONCUR*

N.9 Contact 6761.41P

Latitude: 41° 30' 05.905" N  
Longitude: 070° 37' 29.708" W  
Cross Reference: 6785.14P

Item 6761.41P was found during mainscheme side scan sonar on DN 219. WHITING conducted a diver investigation on the item on DN 242.

Echosounding was used to pinpoint the divers drop position on the item. Divers located a wooden trawler, 80 feet long and 15 feet wide. The single screw boat was intact, with its bow pointing north. Small pieces of debris from the wreck were found off the starboard bow. The least depth is on the stem of the boat.

Least depth (<sup>*APPROVED*</sup> ~~predicted~~ tides) by pneumatic depth gauge was 69 feet (<sup>*21.0*</sup> ~~20.9~~ meters) in 76 feet (23.3 meters) of water. DP #4553 was taken.

WHITING recommends that a non-dangerous wreck with a least depth known <sup>*21m (69 FT)*</sup> be charted at the position listed above. *CONCUR*

*CHART 69 WK*

N.10 Contact 7329.02P

Latitude: 41° 29' 03.496" N  
Longitude: 070° 39' 55.786" W  
Cross Reference: 6489.22S

Item 7329.02P was seen during mainscheme side scan sonar on DN 216, and again on DN 229. WHITING conducted a diver investigation on the item on DN 243. Divers located a triangular-shaped rock, 35 feet in diameter. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge was 73 feet (22.3<sup>2</sup> meters) in 78 feet (23.9 meters) of water. DP #4635<sup>4636</sup> was taken. +

The item is not significant given the depth of water. WHITING recommends not to chart the rock. CONCUR

N.11 Contact 886.04S

Latitude: 41° 29' 13.773" N  
Longitude: 070° 36' 27.412" W  
Cross Reference: 4403.08S

Item 886.04S was found during mainscheme side scan sonar on DN 236, and again on DN 239. WHITING conducted a diver investigation on the item on DN 244. Divers located a 10-foot wide rock on top of an 8-foot sand wave. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge was 39<sup>2</sup> feet (11.8 meters) in 42 feet (12.8 meters) of water. DP #4645 was taken. +

WHITING recommends that a rock with least depth known be charted at the position listed above. ~~DO NOT CONCUR - DO NOT CHART - SHOALER SOUNDINGS IN VICINITY.~~

N.12 Contact 981.01P

Latitude: 41° 29' 01.482" N  
Longitude: 070° 36' 25.752" W  
Cross Reference: 997.19P

Item 981.01P was found during mainscheme side scan sonar on DN 237. WHITING conducted a diver investigation on the item on DN 244. Divers located scattered rocks. The largest rock in the area was 12 feet in diameter. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge was 29<sup>2</sup> feet (8.7 meters) in 36 feet (11.0 meters) of water. DP #4646 was taken. +

WHITING recommends that a rock with least depth known be charted at the position listed above. ~~DO NOT CONCUR - DO NOT CHART - SHOALER FEATURES AND/OR SOUNDINGS IN VICINITY.~~  
CHART 28 RK

N.13 Contact 993.04P

Latitude: 41° 29' 01.062" N  
Longitude: 070° 36' 21.453" W  
Cross Reference: None

Item 993.04P was found during mainscheme side scan sonar on DN 237. WHITING conducted a diver investigation on the item on DN 244. Divers located a rock, 12 feet long and 6 feet wide. Adjacent to it was a wooden pole, 40 feet long and 18 inches in diameter. The pole was lying flat on the bottom. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the rock was ~~18~~<sup>17</sup> feet (5.4 meters) in 23 feet (7.0 meters) of water. DP #4649 was taken.

WHITING recommends that a rock with least depth known <sup>5.4m (17 FT)</sup> be charted at the position listed above. *CONCUR CHART 17 RK*

N.14 Contact 4364.05S

Latitude: 41° 30' 24.386" N  
Longitude: 070° 34' 46.336" W  
Cross Reference: None

Item 4364.05S was found during mainscheme side scan sonar on DN 238. WHITING conducted a diver investigation on the item on DN 244. Divers located a rock, 6 feet long and 4 feet wide. Sand waves in the area had higher depths than the rock. Least depths were taken on both the rock and the top of the sand wave. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the sand wave was ~~21~~<sup>20</sup> feet (6.5 meters) in 24 feet (7.3 meters) of water. DP #4681 was taken.

WHITING recommends that this sounding be charted at the position listed above. *CONCUR - CHART AREA AS SHOWN ON PRESENT SURVEY.*

N.15 Contact 4324.18S

Latitude: 41° 30' 32.397" N  
Longitude: 070° 34' 42.617" W  
Cross Reference: None

Item 4324.18S was found during mainscheme side scan sonar on DN 238. WHITING conducted a diver investigation on the item on DN 244. Divers located a triangular rock, 12 feet long and 9 feet wide. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the rock was ~~19~~<sup>18</sup> feet (5.8 meters) in 23 feet (7.0 meters) of water. DP #4683 was taken.

WHITING recommends that a rock with least depth known <sup>5.8m (18 FT)</sup> be charted at the position listed above. *CONCUR CHART 18 RK*

N.16 Contact 6137.46P

Latitude: 41° 29' 09.348" N  
Longitude: 070° 34' 16.476" W  
Cross Reference: None

Item 6137.46P was found during mainscheme side scan sonar on DN 209. WHITING conducted a diver investigation on the item on DN 250. Divers located wreckage, 70 feet long and 12 feet wide, with no distinctive form. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the wreckage was 64<sup>3</sup> feet (19.4 meters) in 69 feet (20.9 meters) of water. DP #4761 was taken.

WHITING recommends that <sup>OBSTR (WRECKAGE)</sup> ~~wreckage~~ with least depth known be charted at the position listed above. <sup>19.4m (63 FT)</sup> CONCUR CHART 63 OBSTR

N.17 Contact 7104.25S

Latitude: 41° 29' 40.610" N  
Longitude: 070° 34' 16.887" W  
Cross Reference: 6054.31P

Item 7104.25S was found during mainscheme side scan sonar on DN 204, and again on DN 209. WHITING conducted a diver investigation on the item on DN 250. Divers found metal wreckage, 12 feet long and 18 feet wide. Near the wreckage divers found a stockless anchor, 3 feet fluke to fluke. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the wreckage was 76 feet (23.2 meters) in 82 feet (24.9 meters) of water. DP #4762 was taken.

WHITING recommends that <sup>AN OBSTRUCTION (WRECKAGE)</sup> ~~an obstruction~~ with least depth known be charted at the position listed above. <sup>23.2m (76 FT)</sup> CONCUR CHART 76 OBSTR

N.18 Contact 3506.07P

Latitude: 41° 28' 00.868" N  
Longitude: 070° 33' 27.407" W  
Cross Reference: None

Item 3506.07P was found during mainscheme side scan sonar on DN 221. WHITING conducted a diver investigation on the item on DN 250. Divers located a rock, 8 feet long and 2 feet wide. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the rock was 12<sup>14.1</sup> feet (<sup>4.3</sup> 3.8 meters) in 15 feet (4.7 meters) of water. DP #4765 was taken.

WHITING recommends that a rock with least depth known be charted at the position listed above. <sup>4.3m (14 FT)</sup> CONCUR CHART 14 RK

N.19 Contact 6001.48P

Latitude: 41° 28' 47.630" N  
Longitude: 070° 33' 30.013" W  
Cross Reference: 6104.39P

Item 6001.48P was found during mainscheme side scan sonar on DN 204, and again on DN 205. WHITING conducted a diver investigation on the item on DN 251. Divers located a rock, 7 foot diameter, with smaller rocks nearby. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the rock was 57<sup>6</sup> feet (17.4<sup>3</sup> meters) in 62 feet (18.9 meters) of water. DP #4766 was taken. x

WHITING recommends that a rock with least depth known be charted at the position listed above. \*

N.20 Contact 3461.41P

Latitude: 41° 28' 11.311" N  
Longitude: 070° 33' 28.950" W  
Cross Reference: 3470.19P, 3487.38P

Item 3461.41P was found during mainscheme side scan sonar on DN 221. WHITING conducted a diver investigation on the item on DN 251. Divers located a rock, 8 feet long and 8 feet wide. Least depth (<sup>APPROVED</sup> predicted tides) by pneumatic depth gauge on the rock was 13<sup>OK</sup> feet (4.0<sup>3.9</sup> meters) in 19 feet (5.8 meters) of water. DP #4767 was taken. x

WHITING recommends that a rock with least depth known be charted at the position listed above. CONCUR CHART 13RK

N.21 Contact 3529.12S

Latitude: 41° 27' 37.084" N  
Longitude: 070° 33' 18.897" W  
Cross Reference: None

Item 7104.25S was found during mainscheme side scan sonar on DN 224. WHITING conducted a diver investigation on the item on DN 250. Divers performed a 15-foot circle search. The only thing found was large clumps of seagrass. No least depth was taken. x

WHITING believes that the side scan image is the seagrass. Consequently, WHITING recommends no to chart the item. CONCUR

\* DO NOT CONCUR - DO NOT CHART - SHOALER SOUNDINGS IN VICINITY.

N.22 Contact 6921.09S

Latitude: 41° 30' 08.491" N  
 Longitude: 070° 38' 49.741" W  
 Cross Reference: 6931.58S

Item 6921.09S was found during mainscheme side scan sonar on DN 220. A side scan sonar development was done on DN 242 (fix #4554-4561). Based on this WHITING conducted a diver investigation on the item on DN 251. Divers found three rocks, each one 3 feet long, 5 feet wide, and 2-3 feet high in 79 feet (24.2 meters) of water. The rocks were in a line, 20 feet long. A ten-meter circle search in the area showed this to be the only contact in the area.

The item is not significant given the water depth. WHITING recommends not to chart the contact. CONCUR

N.23 Contact 7139.51S

Latitude: 41° 29' 17.886" N  
 Longitude: 070° 41' 01.661" W  
 Cross Reference: None

Based on the side scan image, item 7139.51S appeared to be scattered rocks. Although their height was insignificant they fell within the search radius of AWOIS 8145 (Unexploded \* WWII ordinance, NOT ASSIGNED). An echosounder development was run over the area using 5 meter line spacing (fix #4776-4795). The shoalest depth in the area was less than 1 meter off the bottom. WHITING recommends to chart the soundings from the development. CONCUR  
 \* Retain as charted

Items N.24 through N.107 were investigated by running echosounder investigation lines centered over each contact's average SSS position. The lines were run at a speed of 2.5 knots or slower, often times with the launch at idle, adrift over the contact. The following table summarizes the results of these investigations, with all least depths reduced to MLLW using predicted tides. Note that for some contacts surrounding depths nearby may be shoaler than the contact least depth. These contacts should be charted at the discretion of the chart compiler.

	Contact#	Cross Reference	Position	Least Depth	Bottom Depth	DP	DN
N.24	994.45S		41°28'58.911"N 070°36'34.570"W	12.6m (40 FT)	13.9m 3	994.26	237
N.25	7401.23P	7381.35P	41°28'12.670"N 070°41'19.470"W	13.9m (44 FT)	16.5m	1552	250

DO NOT CHART

CHART 44RK

N.26	7364.32P *	41°28'17.111"N 070°41'24.081"W	<sup>16.5</sup> 15.5m (54 FT)	19.1m	1558	250	
N.27	7359.44S *	41°28'20.460"N 070°41'19.427"W	<sup>16.6</sup> 15.7m (54 FT)	18.6m	1561	250	
N.28	824.55S * 7512.09P	41°28'10.555"N 070°41'00.661"W	11.7m (38 FT)	13.3m	4543	242	
N.29	775.16S * 809.53S	41°28'08.264"N 070°40'51.907"W	12.1m (39 FT)	10.3m	4546	242	
N.30	7298.06S * 7312.46S	41°28'39.831"N 070°41'06.980"W	24.7m (81 FT)	25.5m	4550	242	
N.31	7313.14P *	41°28'35.222"N 070°41'09.504"W	18.9m (62 FT)	19.9m	4551	242	
N.32	3794.55P * 3801.45P	41°30'28.051"N 070°33'48.313"W	<sup>16.9</sup> 17.0m (55 FT)	17.3m	4633	243	
N.33	3824.26P *	41°30'31.516"N 070°34'18.120"W	<sup>15.0</sup> 16.1m (49 FT)	16.6m	4635	243	
N.34	994.14S *	41°28'59.532"N 070°36'32.424"W	<sup>13.0</sup> 12.8m (42 FT)	13.5m	4651	244	
N.35	980.19P * 978.17P	41°29'01.268"N 070°36'33.081"W	<sup>13.1</sup> 12.9m (43 FT)	13.9m	4652	244	
N.36	968.39P * 942.30S	41°29'06.900"N 070°36'18.803"W	<sup>1</sup> 12.3m (39 FT)	12.6m	4653	244	
N.37	879.34S * 885.05S	41°29'16.494"N 070°36'16.876"W	18.6m (61 FT)	19.5m	4654	244	
N.38	3126.08P	41°29'02.089"N 070°35'38.603"W	7.1m (23 FT)	8.0m	4662	244	CHART A5 23RK *
N.39	3125.20P	41°28'56.824"N 070°35'29.322"W	10.5m (34 FT)	11.6m	4663	244	CHART A5 34RK *
N.40	3124.41S *	41°28'51.784"N 070°35'22.506"W	<sup>6</sup> 11.7m (38 FT)	12.0m	4665	244	

\* DO NOT CHART



N.41	6220.10P * 6228.11P	41°29'07.075"N 070°35'10.625"W	19. <sup>0</sup> <del>1</del> m (62 FT)	19.7m	4666	244
N.42	3806.04P *	41°30'38.319"N 070°34'18.733"W	16. <sup>6</sup> <del>7</del> m (54 FT)	17.4m	4669	244
N.43	3819.43S *	41°30'31.404"N 070°35'06.211"W	11. <sup>10.9</sup> <del>1</del> m (36 FT)	11.4m	4672	244
N.44	4382.59P *	41°30'16.142"N 070°35'08.481"W	10. <sup>8</sup> <del>9</del> m (35 FT)	11.7m	4675	244
N.45	3651.56S *	41°30'10.457"N 070°35'12.943"W	12. <sup>6</sup> <del>7</del> m (41 FT)	15.5m	4677	244
N.46	6600.15P *	41°29'47.863"N 070°33'31.578"W	22. <sup>7</sup> <del>8</del> m (76 FT)	24.3m	4678	244
N.47	6307.09P * 6376.18S	41°29'55.132"N 070°36'12.440"W	25. <sup>5</sup> <del>8</del> m (83 FT)	27.2m	4685	244
N.48	3908.55P *	41°30'36.921"N 070°36'30.709"W	19. <sup>18.9</sup> <del>1</del> m (62 FT)	19.3m	4687	244
N.49	4120.19S *	41°30'43.056"N 070°37'33.749"W	12. <sup>0</sup> <del>3</del> m (39 FT)	13.6m	4688	244
N.50	6982.34P * 6971.33P	41°30'30.599"N 070°37'28.990"W	18. <sup>17.7</sup> <del>0</del> m (58 FT)	19.0m	4690	244
N.51	6984.25S * 6997.17S	41°30'28.204"N 070°37'54.937"W	18. <sup>0</sup> <del>4</del> m (59 FT)	19.5m	4695	244
N.52	6889.07P *	41°29'59.616"N 070°39'19.610"W	26.5m (87 FT)	27.5m	4700	245
N.53	6804.27S * 6791.20S	41°29'54.598"N 070°38'49.893"W	24.6m (80 FT)	26.3m	4702	245
N.54	6920.27P *	41°30'08.365"N 070°38'37.815"W	23.7m (78 FT)	24.8m	4704	245
N.55	6968.02S * 6956.44S	41°30'20.653"N 070°38'15.072"W	20. <sup>6</sup> <del>3</del> m (67 FT)	22.8m	4709	245

\* DO NOT CHART

N.56	3910.03P *		41°30'36.582"N 070°36'45.580"W	18.7 <sup>8</sup> m (61 FT)	18.1m	4710	245
N.57	6975.30P * 6949.34S 3909.30S 3922.33S		41°30'38.994"N 070°36'38.372"W	17.2m (56 FT)	18.2m	4711	245
N.58	6949.25P * 6942.32P		41°30'34.554"N 070°36'35.084"W	19.0 <sup>1</sup> m (62 FT)	20.3m	4712	245
N.59	6869.14S *		41°30'27.272"N 070°36'31.671"W	20.3 <sup>4</sup> m (67 FT)	21.4m	4716	245
N.60	4305.14S * 3901.12S		41°30'38.271"N 070°34'59.697"W	8.1m (26 FT)	8.0m	4717	245
N.61	6416.20P * 6464.59P		41°30'01.956"N 070°34'42.287"W	20.6 <sup>7</sup> m (68 FT)	22.8m	4720	245
N.62	7452.31S * 7492.51S		41°29'19.961"N 070°36'23.816"W	18.2m (59 FT)	19.0m	4721	245
N.63	6044.52P * 6025.14P		41°29'01.446"N 070°33'27.945"W	22.6 <sup>5</sup> m (74 FT)	22.5m	4723	245
N.64	6061.41S *		41°28'58.582"N 070°33'16.961"W	22.7 <sup>2</sup> m (73 FT)	23.0m	4725	245
N.65	6030.25P * 6011.37S		41°28'52.600"N 070°33'29.465"W	21.0 <sup>20.9</sup> m (68 FT)	21.0m	4726	245
N.66	6002.22S * 6011.55P		41°28'53.199"N 070°33'34.292"W	21.0 <sup>20.9</sup> m (68 FT)	22.0m	4727	245
N.67	276.00P * 6000.51P 6105.29P 269.24S		41°28'40.759"N 070°33'22.105"W	16.8 <sup>8</sup> m (55 FT)	18.0m	4728	245
N.68	6106.27P *		41°28'33.349"N 070°33'13.265"W	16.7 <sup>5</sup> m (54 FT)	17.5m	4730	245
N.69	258.59S 266.46S		41°28'35.536"N 070°33'22.051"W	15.8 <sup>4</sup> m (50 FT)	17.0m	4734	245

CHART 50 SOUNDING

\* DO NOT CHART

N.70	6122.35S* 274.51S	269.40S	41°28'38.460"N 070°33'26.142"W	17.2 <sup>1</sup> <sub>m</sub> (56 FT)	18.0m	4735	245
N.71	265.46P	270.26P	41°28'37.024"N 070°33'35.027"W	16.3 <sup>2</sup> <sub>m</sub> (53 FT)	17.8m	4737	245 CHART 53 SOUNDING +
N.72	261.21P*	254.03P	41°28'33.331"N 070°33'47.832"W	13.2 <sup>1</sup> <sub>m</sub> (43 FT)	14.0m	4739	245
N.73	3083.15S*	3090.52S	41°28'30.583"N 070°34'04.690"W	12.8 <sup>5</sup> <sub>m</sub> (41 FT)	13.7m	4740	245
N.74	3082.35S*	3091.22S	41°28'27.065"N 070°34'10.951"W	12.1 <sup>2</sup> <sub>m</sub> (40 FT)	13.6m	4742	245
N.75	3473.29S	3481.35P	41°28'18.327"N 070°33'25.965"W	5.0 <sup>4.9</sup> <sub>m</sub> (16 FT)	6.0m	4744	245 CHART AS 16 RK +
N.76	3481.52S*		41°28'16.245"N 070°33'24.997"W	5.8 <sup>5</sup> <sub>m</sub> (18 FT)	6.6m	4745	245
N.77	4592.53S		41°30'48.326"N 070°39'31.165"W	3.9 <sup>5</sup> <sub>m</sub> (11 FT)	6.2m	4747	250 CHART AS 11 RK +
N.78	4586.26S*		41°30'46.617"N 070°39'24.826"W	4.6 <sup>1</sup> <sub>m</sub> (13 FT)	6.0m	4750	250 CHART AS 13 RK +
N.79	3478.18P	3469.36S	41°28'06.216"N 070°33'23.228"W	5.7 <sup>4</sup> <sub>m</sub> (17 FT)	6.5m	4757	250 CHART AS 17 RK +
N.80	3497.36S		41°27'50.311"N 070°33'17.743"W	5.2 <sup>4.9</sup> <sub>m</sub> (16 FT)	5.6m	4758	250 CHART AS 16 RK -
N.81	3859.17S		41°27'42.593"N 070°33'15.436"W	4.7 <sup>5</sup> <sub>m</sub> (14 FT)	5.5m	4760	250 CHART AS 14 RK +
N.82	312.24S*	316.24P	41°28'23.045"N 070°34'04.264"W	5.3 <sup>0</sup> <sub>m</sub> (16 FT)	6.6m	4769	251
N.83	307.53P*	302.39S 320.13P 322.03P	41°28'23.586"N 070°33'57.373"W	4.8 <sup>6</sup> <sub>m</sub> (15 FT)	6.8m	4770	251

\* DO NOT CHART

N.84	7005.29P* 7000.13P	41°30'38.987"N 070°37'17.326"W	<sup>0</sup> 15.8m (49 FT)	14.9m	4772	251	
N.85	7207.58S 7231.44P	41°29'28.435"N 070°40'06.330"W	<sup>20.6</sup> 21.0m (67 FT)	23.6m	4773	251	CHART 67 SOUNDING +
N.86	6656.38P*	41°29'27.669"N 070°40'01.528"W	<sup>22.9</sup> 23.0m (75 FT)	24.1m	4775	251	
N.87	7212.36P 7200.01S	41°29'03.516"N 070°40'58.200"W	<sup>21.0</sup> 20.9m (69 FT)	22.3m	4798	251	CHART 69 SOUNDING +
N.88	7503.08S* 7285.24P 4798.48S	41°28'56.195"N 070°40'29.930"W	<sup>9</sup> 21.8m (72 FT)	24.8m	4800	251	
N.89	7503.52P* 7284.38P	41°29'00.940"N 070°40'22.155"W	<sup>8</sup> 23.7m (78 FT)	25.4m	4801	251	
N.90	7322.18S*	41°28'59.762"N 070°40'51.257"W	<sup>8</sup> 21.7m (71 FT)	23.4m	4802	251	
N.91	7322.37S* 7334.02S	41°28'39.945"N 070°40'52.623"W	<sup>21.1</sup> 20.9m (69 FT)	21.6m	4805	251	
N.92	7321.38S*	41°28'34.997"N 070°41'04.643"W	<sup>6</sup> 15.4m (51 FT)	15.8m	4806	251	
N.93	7357.00P* 7367.50P	41°28'33.048"N 070°40'47.594"W	<sup>9</sup> 17.7m (58 FT)	19.3m	4809	251	
N.94	7413.00P*	41°28'32.615"N 070°40'24.020"W	<sup>20.2</sup> 19.8m (66 FT)	20.5m	4810	251	
N.95	7509.18P*	41°28'26.616"N 070°40'26.302"W	<sup>18.1</sup> 17.7m (59 FT)	20.6m	4812	251	
N.96	7445.30S*	41°28'22.037"N 070°40'42.108"W	<sup>5</sup> 15.0m (51 FT)	15.8m	4814	251	
N.97	7445.14P* 7416.37P	41°28'22.796"N 070°40'46.798"W	<sup>14.5</sup> 13.9m (47 FT)	15.5m	4817	251	
N.98	7379.21S	41°28'25.861"N 070°40'57.315"W	<sup>6</sup> 13.0m (44 FT)	15.5m	4821	251	CHART 44 SOUNDING +

\* DO NOT CHART

N.99	7379.00P *	41°28'26.844"N 070°40'50.807"W	<sup>15.2</sup> <del>14.5</del> m (50 FT)	16.2m	4822	251
N.100	7358.29P *	41°28'25.958"N 070°41'05.116"W	<sup>13.4</sup> <del>12.7</del> m (44 FT)	15.2m	4826	251
N.101	7381.00P *	41°28'16.758"N 070°41'13.912"W	<sup>9</sup> <del>13.4</del> m (45 FT)	13.7m	4829	251
N.102	7343.22S *	41°28'23.963"N 070°41'15.961"W	<sup>17.5</sup> <del>16.8</del> m (57 FT)	19.0m	4830	251
N.103	7336.09S *	41°28'29.041"N 070°41'14.155"W	<sup>17.5</sup> <del>18.8</del> m (57 FT)	19.9m	4832	251
N.104	7314.28P *	41°28'29.405"N 070°41'22.653"W	<sup>3</sup> <del>23.4</del> m (76 FT)	24.8m	4837	251
N.105	7380.15S *	41°28'21.162"N 070°41'06.653"W	<sup>8</sup> <del>14.9</del> m (48 FT)	15.9m	4841	252
N.106	7511.19P *	41°28'15.238"N 070°40'50.466"W	<sup>3</sup> <del>13.4</del> m (43 FT)	16.0m	4842	252
N.107	7533.39S *	41°28'13.832"N 070°41'09.552"W	<sup>2</sup> <del>13.4</del> m (43 FT)	16.5m	4844	252

Contacts 6488.50S, 6453.09S, 6505.35P, 3893.25P, and 3097.30P were selected for further investigation, and then later deemed insignificant. These decisions were based on further analysis of the side scan image, and additional side scan developments done on the 50-meter range scale. CONCUR

#### O. COMPARISON WITH THE CHART - SEE ALSO EVALUATION REPORT

Soundings from chart 13233 (14th ed., November 28/92, 1:<sup>40</sup>~~20~~,000) were compared to H-10556 soundings. General agreement of the bottom topography was excellent, with the average difference between charted and survey soundings being  $\pm 1.0$  meters. Both Hedge Fence and Middle Ground shoals appear to have shifted slightly. In these areas some soundings differ greatly. In the areas away from these shoals where prior survey soundings were 1.0 meters or more shoaler than current soundings were developed with 25-meter line spacing.

\* DO NOT CHART

Reports listing the uncharted submerged features discovered were submitted to the Coast Guard on October 7, 1994.

No changes to the scale, coverage, or format of Chart 13233 are recommended.

**P. ADEQUACY OF SURVEY - SEE ALSO EVALUATION REPORT**

All items found during this survey have been completely resolved. This survey is complete and of adequate quality to supersede all prior surveys of the area. *CONCUR*

**Q. AIDS TO NAVIGATION**

Ten buoys were examined by a survey launch. Characteristics to all floating aids to navigation within the survey limits were verified as depicted. Positions varied as much as 65 meters from the charted positions. The items examined were as follows:

<u>Light List #</u>	<u>Name</u>	<u>Position Number</u>	<u>ΔD (meters)</u>
13735	G "23"	1102	33.11
13740	G "23A"	1103	14.86
13750	RW "NW"	1104	38.07
13755	R G	1105	28.45
13760	R "2"	1107	18.63
13780	G "25"	1108	7.23
15465	R "4"	1106	29.21
15550	G R	1109	10.37
15555	R "26"	1110	64.19
15575	G "27"	1111	37.01

ΔD is the distance from the survey position to the charted position of the buoy.

It is WHITING's opinion that the two buoys marking the ends of Middle Ground are not sufficient. A mariner might assume that the straight line between the two markers is deep water, which is not the case. WHITING recommended that an additional buoy be set at 41° 29.0' N, 070° 38.5' W to aid vessels transiting the area. Refer to Appendix I. *CONCUR*  
*DATA APPENDED TO THIS REPORT*

There were no bridges, overhead cables, pipelines, or submarine cables in the survey area. Ferries run on the following routes: Woods Hole to Vineyard Haven, Woods Hole to Oak Bluffs (ferry to and from New Bedford goes through Woods Hole), Falmouth to Oak Bluffs, Hyannis to Oak Bluffs, and Oak Bluffs to Nantucket. The only ferry terminal within the survey limits is the Oak Bluffs terminal, which is accurately represented on the chart. *CONCUR*

**R. STATISTICS**

Number of Positions .....	4466
Main-scheme Sounding Lines (Nautical Miles).....	218.5
Crosslines (Nautical Miles) .....	22.4
Square Nautical Miles Surveyed .....	14.0
Days of Production.....	31
Detached Positions .....	139
Bottom Samples.....	35
Tide Stations Installed .....	3
Current Stations.....	None
Number of CTD Casts.....	5
Magnetic Stations.....	None

**S. MISCELLANEOUS - SEE ALSO EVALUATION REPORT**

Bottom samples for the survey area were acquired in accordance with the Project Instructions. As specified in the Project Instructions, the samples were taken on an approximate grid spacing of 1000 meters square. Oceanographic log sheets for H-10556 are submitted with the separates for this survey. Bottom samples were not submitted to the Smithsonian Institution. \* DATA FILED WITH FIELD REPORTS

No current studies were done in the area. No unusual magnetic variations were encountered in the survey area. No unusual submarine features were discovered.

**T. RECOMMENDATIONS - SEE ALSO SECTION P. OF THE EVALUATION REPORT**

H-10556 is complete and without inadequacies. No additional fieldwork is required. There are no current plans for construction or dredging in the survey area.

**U. REFERRAL TO OTHER REPORTS**

For information on the investigation of AWOIS 2613, refer to the Descriptive Report for H-10504, WH-10-2-93, L'Hommeideau Shoal to Harthaven.

Submitted By:



ENS Kenneth A. Pavelle, NOAA  
Junior Officer, NOAA Ship WHITING





REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

A rock with a six-foot radius was found with side scan sonar and examined by divers.

**Covers:**

Divers used a pneumatic depth gauge to determine the least depth. Their findings indicate a least depth of 8.7 meters (29 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	29 ft	NAD83	41°29'01.482"N	070°36'25.752"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

ADVANCE  
INFORMATION

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

Object Discovered:

A rock was found with side scan sonar and examined by divers. The rock is 12 feet long and 6 feet high. Adjacent to it was a wooden pole 40 feet long and 18 inches in diameter.

Covers:

Divers used a pneumatic depth gauge to determine the least depth. Their findings indicate a least depth on the rock of 5.4 meters (18 feet) corrected to MLLW with predicted tide correctors.

Affected Nautical Charts:

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	18 ft	NAD83	41°29'01.062"N	070°36'21.453"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

Hydrographic Survey Registry Number: H-10556

State: Massachusetts

General Locality: Vineyard Sound

Sublocality: Middle Ground and Vicinity

Project Number: OPR-B616-WH-94

**ADVANCE  
INFORMATION**

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

A rock with a ten-foot radius on top of an 8-foot sand wave was found with side scan sonar and examined by divers.

**Covers:**

Divers used a pneumatic depth gauge to determine the least depth. Their findings indicate a least depth of 11.8 meters (39 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	39 ft	NAD83	41°29'13.773"N	070°36'27.412"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.



U.S. DEPARTMENT OF COMMERCE  
 National Oceanic and Atmospheric Administration  
 Office of NOAA Corps Operations  
 NOAA Ship WHITING S-329  
 439 W. York Street  
 Norfolk, VA 23510-1114

October 7, 1994

**ADVANCE  
 INFORMATION**

Commander, First Coast Guard District  
 Aids to Navigation Branch  
 408 Atlantic Avenue  
 Boston, MA 02110-3350

Dear Sir or Madam:

While conducting hydrographic survey operations in Vineyard Sound, NOAA Ship WHITING discovered eleven uncharted rocks and two areas of shoaling. Enclosed are reports on these features and a chartlet indicating their locations. The following table is a summary of our findings:

<u>Feature</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Depth (ft)</u>
Rock	41°29'13.773"N	070°36'27.412"W	39
Rock	41°29'01.482"N	070°36'25.752"W	29
Rock	41°29'01.062"N	070°36'21.453"W	18
Rock	41°30'32.397"N	070°34'42.617"W	19
Rock	41°28'00.868"N	070°33'27.407"W	12
Rock	41°28'11.311"N	070°33'28.950"W	13
Rock	41°29'02.089"N	070°35'38.603"W	23
Rock	41°28'18.327"N	070°33'25.965"W	16
Rock	41°30'48.326"N	070°39'31.165"W	13
Rock	41°30'46.617"N	070°39'24.826"W	15
Rock	41°28'23.586"N	070°33'57.373"W	16
Shoaling	41°30'15.764"N	070°34'48.136"W	17
Shoaling	41°27'47.353"N	070°41'33.654"W	11

Also enclosed is a recommendation for placement of an additional buoy to mark Middle Ground.

Differential DPS was used to determine the items' positions. Positions are referenced to NAD-83. All depths are referenced to MLLW using predicted tides. Charts 13229, 13233, 13237 and 13238 are the charts affected.

A copy of this letter and attachments have been forwarded to the following offices:

Chief, Nautical Charting Division, NOAA  
 Chief, Atlantic Hydrographic Section  
 Chief, Operations Division, NOAA  
 Director, Defense Mapping Agency  
 Hydrographic/Topographic Center

Sincerely,

John D. Wilder  
 Commander, NOAA  
 Commanding Officer

Enclosures  
 cc: AMC1  
 N/CG2  
 N/CG244  
 DMAHTC



REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

A triangular rock, 12 feet long and 9 feet wide, was found with side scan sonar and examined by divers.

**Covers:**

Divers used a pneumatic depth gauge to determine the least depth. Their findings indicate a least depth of 5.8 meters (19 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	19 ft	NAD83	41°30'32.397"N	070°34'42.617"W
13233	14	11/28/92				
13237	34	10/26/91				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

A rock, 8 feet long and 2 feet wide, was found with side scan sonar and examined by divers.

**Covers:**

Divers used a pneumatic depth gauge to determine the least depth. Their findings indicate a least depth of 3.8 meters (12 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	12 ft	NAD83	41°28'00.868"N	070°33'27.407"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

A rock with a four-foot radius was found with side scan sonar and examined by divers.

**Covers:**

Divers used a pneumatic depth gauge to determine the least depth. Their findings indicate a least depth of 4.0 meters (13 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	13 ft	NAD83	41°28'11.311"N	070°33'28.950"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
 State: Massachusetts  
 General Locality: Vineyard Sound  
 Sublocality: Middle Ground and Vicinity  
 Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

An uncharted rock was found with side scan sonar.

**Covers:**

Echosounder development was run to position and define the height of the obstruction. Least depth was determined to be 7.1 meters (23 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	23 ft	NAD83	41°29'02.089"N	070°35'38.603"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.



REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556

State: Massachusetts

General Locality: Vineyard Sound

Sublocality: Middle Ground and Vicinity

Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

An uncharted rock was found with side scan sonar.

**Covers:**

Echosounder development was run to position and define the height of the obstruction. Least depth was determined to be 5.0 meters (16 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>
					<u>Latitude</u> <u>Longitude</u>
13229	25	03/27/93	16 ft	NAD83	41°28'18.327"N 070°33'25.965"W
13233	14	11/28/92			
13237	34	10/26/91			
13238	13	06/27/92			

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

An uncharted rock was found with side scan sonar.

**Covers:**

Echosounder development was run to position and define the height of the obstruction. Least depth was determined to be 3.9 meters (13 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	13 ft	NAD83	41°30'48.326"N	070°39'31.165"W
13233	14	11/28/92				
13237	34	10/26/91				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

An uncharted rock was found with side scan sonar.

**Covers:**

Echosounder development was run to position and define the height of the obstruction. Least depth was determined to be 4.6 meters (15 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	15 ft	NAD83	41°30'46.617"N	070°39'24.826"W
13233	14	11/28/92				
13237	34	10/26/91				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556

State: Massachusetts

General Locality: Vineyard Sound

Sublocality: Middle Ground and Vicinity

Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

An uncharted rock was found with side scan sonar.

**Covers:**

Echosounder development was run to position and define the height of the obstruction. Least depth was determined to be 4.8 meters (16 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u> <u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	16 ft	NAD83	41°28'23.586"N	070°33'57.373"W
13233	14	11/28/92				
13237	34	10/26/91				
13238	13	06/27/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556

State: Massachusetts

General Locality: Vineyard Sound

Sublocality: Middle Ground and Vicinity

Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

Shoaling has been discovered east of Hedge Fence in the area where L'Hommeideau Shoal dips south.

**Covers:**

Echosounder development was run to define the area. Least depth in the area was determined to be 5.3 meters (17 feet) corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	17 ft	NAD83	41°30'15.764"N	070°34'48.136"W
13233	14	11/28/92				
13237	34	10/26/91				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

REPORT OF UNCHARTED SUBMERGED FEATURE

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
State: Massachusetts  
General Locality: Vineyard Sound  
Sublocality: Middle Ground and Vicinity  
Project Number: OPR-B616-WH-94

The following item was found during hydrographic survey operations by the NOAA Ship WHITING:

**Object Discovered:**

Shoaling has been discovered in the western part of Middle Ground. The shoal has changed shape and position. This report cites the largest shoaling discrepancy.

**Covers:**

Echosounder development was run to define the area. The limit of the shoal has a depth of 3.5 meters (11 feet), corrected to MLLW with predicted tide correctors.

**Affected Nautical Charts:**

<u>Chart Number</u>	<u>Edition No.</u>	<u>Reported Date</u>	<u>Reported Depth</u>	<u>Chart Datum</u>	<u>Geographic Location</u>	
					<u>Latitude</u>	<u>Longitude</u>
13229	25	03/27/93	11 ft	NAD83	41°27'47.353"N	070°41'33.654"W
13233	14	11/28/92				

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

RECOMMENDATION FOR BUOY PLACEMENT

ADVANCE  
INFORMATION

Hydrographic Survey Registry Number: H-10556  
 State: Massachusetts  
 General Locality: Vineyard Sound  
 Sublocality: Middle Ground and Vicinity  
 Project Number: OPR-B616-WH-94

During the course of survey operations WHITING personnel noticed a potential danger with the buoy placement around Middle Ground. Currently, there is one buoy on the west end, and several on the east end. A mariner might assume that the straight line between the two markers is deep water, which is not the case. An additional buoy at 41° 29.0' N, 070° 38.5' W will reduce the chance of this happening.

Affected Nautical Charts:

Chart Number	Edition No.	Date	Scale	Chart Datum	Geographic Location	
					Latitude	Longitude
13229	25	03/27/93	1:40,000	NAD83	41° 29.0'N	070° 38.5'W
13233	14	11/28/92	1:40,000	NAD83		
13237	34	10/26/91	1:80,000	NAD83		

Questions concerning this report should be directed to the Atlantic Hydrographic Section in Norfolk, Virginia, at telephone number (804) 441-6746.

OPR-B616 H

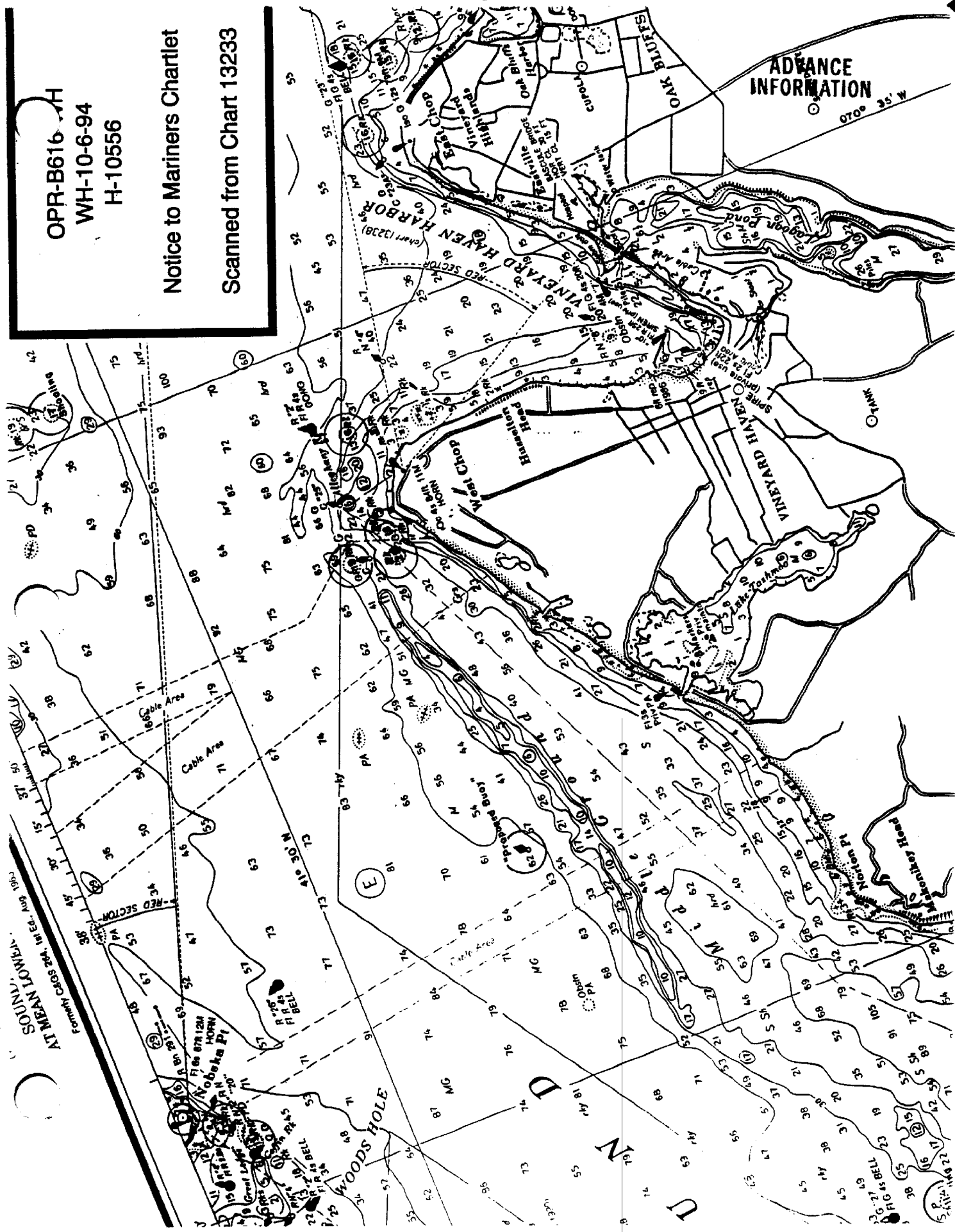
WH-10-6-94

H-10556

Notice to Mariners Chartlet

Scanned from Chart 13233

ADVANCE INFORMATION





**APPROVAL SHEET  
HYDROGRAPHIC SURVEY  
OPR-B616-WH  
1994  
WH-10-6-94  
H-10556**

The data for this survey were acquired and checked under my daily supervision. Position and sounding accuracy meet the requirements specified in the Field Project Instructions, Hydrographic Manual, Hydrographic Survey Guidelines and the Field Procedures Manual for Hydrographic Surveying. This survey is complete and adequate for the intended purpose of delineating bottom topography, determining depths and identifying all potential dangers to navigation. No final field sheets were prepared for this survey. The survey data and accompanying records are complete for the preparation of the smooth sheet.

Approved By:



Commander John D. Wilder, NOAA  
Commanding Officer, NOAA Ship WHITING



UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

**TIDE NOTE FOR HYDROGRAPHIC SURVEY**

**DATE:** March 23, 1995

**HYDROGRAPHIC SECTION:** Atlantic

**HYDROGRAPHIC PROJECT:** OPR-B616

**HYDROGRAPHIC SHEET:** H-10556

**LOCALITY:** Massachusetts, Middle Ground and Vicinity, Vineyard Sound

**TIME PERIOD:** July 23 - September 9, 1994

**TIDE STATION USED:** 844-8157 Vineyard Haven, Martha's Vineyard,  
Ma.  
Lat.  $41^{\circ} 27.5'N$  Lon.  $70^{\circ} 36.0'W$

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 4.24 ft.  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 1.8 ft.

**TIDE STATION USED:** 844-8208 Oak Bluffs, Martha's Vineyard, Ma.  
Lat.  $41^{\circ} 27.5'N$  Lon.  $70^{\circ} 33.2'W$

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 10.87 ft.  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 2.1 ft.

**TIDE STATION USED:** 844-8533 Cape Higgon, Martha's Vineyard, Ma.  
Lat.  $41^{\circ} 24.6'N$  Lon.  $70^{\circ} 42.7'W$

**PLANE OF REFERENCE (MEAN LOWER LOW WATER):** 2.02 ft.  
**HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE:** 2.7 ft.



**REMARKS: RECOMMENDED ZONING**

1. East of  $70^{\circ} 34.0'W$  times and heights are direct on Oak Bluffs, Martha's Vineyard, Ma. (844-8208).
2. South of a line between East Chop and West Chop on Martha's Vineyard, times and heights are direct on Vineyard Haven, Ma. (844-8157).
3. \*North of a line between East Chop and West Chop on Martha's Vineyard, between west of  $70^{\circ} 34.0'W$  and east of  $70^{\circ} 36.5'W$ , apply a -30 minute correction to times, and heights are direct on Vineyard Haven, Ma. (844-8157).
4. \*Between west of  $70^{\circ} 36.5'W$  and east of  $70^{\circ} 40.0'W$ , apply a +1 hour correction to times a X0.76 range ratio to heights using Cape Higgon, Ma. (844-8533).
5. West of  $70^{\circ} 40.0'W$ , apply a +15 minute correction to times and a X0.76 range ratio to heights using Cape Higgon, Ma. (844-8533).

**Notes:**

1. Times are tabulated in Greenwich Mean Time.

**2. \*Caution:**

The tides in the area of Vineyard Sound at the interface of Vineyard and Nantucket Sounds are very complex due to a mix of the tide progressions from the western entrance to Vineyard Sound and from Nantucket Sound. Tides around the area of Falmouth Harbor exhibit double high waters followed by a phase lag in the falling tide which complicates the Greenwich Time intervals. Those reducers based on zoning corrections from the tide gauge at Vineyard Haven may not replicate the tide curve in the area of Falmouth Harbor and the adjacent area of Vineyard Sound.

  
CHIEF, DATUMS SECTION

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 13217, 13258, 13218 B ON PREVIOUS SURVEY NO. C ON U.S. QUADRANGLE MAPS D FROM LOCAL INFORMATION E ON LOCAL MAPS F P.O. GUIDE OR MAP G RAND McNALLY ATLAS H U.S. LIGHT LIST K											
	EAST CHOP (cape)	X		X								
EAST CHOP FLATS	X		X									2
HEDGE FENCE (bar)	X		X									3
MIDDLE GROUND (bar)	X		X									4
MASSACHUSETTS (title)	X		X									5
VINEYARD HAVEN HARBOR	X		X									6
VINEYARD HIGHLANDS (pp1)	X		X									7
VINEYARD SOUND	X		X									8
WEST CHOP (capè)	X		X									9
RHODE ISLAND ROCK	X											10
												11
												12
												13
												14
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												24
												25

Approved

*Chris Colby*  
Chief Geographer

JUL 12 1996

04/17/96

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H-10556

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	4466
NUMBER OF SOUNDINGS	24048

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	78	10/28/94
VERIFICATION OF FIELD DATA	155	12/20/95
QUALITY CONTROL CHECKS	10	
EVALUATION AND ANALYSIS	6	
FINAL INSPECTION	5	12/16/95
COMPILATION	123	03/01/96
TOTAL TIME	377	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		12/20/95

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H-10556 (1994)**

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.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

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

Hydrographic Processing System  
NADCON, version 2.10  
AutoCAD, Release 12  
QUICKSURF, version 5.1  
Microstation, version 5.0

The smooth sheet was plotted using an ENCAD NovaJet III plotter.

**H. CONTROL STATIONS**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values.

To place this survey on the NAD 27, move the projection lines 0.398 seconds (12.267 meters or 1.23 mm at the scale of the survey) north in latitude, and 1.895 seconds (43.965 meters or 4.39 mm at the scale of the survey) east in longitude.

**J. SHORELINE**

No photogrammetric source data was available for this project. Shoreline for the present survey originates with National Ocean Service (NOS) chart 13238 (13<sup>th</sup> Edition, June 27/92).

The shoreline is shown on the smooth sheet in brown and is for orientation purposes only.

**L. JUNCTIONS**

H-10504 (1993-94) to the east  
H-10563 (1994) to the west

Standard junctions were effected between the present survey and surveys H-10504 (1993-94) and H-10563 (1994).

There are no junctional surveys to the north or south. Present survey depths are in harmony with the charted hydrography to the north and south.

**M. 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. However, an area that was not covered with 200% side scan sonar was compared with unverified prior survey H-8821 (1964). The following should be noted:

1) A charted rock awash in Latitude 41°28'59.5"N, Longitude 70°33'37.5"W, originates with unverified prior survey H-8821 (1964). The rock was neither verified nor disproved. The rock was brought forward to supplement the present survey. It is recommended that the rock awash be retained as charted. ✓

2) A charted rock awash in Latitude 41°28'01.0"N, Longitude 70°33'37.6"W, originates with unverified prior survey H-8821 (1964). The rock was neither verified nor disproved by the present survey. A rock with a depth of 7 ft is shown on the prior survey. The rock with a depth of 7 ft was brought forward to supplement the present survey. It is recommended that the rock (no depth) be deleted and a rock with a depth of 7 ft (7Rk) in Latitude 41°28'01.0"N, Longitude 70°33'37.6"W be charted. ✓

3) A charted rock awash in Latitude 41°27'55.5"N, Longitude 70°33'34.3"W, originating with unverified prior survey H-8821 (1964) was located by the field unit. A rock with a depth of 1 ft (0<sup>3</sup> m) was located in Latitude 41°27'55.54"N, Longitude 70°33'34.34". It is recommended that the charted rock awash be revised to a rock awash with notation covers 1 ft at MLLW. ✓

4) A charted rock with a depth of 5 ft (1<sup>5</sup> m), in Latitude 41°29'02"N, Longitude 70°36'12"W, originating with prior survey H-1832 (1887) was searched for using side scan sonar. 200% side scan coverage was completed in the assigned search area. A fathometer investigation was also conducted in the vicinity of the charted rock. No indication of the rock was noted during either investigation. It is recommended that the charted rock be deleted, and the area be charted as shown on the present survey. ✓

- O. **COMPARISON WITH CHARTS** 13218 (32<sup>nd</sup> Edition, Jun 26/93)  
13229 (24<sup>th</sup> Edition, Oct 5/91)  
13230 (39<sup>th</sup> Edition, Mar 27/93)  
13233 (14<sup>th</sup> Edition, Nov 28/92)  
13235 ( 5<sup>th</sup> Edition, Aug 31/91)  
13237 (34<sup>th</sup> Edition, Oct 26/91)  
13238 (13<sup>th</sup> Edition, Jun 27/92)

### **Hydrography**

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in sections N. and O. of the Descriptive Report.

A charted danger submerged rock with a depth of 28 ft (8<sup>5</sup> m), in Latitude 41°30'43.125"N, Longitude 70°39'22.323"W, was located by the hydrographer. It is recommended that the dangerous submerged rock with a depth of 28 ft (8<sup>5</sup> m), (28 Rk), be charted in Latitude 41°30'43.12"N, Longitude 70°39'22.32"W.

The present survey is adequate to supersede the charted hydrography within the common area.

### **Danger to Navigation**

One Danger to Navigation report was submitted to Commander (oan), First Coast Guard District, Boston, Massachusetts for inclusion in the Local Notice to Mariners, and to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of the report is appended to this the report.

### **P. ADEQUACY OF SURVEY**

This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.


### **S. MISCELLANEOUS**

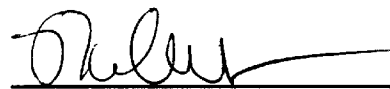
Chart compilation was done by Atlantic Hydrographic Branch personnel, in Norfolk, Virginia. Compilation data will be forwarded to Marine Chart Division, Silver Spring, Maryland.



H-10556

**WHITING Processing Team**

  
\_\_\_\_\_  
Franklin L. Saunders  
Cartographic Technician

  
\_\_\_\_\_  
Norris A. Wike  
Cartographer

APPROVAL SHEET  
H-10556

Initial Approvals:

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. The digital data have been completed and all revisions and additions made to the smooth sheet 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.

Robert G. Roberson Date: 12/28/95  
Robert G. Roberson  
Cartographer  
Chief, Cartographic Section

I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Nicholas E. Perugini Date: 12/20/95  
Nicholas E. Perugini  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

\*\*\*\*\*

Final Approval:

Approved: Andrew A. Armstrong, III Date: Sept 5, 1997  
Andrew A. Armstrong, III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

