H10859

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey MULTIBEAM/SIDE SCAN SONAR

Field No. BH-10-1-99

Registry No. H10859

LOCALITY

State MARYLAND

General Locality CHESAPEAKE BAY

Locality ENTRANCE TO CHESTER RIVER

1999

CHIEF OF PARTY
LT SHEPARD SMITH

NOAA FORM 77-28
(11-72)

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

REGISTRY NUMBER:

H-10859

HYDROGRAPHIC TITLE SHEET

INSTRUCTIONS: The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NUMBER: BH-10-1-99

State: Maryland

General locality: Chesapeake Bay

Locality: Entrance to Chester River

Scale: 1: 10,000 Date of survey: March 17 – August 18,1999

Instructions dated: March 26, 1999 Project Number: OPR-E346-BH

Vessel: NOAA Survey Vessel BAY HYDROGRAPHER (1107)
Chief of Party: LT Shepard Smith

Surveyed by: LT Shepard Smith, ST Kevin Callahan, ST Monica Cisternelli, ST Michael Becker

Soundings taken by echo sounder, hand lead-line, or pole: Odom Echotrac MK3

Graphic record scaled by: LT Shepard Smith, ST Kevin Callahan, ST Monica Cisternelli, ST Michael Becker

Graphic record checked by: LT Shepard Smith, ST Kevin Callahan, ST Monica Cisternelli, ST Michael Becker

Protracted by: N/A Automated plot by: N/A

Verification by: Hydrographic Surveys Branch

Soundings in: (Feet:) Fathoms: ~~Meters: (X)~~ at MLW: MLLW: (X) :

Remarks: **All times are recorded in UTC**

Notes in the Descriptive Report were made during office processing.

AWOIS/SURF~ 11/29/00 SJV

TABLE OF CONTENTS

* Data Filed with Field records.

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
OPR-E346-AHP
BH-10-1-99
H-10859

NOAA S/V BAY HYDROGRAPHER
LT SHEPARD SMITH, OFFICER IN CHARGE

A. PROJECT

A.1 This basic hydrographic survey was conducted in accordance with Hydrographic Project Instructions OPR-E346-BH, Upper Chesapeake Bay - calendar year 1999.

A.2 The original instructions are dated March 26, 1999.

A.3 There have been no changes to the original instructions.

A.4 This Descriptive Report covers sheet "H" of OPR-E346-BH. This sheet lies at the entrance to the Chester River, Chesapeake Bay, Maryland. See section B.2 for exact survey boundaries.

A.5 Project OPR-E346-BH responds to requests from Maryland Port Authority, Association of Maryland Pilots, U.S. Army Corps of Engineers, and the U.S. Coast Guard for modern hydrographic surveys. In addition, the Association of Maryland Pilots has requested that survey coverage be expanded in the vicinity of Love Point to support recently activated pier facilities.

B. AREA SURVEYED

B.1 This survey covers the area deeper than 18 ft at the entrance to the Chester River.

B.2 This sheet has the following boundaries, starting at the Northwest corner and progressing clockwise:

1. 39°08'08"N 076°18'51"W
2. 39°06'18"N 076°16'55"W
3. 39°05'03"N 076°16'13"W
4. 39°05'19"N 076°14'58"W

5 39°02'29"N 076°15'26"W
6.39°00'54"N 076°15'19"W
7.39°00'54"N 076°17'02"W
8.39°02'50"N 076°17'17"W
9.39°04'08"N 076°16'17"W
10.39°03'16"N 076°19'14"W
11.39°08'08"N 076°19'14"W

B.3 Data collection for this survey began on March 17, 1999(DN 076) and ended on August 18, 1999(DN 230).

C. SURVEY VESSELS

C.1 The following vessel was used during this survey:

Vessel	EDP Number	Primary Function
NOAA Survey Vessel BAY HYDROGRAPHER	1107	Hydrography, Side Scan, and Multibeam Operations

C.2 No unusual vessel configurations were used during this survey.

D. AUTOMATED DATA ACQUISITION AND PROCESSING *See also Evaluation Report

D.1 All sounding data acquisition software and data processing software versions are found on the Hydrosoft CD, version 9.4. HYPACK software was used exclusively for data acquisition; no processing modules were used.

D.2 The SEABIRD SBE-19 sound velocity profile unit was utilized with SEASOFT 3.3M and SEACAT 3.1 software. The program VELOCITY 4.0 for Windows was used to process the collected data and calculate velocity corrections.

D.3 Processing of sounding data was accomplished using HPS (Hydrographic Processing System), MapInfo, and the HPS_MI MapBasic application.

D.4 ISIS Version 4.32 was used for digital side scan sonar and multibeam acquisition. The digital data was logged as XTF files (Extended Triton Format).

D.5 Caris SIPS (Sonar Image Processing System) was used to

process the digital side scan sonar data. Sips was used to check bottom tracking quality, towfish navigation, slant-range correct the image, pick contacts, measure contact heights, and create mosaics.

D.5a. Caris HIPS (Hydrographic Image Processing System) was used to process the multibeam sonar data. Hips was used to clean multibeam sounding data, check navigation, heave, pitch and roll values, and create work files. All multibeam data was exported into HPS.

D.6 No software, acquisition or processing problems were encountered which would affect the survey data.

E. SIDE SCAN SONAR EQUIPMENT.

E.1 The BAY HYDROGRAPHER conducted all side scan sonar operations using a Klein system 5500 sonar (S/N 101). This integrated system includes the high resolution, multiple beam side scan sonar towfish, and the T5100 Sonar Transceiver module (for output of sonar data and trigger).

The towfish is configured with a 40° beam depression at 455 khz frequency.

E.2 Forty meter line spacing with the 50-meter range scale was used throughout this survey. This range scale was used to obtain complete area coverage and provide optimal contact resolution.

E.3 Side scan sonar operations were limited to a speed-over-ground of 10 knots. Confidence checks were performed by noting changes in linear bottom features extending to the outer edges of the digital side scan image, and by passing aids to navigation. These features were identified during processing in Caris SIPS.

E.4 a. Two hundred percent side scan sonar coverage was completed for this survey. Side scan sonar coverage was checked using MapInfo generated swath "A" and "B" plots to ensure proper overlap between adjoining lines. Side scan sonar coverage was also determined by using mosaics generated in SIPS and imported into MapInfo. Any deficiencies in the side scan sonar data were found, and a holiday line file was created from these mosaics and swath plots to complete the 200 percent requirement.

E.4 b. All contacts were digitized in Caris Sips. Digitizing a contact included measuring apparent height, and creating a "snapshot" of each image. All contacts were added to the HPS contact database. Snapshots for each contact were also integrated into the HPS data structure. Contacts appearing significant were further investigated by side scan sonar. Final positioning and least depth determination of significant items was acquired with multibeam. (See section F)

All information concerning a contact was displayed in the Correlator program, including comparisons between contacts and AWOIS item positions, surrounding depths and contact cross references. Correlator chartlets for contacts with specific charting recommendations are included in N section of the DR. Correlator chartlets for all other investigated contacts are included in* Separates V.

E.4 c. The towfish was deployed exclusively from the stern.

F. MULTIBEAM SONAR EQUIPMENT and SOUNDING EQUIPMENT

F.1 The BAY HYDROGRAPHER conducted all multibeam sonar operations using a Reson Seabat 9001 sonarhead, S/N 214019, 455 kHz, and a Seabat 9001 processor S/N 3314. The sensor head is mounted vertically (0° mount) at a depth of approximately 6ft below the water line on the end of a pole secured to the stern.

A stern mounted sensor head required the BAY HYDROGRAPHER to orient the sensor's projector aft, creating an azimuthal offset of 180°.

The 9001's combined transmit and receive beams yield sixty (60) soundings per ping, with each beam being 1.5° alongtrack x 1.5°crosstrack.

F.2 Multibeam operations were limited to a speed-over-ground of 5.5 knots. Line spacing for item investigations was established by multiplying two times the water depth minus draft over an item investigation. Coverage was determined on-line using the coverage tools in Isis.

F.3 Contacts appearing significant from the side scan imagery were investigated using the Seabat multibeam sonar. Passes were made directly over the contact, attempting to hit the contact as close to nadir as possible. Multiple

* Data Filed with field records.

passes with 5-10 meter line spacing were made over larger contacts and areas with numerous contacts to ensure complete coverage of the item(s).

F.4 Seabat depth data were monitored using ISIS during acquisition and processed using CARIS-HIPS multibeam data cleaning programs. Digital multibeam depth profiles were visually reviewed and fliers were identified and manually flagged as "rejected". Vessel navigation data from DGPS and attitude data from heave, pitch, roll, and gyro sensors were displayed and manually cleaned.
After review and cleaning, the data was then merged with sound velocity, tide, and vessel configuration data to compute the true depth and position of each beam footprint. Shoal biased, line-by-line binning with a 3-meter bin size was used to import processed soundings of item investigations into workfiles. In the two areas where 100% multibeam was acquired, shoal-biased, line-by-line binning with a 5-meter bin size was used to import processed soundings.
Processed soundings were exported to HPS where final zoned tides were applied. Final review of soundings and least depth determination was accomplished in MapInfo.

F.5 The Odom Echotrac echosounder S/N 9551 was used as the primary echosounder for the entire survey.

F.6 Both high (100 kHz) and low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were edited and plotted. Single beam data collected in conjunction with multibeam sounding data was not fully scanned and processed. These data sets were moved to an "Sbdata" subdirectory of the sheet directory. This data should **not** be used for smooth sheet compilation.

G. CORRECTIONS TO SOUNDINGS.

G.1 a. Sound Velocity Correctors

The velocity of sound through water was measured using a Sea-Bird SBE 19 Seacat Profiler (s/n 2039). Seacat Data Quality Assurance Tests were conducted after each respective velocity cast to ensure that the unit was operating within tolerance. A DQA (Data Quality Assurance) was taken with each velocity cast using an Odom Digibar (S/N 168).

All sound velocity data was processed using program **VELOCITY 4.0/5.0** for Windows. Computed velocity correctors for casts **1-18** were entered into the HPS sound velocity table and re-applied to single beam data during post-processing to both high and low frequency soundings. Sound velocity data for casts **9-18** were loaded and applied to the multibeam data in HIPS.

Cast #	DN Taken	Days applied to
01	083	076,082,083 ,084
02	090	089,090,097 ,098
03	138	131,138,139 ,141
04	153	145,146,152 ,153,154,
06	160	158,160,173 ,174
09	195	195
10	197	197
11	209	209
12	210	210
13	225	225
14	228	228
15	228	228
16	229	229
17	229	229
18	230	230

b. Leadline Comparison

The leadline comparison for this survey was conducted alongside Herrington Harbor South Marina, Rose Haven, MD on March 11, 1998 (DN 070). The water was calm, enabling the leadman to make multiple readings, and provided a steady fathometer reading.

A leadline comparison was taken after the installation of the Odom Echotrac on May 13, 1998 (DN 133. This leadline was taken during the first field test of the Odom Echotrac and is on file with the Hydrographic Systems and Technology Programs, Silver Spring MD.

A leadline comparison was also taken February 24, 2000 (055) at Point Lookout Marina, MD. The bottom was very soft

and as expected the 100 khz Odom read less than 0.1m shoaler than the leadline, and the 455 khz Seabat read 0.2m shoaler than the leadline. Data from these comparisons can be found in *Separate IV.

c. Static Draft

On Jun 14, 1997, while the BAY HYDROGRAPHER was out of the water for repairs, LT Shep Smith and ST Mike Annis painted draft markings every tenth of a meter from the transducer on the side of the vessel. When the multibeam pole was installed in July, 1998, measurements were taken on the pole to determine static draft for the Seabat transducer. Sensor offsets were stored in the HIPS Vessel Configuration File for use in multibeam data processing. Refer to *Separate III for the vessel's Offset Table #1 entered in HPS and the vessel configuration file used in HIPS.

d. Dynamic Draft (Settlement and Squat Correctors)

Settlement and squat correctors for the BAY HYDROGRAPHER were determined in the Elizabeth River, VA on February 26, 1998 using on the fly GPS for relative measurements. An Ashtech M12 receiver was set up on a mark on the pier at the Atlantic Marine Center and a second was setup on the BAY HYDROGRAPHER. Both receivers logged data for two continuous hours as the ship ran a series of runs and their reciprocal courses at varying speeds. The data was then run through a GPS processing program to yield a relative vertical change versus time and speed table. The values obtained were applied to soundings through the HPS Offset Table #1. Dynamic draft correctors were stored in the HIPS Vessel Configuration File for use in data processing of multibeam data. Refer to *Separate IV for data records.

e. Heave, Roll, and Pitch Correctors

A TSS DMS-05 (S/N 002066) dynamic motion sensor collected heave, roll and pitch data. Heave correctors were collected during data acquisition and applied to raw data during HPS processing.

f. Heading

Heading data were acquired with a Sperry SR-50 Gyrocompass and were used to determine both towfish and multibeam transducer azimuth and position.

* Data Filed with field records.

g. Multibeam Calibration

On June 8,1999 (DN 159), the BAY HYDROGRAPHER conducted the multibeam calibration (patch test) for the Reson system. The patch test measured the residual pitch and roll offsets, positioning time delay and azimuthal offset. All values obtained from the patch test and sensor offsets were entered in the HIPS Vessel Configuration File (VCF). See the VCF in *Separate III for data records.

h. Tide Correctors

The tidal datum for this project is Mean Lower Low Water. The operating tide station at Baltimore, MD (857-4680) served as control for datum determination. Upon completion of H-10859, verified tides from station 857-2955, Love Point, MD were downloaded from the CO-OPS web site on January 12, 2000. Zones for station 857-2955 were modified from the predicted zones from station 857-4680 provided with the project instructions. Zones for H-10859 were as follows:

Zone	Range Corrector	Time Corrector
CB41	x0.87	6 mins
CB40	x1.04	12 mins
CB43	x1.00	0 mins
CB44	x0.87	-12 mins
CB49	x1.00	0 mins

The hydrographer used a line-by-line thinning process at a 3-meter and 5-meter cell size in Caris HIPS. No reprocessing of multibeam data in HIPS should be necessary. Tide correctors were applied to all single beam and multibeam data using the HPTools tides utilities.

A request for Smooth Tides was submitted on January 20, 2000. *See Appendix V for request for Smooth Tides. Approved tides and zones were applied during office processing.

The BAY HYDROGRAPHER employed no additional, unusual or unique methods or instruments to correct echo soundings.

H. CONTROL STATIONS. * See also Evaluation Rpt.

The horizontal datum for this survey is the North American Datum of 1983 (NAD 83). No horizontal control stations were used or established for this survey.

* Data Filed with field records.

I. HYDROGRAPHIC POSITION CONTROL.

I.1 This survey was conducted exclusively using the Global Positioning System (GPS) corrected by the U.S. Coast Guard Differential GPS reference station network. Differential correctors were supplied from USCG radiobeacon transmitters, precluding the need for shore-based horizontal control stations.

I.2 Accuracy requirements were met as specified by the Hydrographic Manual and Field Procedures Manual (FPM). The Horizontal Dilution of Precision (HDOP) and Expected Position Error (EPE) specified by the FPM were monitored during on-line data collection. If the positioning degraded beyond the acceptable limits while on-line, the data were either smoothed or rejected, depending on the extent of the affected data. The position of the vessel was verified in its slip at the start and end of each day.

I.3 Differential GPS Equipment:

Unit A	Unit B
Starlink GPS Receiver DNAV-212 Ashtech OEM Sensor II Starlink MRB-2A s/n 835	Trimble GPS Receiver DSM212L s/n 0220177299 Trimble Sensor m/n 27207-00

I.4 Correctors were received from the Cape Henry, VA, and Cape Henlopen, DE radiobeacons for the entire survey.

I.5. There were no unusual methods used to operate or calibrate electronic positioning equipment and no unusual atmospheric conditions affected data quality.

I.6 Antenna positions were corrected for offset and layback, and referenced to the position of the Odom Echotrac echo sounder transducer. These correctors are located in HPS Offset Table #1. A copy of Offset Table #1 is contained in *Separate III.

Offsets for the GPS antenna were applied from the HIPS Vessel Configuration File (VCF) to compute the position of the Seabat transducer and the towpoint. See *Separate III for a copy of the VCF.

* Data Filed with field records

J. SHORELINE. *See also Evaluation Report

No shoreline is contained within the boundaries of this survey.

K. CROSS LINES.

A combined total of 25.33 nautical miles of crosslines were acquired for this survey representing 9% of the 288.36 nautical miles of mainscheme hydrography.

Agreement between main scheme and cross line soundings was found to be excellent, The majority of compared soundings fell within 1 foot of each other, with only an occasional difference of 2 feet noted in steeper bathymetry. Concur

L. JUNCTIONS *See also Evaluation Report

L.1 This sheet junctions with H-10757, sheet "F", to the north. Agreement between H-10757 soundings and H-10859 soundings is excellent. All compared soundings fell within 1 foot of each other. Concur

M. COMPARISON WITH PRIOR SURVEYS. *See also Evaluation Report

The Atlantic Hydrographic Branch as part of the office verification process will perform a comparison with prior surveys.

N. ITEM INVESTIGATION REPORTS

See Correlator sheets included in **Separates V** for all side scan contact investigation information.

N1. - **AWOIS NO: 9732**

Item Description: Obstruction (Fish Stakes)

Source: CL1575/79

AWOIS Position: Lat. 39°04'50.00"N Lon. 076°16'00.00"W

Required Investigation: **Radius: 500 M**

Charts Affected: 12272,12273,12278

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS

Charting Recommendation: No fish stakes were visible. No side scan contacts were found within the 500m search radius. The hydrographer recommends removing the charted fish stakes symbol, text and ED from charts 12278, 12272, and 12273 and charting surveyed soundings. CONCUR

Delete charted fish stakes ED note and symbol

N2. - **AWOIS NO: 9733**

Item Description: Obstruction (Visible Pile)

Source: CL1755/75

AWOIS Position: Lat. 39°04'01.00"N Lon. 076°17'27.00"W

Required Investigation: **Radius: 200 M**

Charts Affected: 12272,12278,12273

INVESTIGATION

See Correlator Sheet for 084_190_1632_6

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam at 5-7m line spacing. No pile was visible at the surface, and there was no evidence of a submerged standing pile. The hydrographer did find a side scan contact that resembled a pile lying on its side, flush with the bottom, within the AWOIS search radius.

Charting Recommendation: The pile is lying flat on the bottom and is not significant. The hydrographer recommends removing the charted visible pile on charts 12278, 12273, and 12272. Concur

Delete Pile note and symbol

Name 084_190_1632_6

Offset 23
Shad Len 0
Correlating Contact
158_392_1637_3
Correlating Dist
4.1

☐ Second Hit

Con Lat 39-04-04.29 N
Con Lon 076-17-26.67 W

Development

Least Depth	8.1 (26)	#Selected	149
LD Fix	280943	AWOIS#	0
Day of LD	228	AWOIS Dist	4.9
Contact Dist	0.7	LD Lat	39-04-04.3 N
		LD Lon	076-17-26.7 W

Comments

Contact Remark
Investigation: Multibeam development - DN 228

Charting Rec: AWOIS 9733 Remove charted pile. The pile is lying flat on the bottom and is not significant.

☐ Chart Item

Matching Swath Info

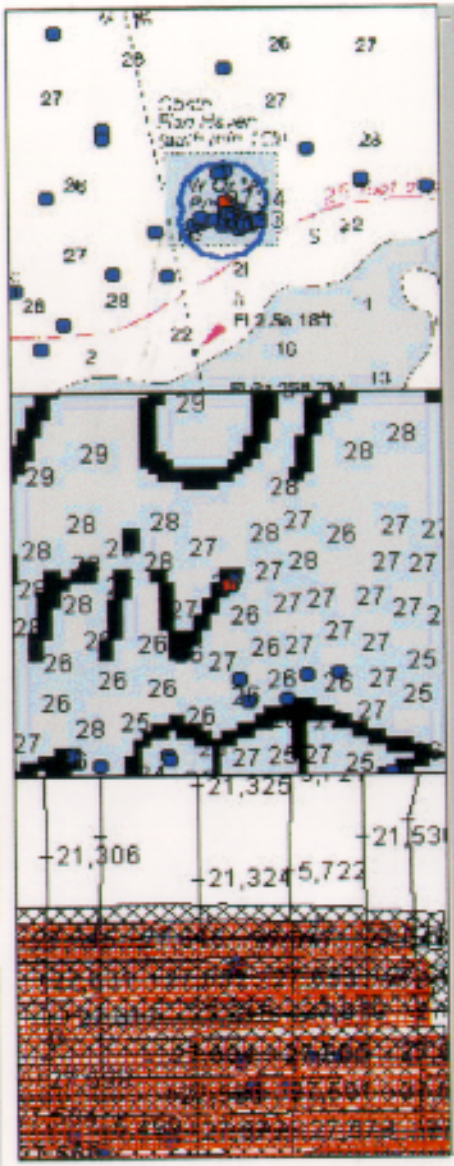
Line	Day	Fix Range
392	158	21316-21429
190	84	5613-5730
392	150	21316-21429

Fixes <Radius VM

2
228 280371
228 280490
228 280493
228 280494
228 280496
228 280501
228 280792
228 280800
228 280803
228 280804
228 280807
228 280932
228 280933
228 280937
228 280938
228 280940

Local Contacts

158_392_1637_3 4.13



Resolution

Height	0
Apparent	0.5
Average Depth	8.4
Top Depth	8.4

Significance Criteria

0 > 1 m< 20 m or 10 %
8.4 < 25

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
0.5 > 100 % 0

Multibeam Coverage ☑

Number of Depths is greater than X
149 > 7

Top Depth is greater than local
8.4 > 7.7

Any green means resolved

☐ Auto-Resolve Resolved ☐

Resolution Notes

N3. - **AWOIS NO: 9734**

Item Description: Obstruction (Fish Haven)

Source: CL1983/68

AWOIS Position: Lat. 39°04'04.39"N Lon. 076°17'26.83"W

Required Investigation: **Radius: 200 M**

Charts Affected: 12273,12272, 12278

INVESTIGATION

See Correlator Sheet for 084_192_1610_95

Investigation Summary: This item was covered with 200% SSS. One critical area within the charted fish haven having numerous side scan contacts was then developed with shallow-water multibeam with 5-7 meter line spacing. The shoalest depth obtained from these developments was 24 ft.

Charting Recommendation: The hydrographer recommends retaining the charted fish haven and authorized depth of 15 ft on chart 12278 (1:40,000), and 12273 (1:80,000). Chart 12272 (1:40,000) has this fish haven charted as a PA with an authorized depth of 22 ft. For this chart, the minimum authorized depth should be charted as 15 ft and the "PA" should be removed.

See E+A report, Section N.3.

Name 084_192_1610_95

Offset 27
Shad Len 0
Correlating Contact
158_392_1637_1
Correlating Dist
2.5

☐ Second Hit

Con Lat 39-04-01.42 N
Con Lon 076-17-27.9 W

Development

Least Depth	7.4 (24)	#Selected	154
LD Fix	278633	AWOIS#	0
Day of LD	228	AWOIS Dist	25.2
Contact Dist	11.7	LD Lat	39-04-01.11 N
		LD Lon	076-17-28.18 W

Comments

Contact Remark
Investigation

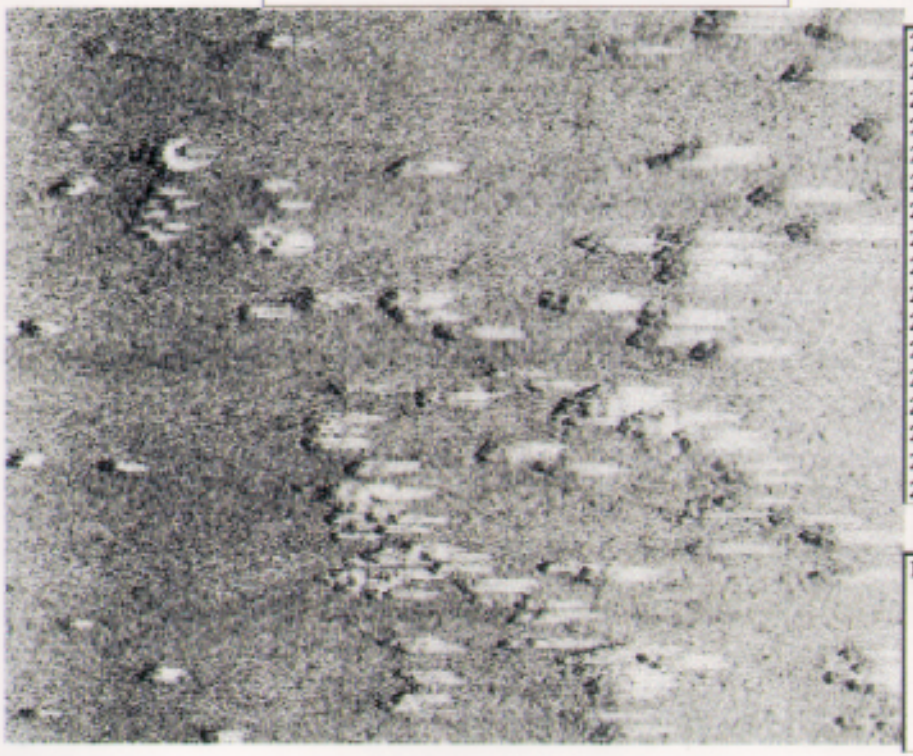
Charting Rec

☐ Chart Item

Matching Swath Info

Line Day Fix Range

```
392 158 21316-21429
192 84  5494-5612
392 158 21316-21429
```

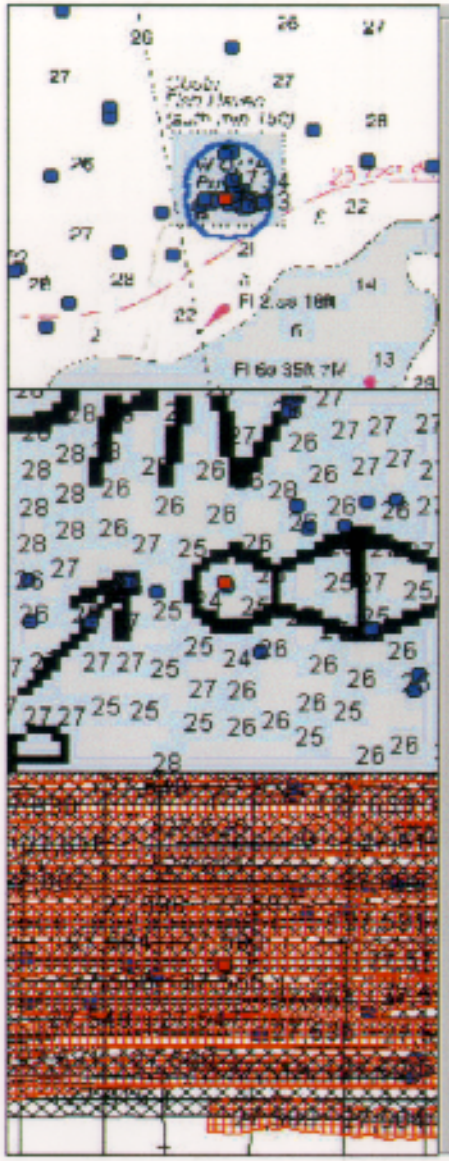


Fixes <Radius VM

```
2
228 278849
228 278859
228 278866
228 279185
228 279187
228 279188
228 279190
228 279196
228 279197
228 279198
228 279199
228 279200
228 279202
228 279203
228 279205
228 279431
```

Local Contacts

```
158_392_1637_1 2.52
```



Resolution

Height	0
Apparent	1.1
Average Depth	8.3
Top Depth	8.3

Significance Criteria

0 > 1 m< 20 m or 10 % ●

8.3 < 25 ●

Both Criteria must be red for

☐ Auto-Signify Significant ☐

Resolution Criteria

Relief is greater than X% of contact

1.1 > 100 % 0 ●

Multibeam Coverage ☑ ●

Number of Depths is greater than X

154 > 7 ●

Top Depth is greater than local

8.3 > 7.4 ●

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N4. - **Contact 082_143_2025_1**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting a dangerous wreck symbol at least depth position and least depth as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. Concur

Chart 32, wk in 39-04-06.54N Lat
76-16-14.33W Lon

Name 082_143_2025_1

Offset -11
Shad Len 0
Correlating Contact
153_343_1762_1
Correlating Dist
3.1

☐ Second Hit

Con Lat 39-04-06.78 N
Con Lon 076-16-14.39 W

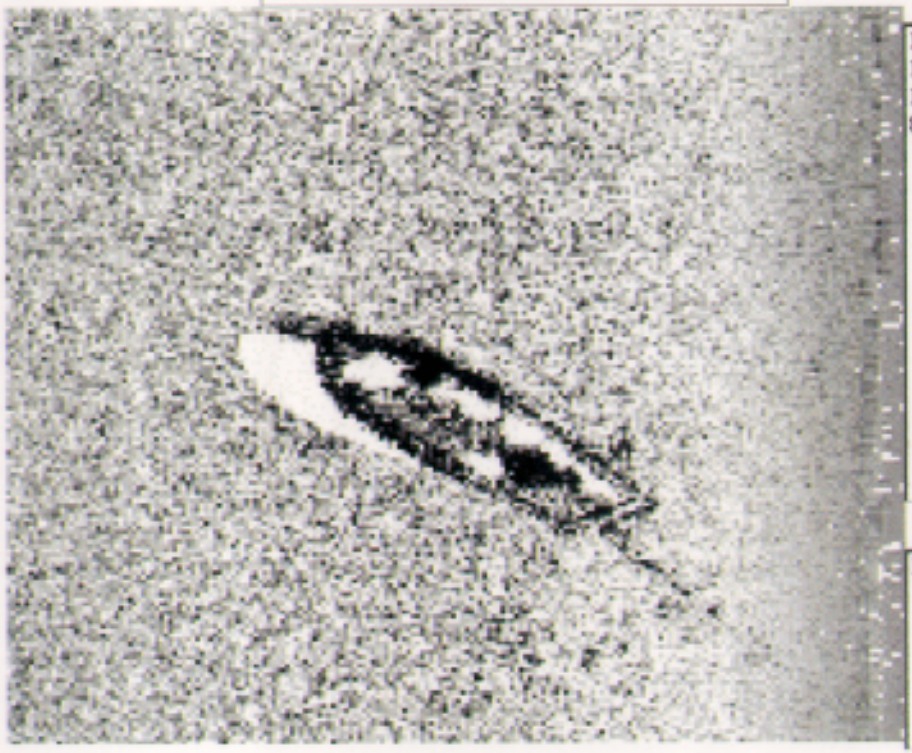
Development

Least Depth	9.9 (32)	#Selected	4
LD Fix	25972	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	7.6	LD Lat	39-04-06.54 N
		LD Lon	076-16-14.33 W

Comments

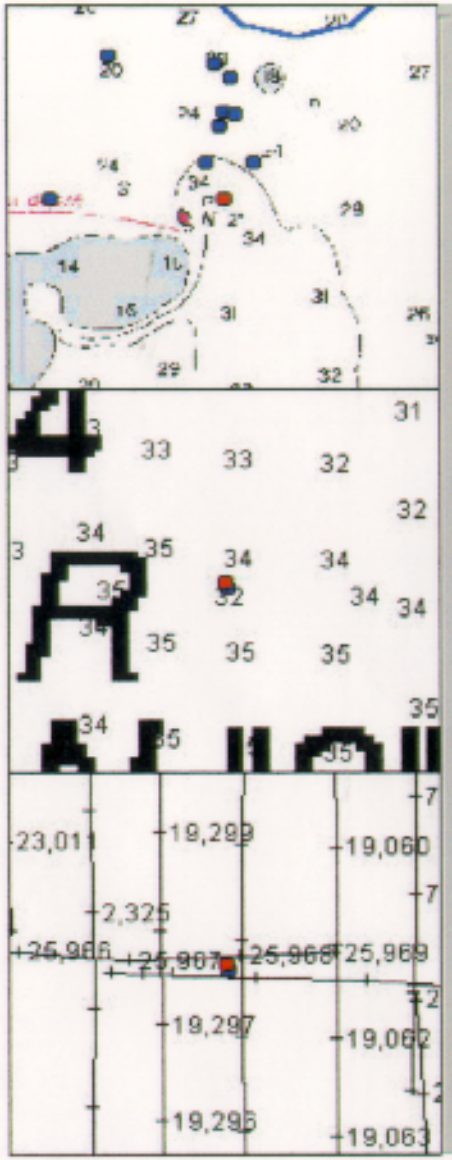
Contact Remark: GOOD WRECK
Investigation: single beam investigation DN 195
Charting Rec: Chart dangerous wreck with least depth and position as stated above DTON
☑ Chart Item

Matching Swath Info
Line Day Fix Range
143 82 2446-2602
343 153 19179-19334



Fixes <Radius VM
195 25968
195 25972
195 25972
82 2565

Local Contacts
153_343_1762_1 3.13



Resolution

Height	0.8
Apparent	0.8
Average Depth	10.5
Top Depth	9.7

Significance Criteria

0.8 > 1 m< 20 m or 10 % 🟢
9.7 < 25 🔴
Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
0.8 > 100 % 0.8 🟢
Multibeam Coverage ☐ 🔴
Number of Depths is greater than X
4 > 7 🔴
Top Depth is greater than local
9.7 > 9.9 🔴
Any green means resolved

☐ Auto-Resolve Resolved ☑
Resolution Notes

N5. - **Contact 082_222_1711_4**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting an obstruction at least depth position and least depth as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. Concur

Chart 36: Obstn in Lat 39-07-25.1N
Lon 76-18-54.79W

Name **082_222_1711_4**

Offset 30
Shad Len 0
Correlating Contact
141_423_1612_5
Correlating Dist
3.7

☐ Second Hit

Con Lat 39-07-24.88 N
Con Lon 076-18-54.91 W

Development

Least Depth	11.1 (36)	#Selected	2263
LD Fix	75981	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	7.9	LD Lat	39-07-25.11 N
		LD Lon	076-18-54.79 W

Comments

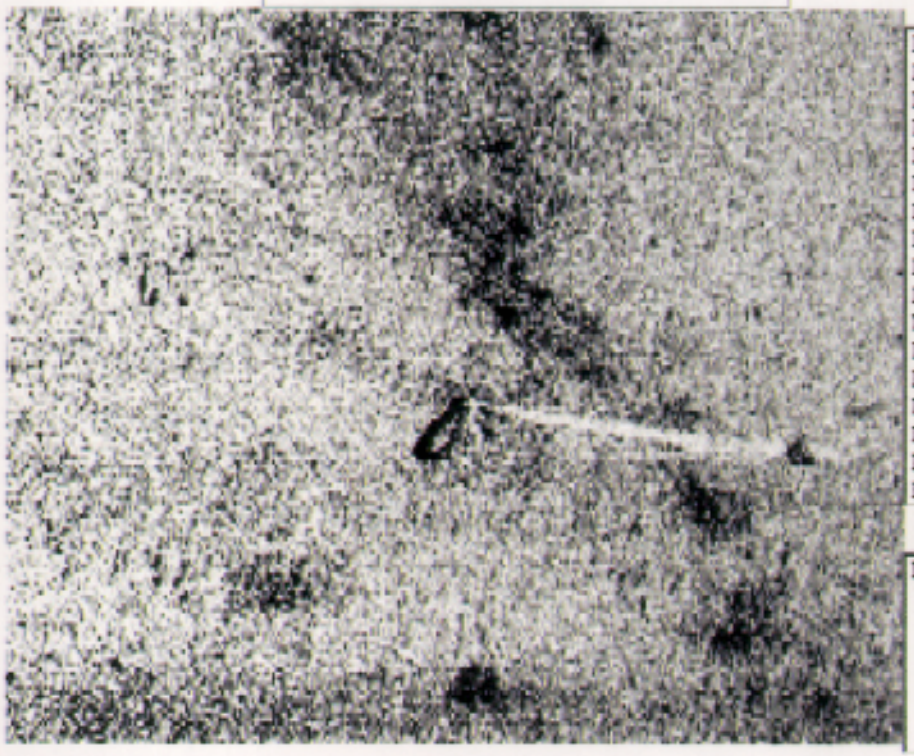
Contact Remark: not a DN
Investigation: Multibeam development - DN 195

Charting Rec: Chart obstruction with least depth and position as stated above DTON

☑ Chart Item

Matching Swath Info

Line	Day	Fix Range
223	82	1321-1430
222	82	1431-1615
423	141	14059-14242

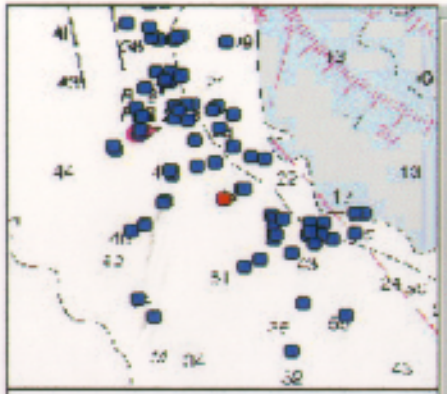


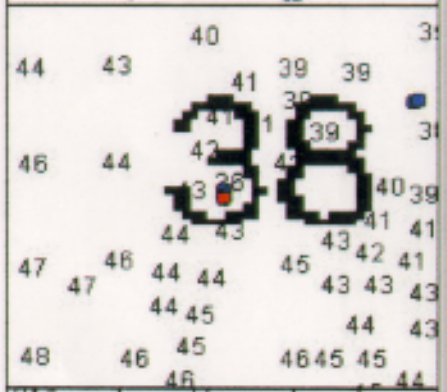
Fixes <Radius VM

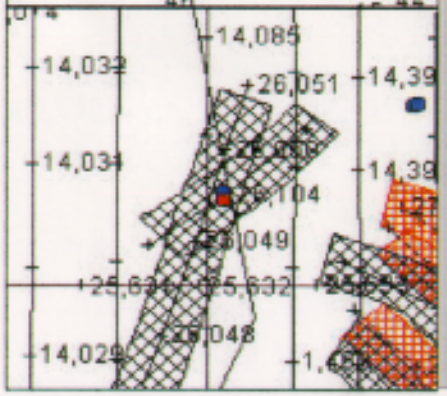
1
197 102953
197 102958
197 102963
197 102971
197 102978
197 102989
197 102990
197 102994
197 102999
197 103011
197 103012
197 103017
197 103021
197 103029
197 103036
197 103037

Local Contacts

141_423_1612_5 3.72







Resolution

Height	1.8
Apparent	2.6
Average Depth	13.3
Top Depth	11.5

Significance Criteria

1.8 > 1 m< 20 m or 10 % 🔴
11.5 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
2.6 > 100 % 1.8 🟢

Multibeam Coverage ☑ 🟢

Number of Depths is greater than X
2263 > 7 🟢

Top Depth is greater than local
11.5 > 11.8 🔴

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N6. - **Contact 082_222_1712_5**

See Correlator sheet for above contact number.

Charts Affected: 12278,12273,12272

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting an obstruction with least depth position and least depth as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. concur

Chart (33) Obstn in Lat 39-04-08.56N
Lon 76-18-51.63W

Name 082_222_1712_5

Offset 38
Shad Len 0
Correlating Contact
082_223_1631_59
Correlating Dist
12.3

☐ Second Hit

Con Lat 39-04-08.31 N
Con Lon 076-18-51.74 W

Development

Least Depth	10.2 (33)	#Selected	1884
LD Fix	148208	AWOIS#	
Day of LD	197	AWOIS Dist	0
Contact Dist	8.3	LD Lat	39-04-08.56 N
		LD Lon	076-18-51.63 W

Comments

Contact Remark: interesting hit
Investigation: Multibeam development - DN 141

Charting Rec: Chart an obstruction with least depth and position as stated above DTON

☑ Chart Item

Matching Swath Info

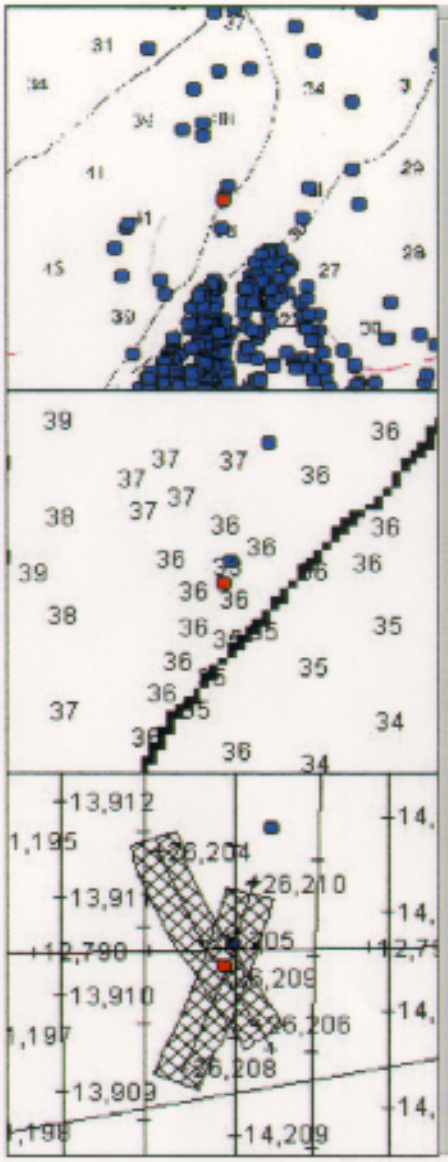
Line	Day	Fix Range
223	02	1232-1319
222	02	1431-1615
423	141	14059-14242

Fixes <Radius VM

1
197 148309
197 148325
197 148331
197 148341
197 148342
197 148356
197 148440
197 148454
197 148455
197 148469
197 148470
197 148471
197 148484
197 148489
197 148497
197 148498

Local Contacts

082_223_1631_59 12.



Resolution

Height	0.7
Apparent	1.1
Average Depth	11.1
Top Depth	10.4

Significance Criteria

0.7 > 1 m< 20 m or 10 % 🟢
10.4 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
1.1 > 100 % 0.7 🟢
Multibeam Coverage ☑ 🟢
Number of Depths is greater than X
1884 > 7 🟢
Top Depth is greater than local
10.4 > 10.7 🔴
Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N7. - **Contact 083_203_2026_1**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: After reviewing the side scan imagery and multibeam data, the hydrographer determined that this item was a submerged pile. Despite making several multibeam passes over this item, the hydrographer does not feel confident that the least depth was acquired because of the pile's narrow width. Dive investigations were not performed on the item due to poor visibility. The hydrographer recommends charting a submerged pile at the least depth position as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. Concur

Chart 0 Subm pile in Lat 39-06-45.57N
Lon 76-17-53.11 W

Additional work required to obtain least depth.
SJV

Name **083_203_2026_1**

Offset -13
Shad Len 0
Correlating Contact
158_403_1338_1
Correlating Dist
1.3

☐ Second Hit

Con Lat 39-06-45.33 N
Con Lon 076-17-53.15 W

Development

Least Depth	7.1 (23)	#Selected	2477
LD Fix	113478	AWOIS#	
Day of LD	197	AWOIS Dist	0
Contact Dist	7.3	LD Lat	39-06-45.57 N
		LD Lon	076-17-53.11 W

Comments

Contact Remark
Investigation: Multibeam development - DN 197

Charting Rec: Chart submerged pile at LD position stated above DTON

☑ Chart Item

Matching Swath Info

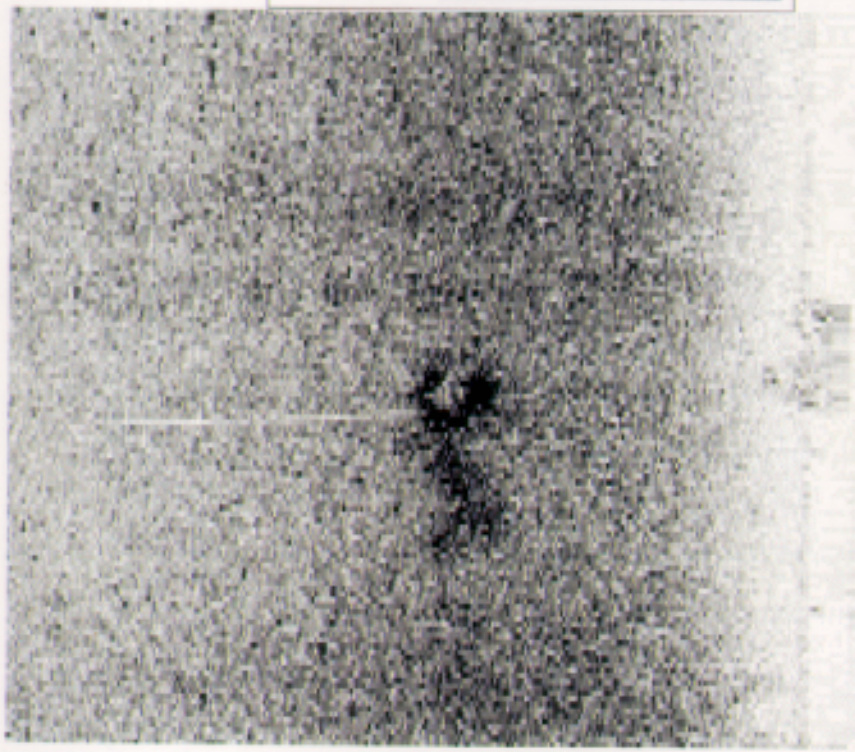
Line	Day	Fix Range
403	158	20456-20547
203	03	4596-4725
403	158	20456-20547

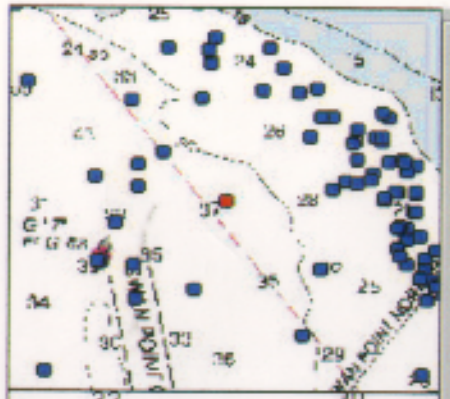
Fixes <Radius VM

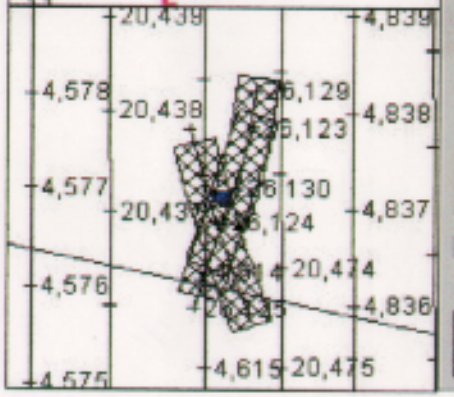
1
197 113830
197 113842
197 113852
197 113855
197 113860
197 113865
197 113866
197 113878
197 113879
197 113882
197 113886
197 113889
197 113890
197 113891
197 113899
197 113905

Local Contacts

158_403_1338_1 1.25







Resolution

Height	0
Apparent	2.6
Average Depth	9.5
Top Depth	9.5

Significance Criteria

0 > 1 m < 20 m or 10 % 🟢
9.5 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
2.6 > 100 % 0 🟢

Multibeam Coverage ☑ 🟢

Number of Depths is greater than X
2477 > 7 🟢

Top Depth is greater than local
9.5 > 9.1 🟢

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N8. - **Contact 083_203_2027_1**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: After reviewing the side scan imagery and multibeam data, the hydrographer determined that this item was a submerged pile. Because of the pile's narrow width, the hydrographer does not feel confident that the least depth was acquired with multibeam. Dive investigations were not performed on the item due to poor visibility. The hydrographer recommends charting a submerged pile at the least depth position as indicated on the Correlator sheet. Concur

Chart °Subm pile in 39-04-16.78 N Lat
76-17-49.99 W Lon

Additional work required to obtain least depth.
SJ

Name **083_203_2027_1**

Offset -25
Shad Len 0
Correlating Contact

Correlating Dist
0

☐ Second Hit

Con Lat 39-04-16.56 N
Con Lon 076-17-49.99 W

Development

Least Depth	6.8 (22)	#Selected	693
LD Fix	150252	AWOIS#	
Day of LD	197	AWOIS Dist	0
Contact Dist	6.9	LD Lat	39-04-16.78 N
		LD Lon	076-17-49.99 W

Comments

Contact Remark
Investigation: Multibeam development - DN 197

Charting Rec: Chart submerged pile at LD position stated above

☑ Chart Item

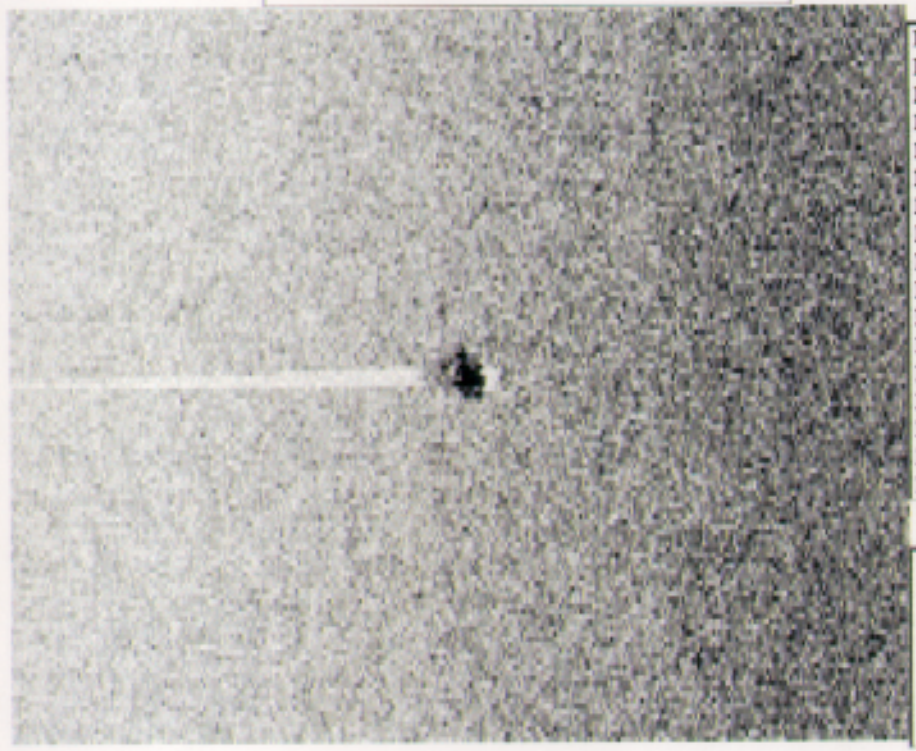
Matching Swath Info

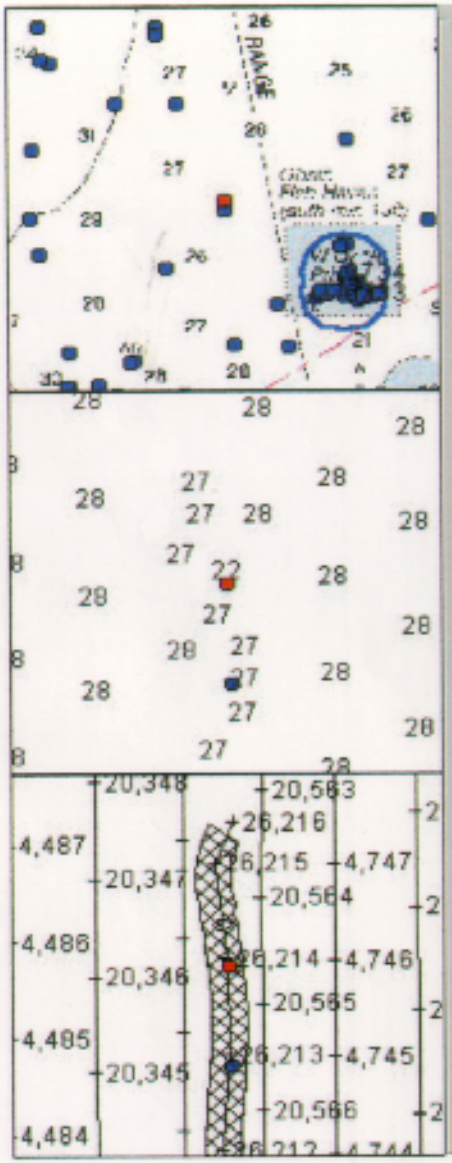
Line	Day	Fix Range
403	158	20548-20584
203	83	4596-4725
202	84	4727-4855
403	158	20548-20584

Fixes <Radius VM

158 20565
19
197 149857
197 149858
197 149864
197 149875
197 149876
197 149880
197 149881
197 149887
197 149893
197 149899
197 149908
197 149918
197 149927
197 150227
197 150234

Local Contacts





Resolution

Height	1.7
Apparent	1.8
Average Depth	8.4
Top Depth	6.7

Significance Criteria

1.7 > 1 m< 20 m or 10 % 🔴
6.7 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
1.8 > 100 % 1.7 🟢
Multibeam Coverage ☑ 🟢
Number of Depths is greater than X
693 > 7 🟢
Top Depth is greater than local
6.7 > 8.2 🔴
Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N9. - **Contact 084_180_1813_1**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: After reviewing the side scan imagery and multibeam data, the hydrographer determined that this item was a submerged pile. Despite making several multibeam passes over this item, the hydrographer does not feel confident that the least depth was acquired because of the pile's narrow width. Dive investigations were not performed on the item due to poor visibility. The hydrographer recommends charting a submerged pile at the least depth position as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. Concur

Chart °Subm pile in 39-06-12.53N Lat
76-17-13.31W Lon

Additional work required to obtain least depth

JJV

Name **084_180_1813_1**

Offset -20
Shad Len 0
Correlating Contact
158_382_1817_4
Correlating Dist
5.5

☐ Second Hit

Con Lat 39-06-12.63 N
Con Lon 076-17-13.19 W

Development

Least Depth	4.9 (16)	#Selected	3526
LD Fix	70703	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	4	LD Lat	39-06-12.53 N
		LD Lon	076-17-13.31 W

Comments

Contact Remark
Investigation: Multibeam development - DN 195

Charting Rec: Chart a submerged pile at LD position above DTON

☑ Chart Item

Matching Swath Info

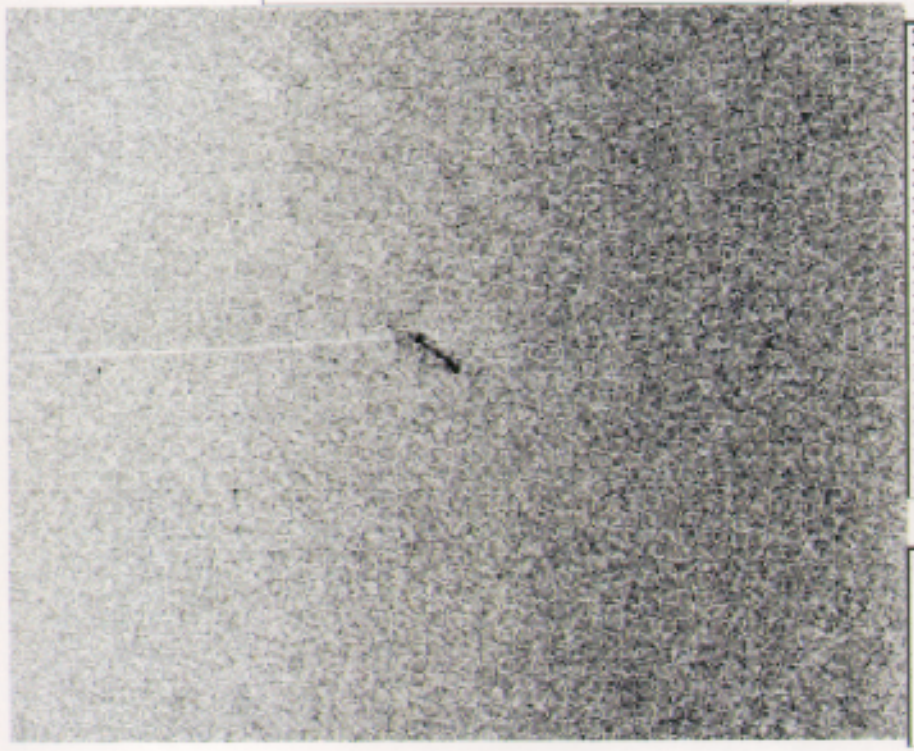
Line	Day	Fix Range
382	158	21872-21973
180	84	6180-6282
382	158	21872-21973

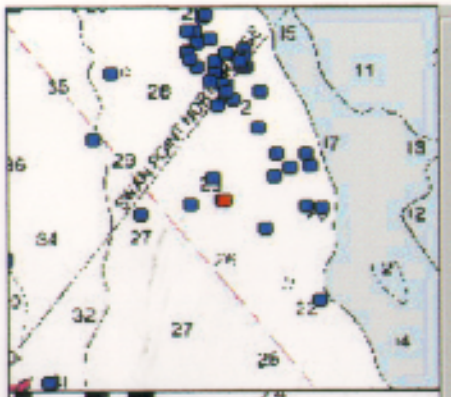
Fixes <Radius VM

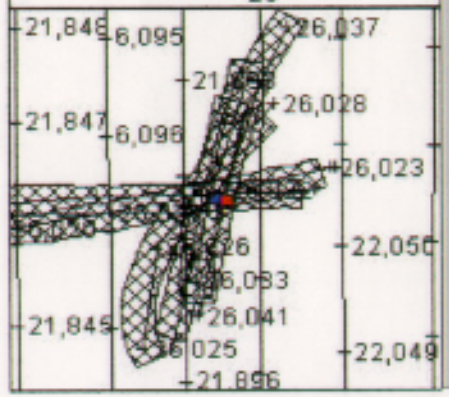
195 62590
195 62591
195 62603
195 62606
195 71008
195 71011
195 71013
195 71018
195 71019
195 71020
195 71026
195 71027
195 71033
195 71034
195 71035
195 71038
195 71041

Local Contacts

158_382_1817_4 5.53







Resolution

Height	2.8
Apparent	2.9
Average Depth	7.5
Top Depth	4.7

Significance Criteria

2.8 > 1 m< 20 m or 10 %
4.7 < 25

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
2.9 > 100 % 2.8

Multibeam Coverage ☑

Number of Depths is greater than X
3526 > 7

Top Depth is greater than local
4.7 > 7.4

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N10. - **Contact 084_192_1610_98**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: After reviewing the side scan imagery and multibeam data, the hydrographer determined that this item was a submerged pile. Despite making multibeam passes over this item, the hydrographer does not feel confident that the least depth was acquired because of the pile's narrow width. Dive investigations were not performed on the item due to poor visibility. The hydrographer recommends charting a submerged pile at least depth position as indicated on the Correlator sheet. CONCUR

Chart ○ Subm pile in Lat 39-06-10.16 N
Lon 76-17-29.4 W

Additional work required to obtain least depth

SSV

Name 084_192_1610_9t

Offset 39
Shad Len 0
Correlating Contact

Correlating Dist
0

☐ Second Hit

Con Lat 39-06-10.1 N
Con Lon 076-17-29.44 W

Development

Least Depth	6.5 (21)	#Selected	670
LD Fix	60379	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	1.9	LD Lat	39-06-10.16 N
		LD Lon	076-17-29.4 W

Comments

Contact Remark
Investigation: Multibeam development - DN 195

Charting Rec: Chart submerged pile at LD position as stated above

☑ Chart Item

Matching Swath Info

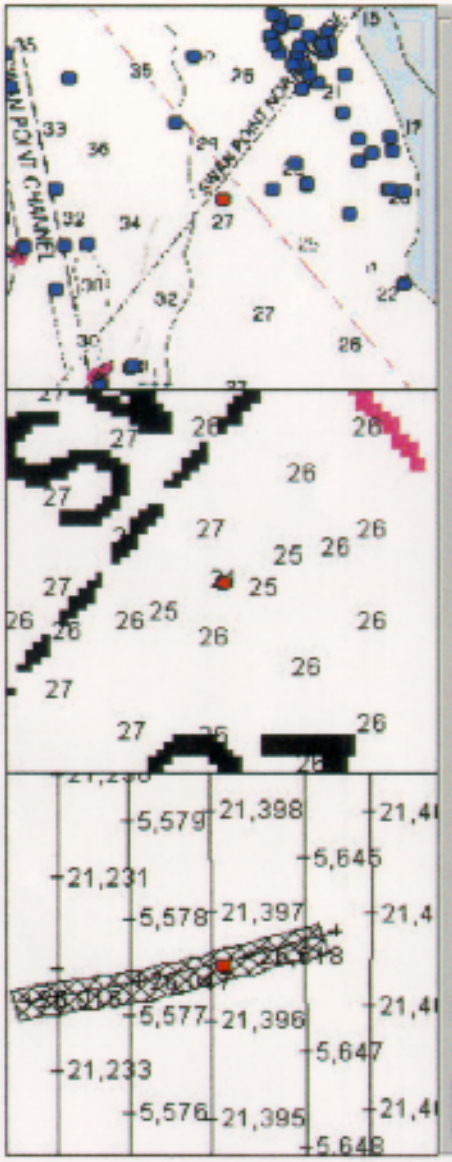
Line Day Fix Range

```
392 158 21316-21429
192  84  5494-5612
190  84  5613-5730
392 158 21316-21429
```

Fixes <Radius VM

```
195 60617
195 60627
195 60630
195 60633
195 60637
195 60638
195 60639
195 60642
195 60643
195 60651
195 60652
195 60657
195 60658
195 60659
195 60660
195 60661
195 60662
```

Local Contacts



Resolution

Height	0
Apparent	1.8
Average Depth	8
Top Depth	8

Significance Criteria

0 > 1 m< 20 m or 10 % 🟢
8 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
1.8 > 100 % 0 🟢
Multibeam Coverage ☑ 🟢
Number of Depths is greater than X
670 > 7 🟢
Top Depth is greater than local
8 > 7.7 🟢
Any green means resolved

☐ Auto-Resolve Resolved ☐

Resolution Notes

N11. **Contact 084_201_1408_1**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting a dangerous wreck symbol with least depth position and least depth as indicated on the Correlator sheet. Concur

Chart 25 wk in Lat 39-05-41.93N
Lon 76-17-46.99W

Name **084_201_1408_1**

Offset 22
Shad Len 0
Correlating Contact
158_402_1421_1
Correlating Dist
9

☐ Second Hit

Con Lat 39-05-41.78 N
Con Lon 076-17-47.16 W

Development

Least Depth	7.8 (25)	#Selected	1410
LD Fix	135127	AWOIS#	
Day of LD	197	AWOIS Dist	0
Contact Dist	6	LD Lat	39-05-41.93 N
		LD Lon	076-17-46.99 W

Comments

Contact Remark: hard hit with profile
Investigation: Multibeam development - DN 195

Charting Rec: Chart dangerous wreck symbol with least depth and position as stated above

☑ Chart Item

Matching Swath Info

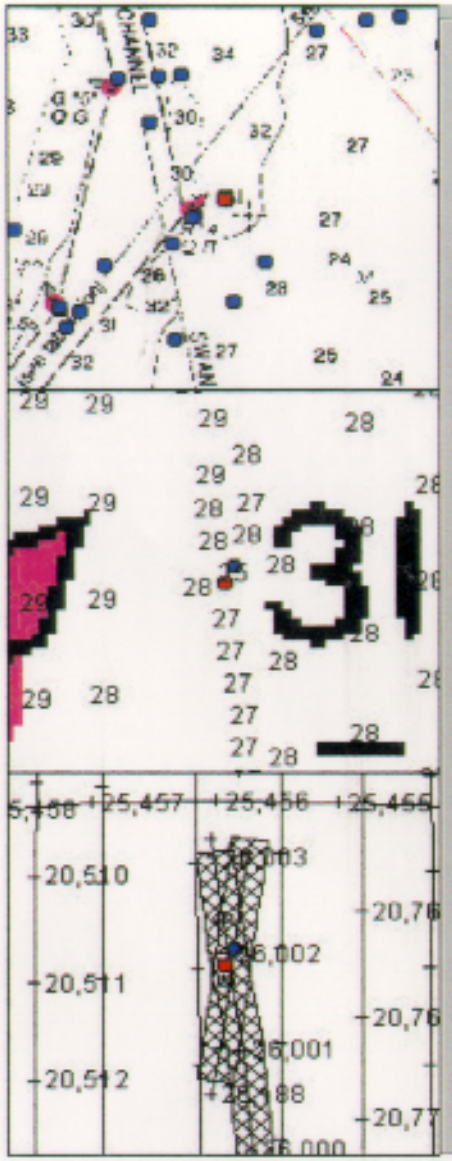
Line	Day	Fix Range
402	158	20646-20710
201	04	4856-4983
402	158	20646-20710

Fixes <Radius VM

195 52540
195 52543
195 52551
195 52557
195 52559
195 5256
195 52569
195 52575
197 135083
197 135088
197 135089
197 135094
197 135121
197 135123
197 135127
197 135131
197 135133

Local Contacts

158_402_1421_1 9.00



Resolution

Height	0.8
Apparent	1.3
Average Depth	8.5
Top Depth	7.7

Significance Criteria

0.8 > 1 m< 20 m or 10 % 🟢
7.7 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
1.3 > 100 % 0.8 🟢
Multibeam Coverage ☑ 🟢
Number of Depths is greater than X
1410 > 7 🟢
Top Depth is greater than local
7.7 > 8.4 🔴
Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N12. **Contact 084_201_1408_2**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting an obstruction at least depth position and least depth as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. Concur

Chart (2) Obstn in Lat 39-05-24.78 N
Lon 76-17-45.58 W

Name **084_201_1408_2**

Offset -8
Shad Len 0
Correlating Contact
158_401_1449_1
Correlating Dist
1.8

☐ Second Hit

Con Lat 39-05-24.68 N
Con Lon 076-17-45.61 W

Development

Least Depth	6.4 (21)	#Selected	683
LD Fix	50436	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	3.2	LD Lat	39-05-24.78 N
		LD Lon	076-17-45.58 W

Comments

Contact Remark
Investigation: Multibeam development - DN 195

Charting Rec: Chart an obstruction with least depth and position as stated above DTON

☑ Chart Item

Matching Swath Info

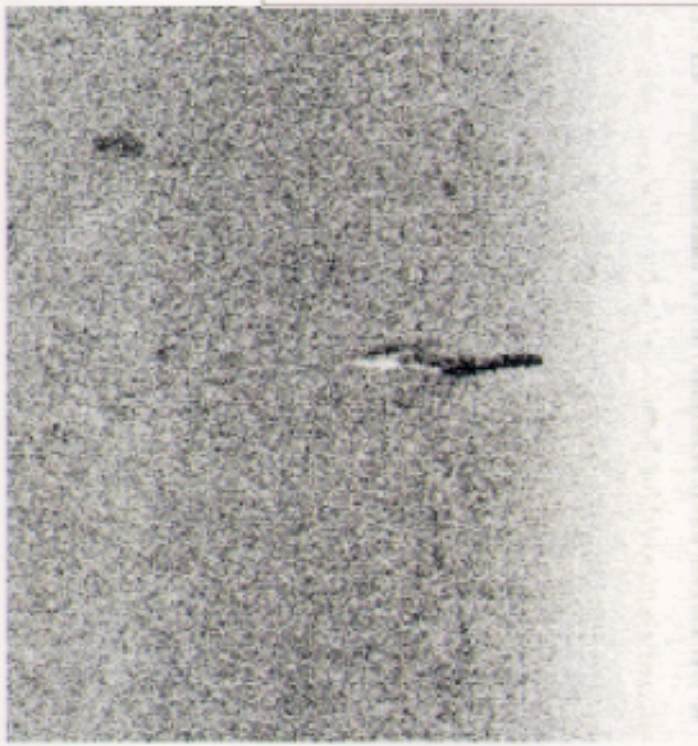
Line	Day	Fix Range
402	158	20585-20645
402	158	20646-20710
401	158	20720-20818
201	84	4856-4983

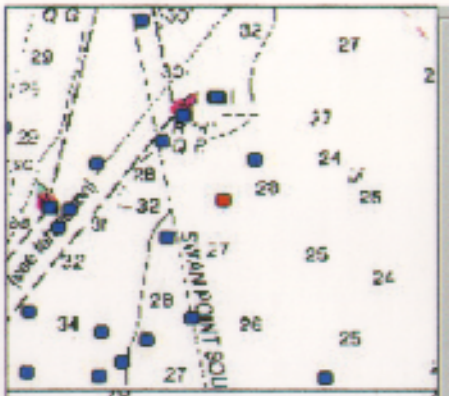
Fixes <Radius VM

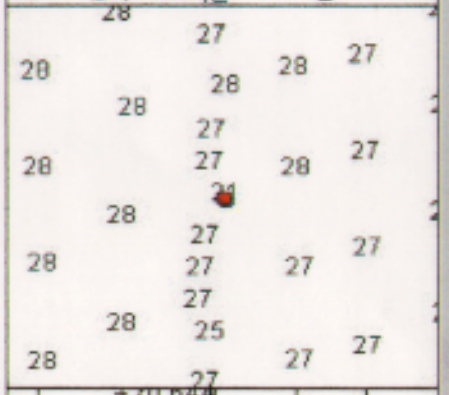
195 50116
195 50125
195 50127
195 50128
195 50129
195 50130
195 50135
195 50136
195 50137
195 50140
195 50145
195 50146
195 50191
195 50419
195 50422
195 50423
195 50427

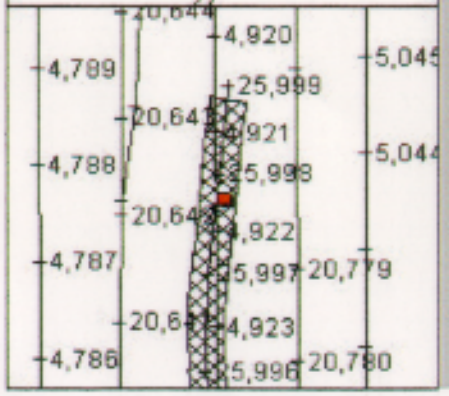
Local Contacts

158_401_1449_1 1.84









Resolution

Height	1.3
Apparent	2.3
Average Depth	8.3
Top Depth	7

Significance Criteria

1.3 > 1 m < 20 m or 10 %
7 < 25

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
2.3 > 100 % 1.3

Multibeam Coverage ☑

Number of Depths is greater than X
683 > 7

Top Depth is greater than local
7 > 7.6

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N13. - **Contacts 098_116_1520_5**

See Correlator sheets for above contact numbers.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: These items were covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting a dangerous wreck symbol at least depth position and least depth as indicated on the Correlator sheet. This item was reported as a Danger to Navigation in a letter dated March 1, 2000. Concur

Chart 19 Wk in Lat 39-04-40.03N
Lon 76-15-30.62W

Name **098_116_1520_5**

Offset 4
Shad Len 0
Correlating Contact
160_314_1629_1
Correlating Dist
2.4

☐ Second Hit

Con Lat 39-04-39.95 N
Con Lon 076-15-30.56 W

Development

Least Depth	5.8 (19)	#Selected	1122
LD Fix	43378	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	2.9	LD Lat	39-04-40.03 N
		LD Lon	076-15-30.62 W

Comments

Contact Remark
Investigation: Multibeam development - DN 195

Charting Rec: Chart dangerous wreck with least depth and position as stated above DTON

☑ Chart Item

Matching Swath Info

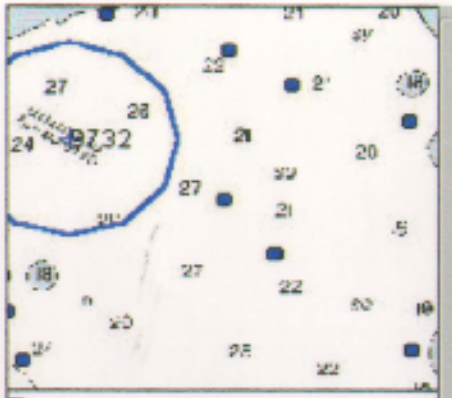
Line	Day	Fix Range
116	90	9159-9241
316	160	23867-23926
314	160	23975-24074

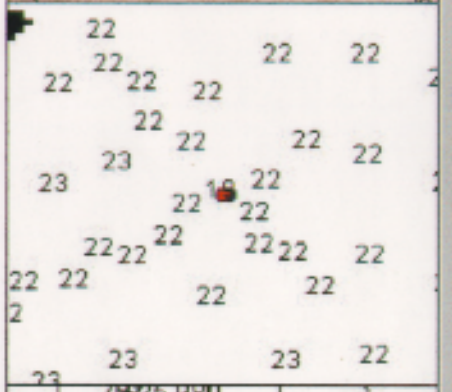
Fixes <Radius VM

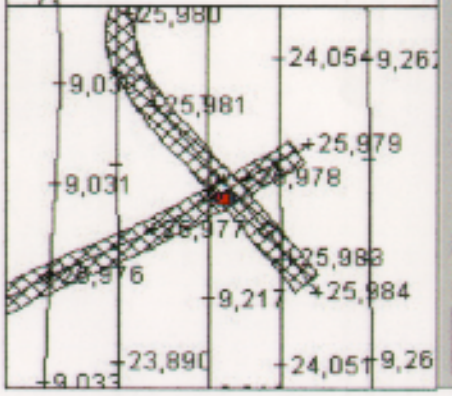
195 25982
195 41671
195 41678
195 41683
195 41688
195 43332
195 43370
195 43389
195 43408
195 43440
195 43444
195 43460
195 43544
195 43610
195 43632
195 43651
195 43661

Local Contacts

160_314_1629_1 2.39







Resolution

Height	0.9
Apparent	1.3
Average Depth	6.8
Top Depth	5.9

Significance Criteria

0.9 > 1 m< 20 m or 10 % 🟢
5.9 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
1.3 > 100 % 0.9 🟢
Multibeam Coverage ☑ 🟢
Number of Depths is greater than X
1122 > 7 🟢
Top Depth is greater than local
5.9 > 6.6 🔴
Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N14. - **Contact 131_151_1555_1**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting an obstruction at least depth position and least depth as indicated on the Correlator sheet. Concur

Chart (24) Obstn in Lat 39-01-37.68 N
Lon 76-16-27.95 W

Name **131_151_1555_1**

Offset 27
Shad Len 0
Correlating Contact
146_352_1503_1
Correlating Dist
0.4

☐ Second Hit

Con Lat 39-01-37.48 N
Con Lon 076-16-27.95 W

Development

Least Depth	7.5 (24)	#Selected	706
LD Fix	47908	AWOIS#	
Day of LD	195	AWOIS Dist	0
Contact Dist	6	LD Lat	39-01-37.68 N
		LD Lon	076-16-27.95 W

Comments

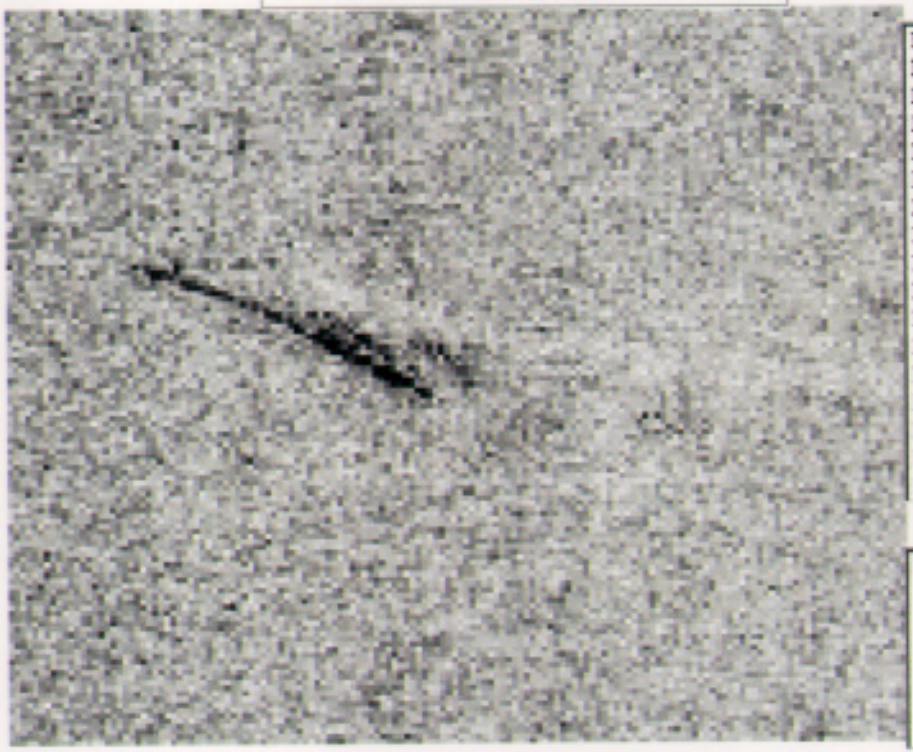
Contact Remark: X-ref, good hit
Investigation: Multibeam development - DN 195

Charting Rec: Chart obstruction with least depth and position as stated above

☑ Chart Item

Matching Swath Info

Line	Day	Fix Range
151	131	10274-10370
352	146	16009-16096

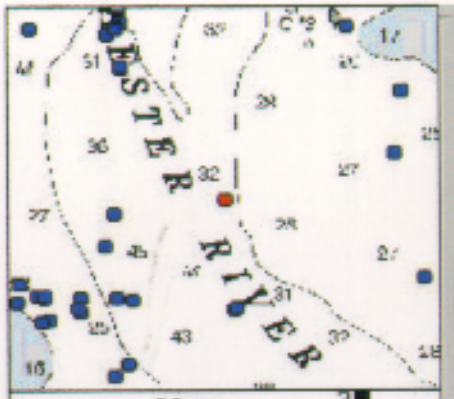


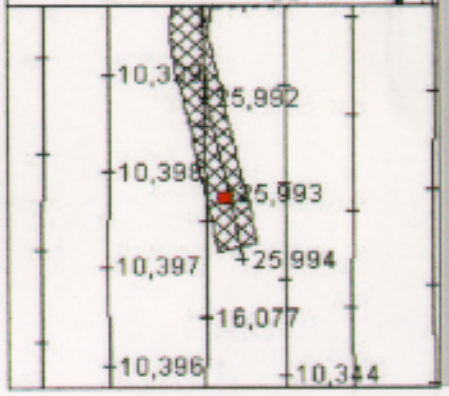
Fixes <Radius VM

195 47857
195 47858
195 47865
195 47878
195 47879
195 47880
195 47888
195 47889
195 47891
195 47893
195 47894
195 47895
195 47901
195 47907
195 47909
195 47910
195 47914

Local Contacts

146_352_1503_1 0.41





Resolution

Height	1.2
Apparent	1.9
Average Depth	9
Top Depth	7.8

Significance Criteria

1.2 > 1 m< 20 m or 10 %
7.8 < 25

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
1.9 > 100 % 1.2

Multibeam Coverage ☑

Number of Depths is greater than X
706 > 7

Top Depth is greater than local
7.8 > 8.8

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N15. - **Contacts 138_175_1645_1**
138_175_1645_2
145_005_1725_2
153_379_1521_1

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273,12263

INVESTIGATION

Investigation Summary: These items were covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: Several dives were conducted on these items and it was verified that these were four artificial oyster mounds. After discovering these items, the Bay Hydrographer OIC began investigating the origin of these obstructions. It was determined that permits for the construction of these oyster mounds was issued to the Maryland Department of Natural Resources. The permit authorized a minimum depth of 12 ft. In a memo to Steve Verry (NOAA/NOS Hydrographic Survey) dated June 6, 1999, Gary Smith (Chief, Mapping and Analysis Project, Department of Natural resources, MD) suggests that a center point be established so a circle with a 500 ft radius can encompass all four mounds. Mr Smith also states that the reef has an authorized minimum depth of 12 ft. The newest edition of chart 12273 (50th Ed. 2 Oct 1999) was updated with this charting recommendation. Charts 12272, 12278, and 12263 also received this charting recommendation but revised editions have not been printed yet. See Appendix VI for Supplemental Correspondence. Upon completion of H-10859, the least depth of the oyster mounds was found to be 8 ft. The hydrographer recommends retaining the charted obstruction and authorized minimum depth of 12 ft and charting an 8 ft sounding at the least depth position as shown on the Correlator sheet for contact # 138_175_1645_2 for charts 12278, 12273, 12272, and 12263.
This 8 ft sounding was reported as a Danger to Navigation letter dated March 1, 2000. Concur - See also Sect. N.15. of the E+A Report

Chart 8ft in Lat 39-01-17.22N, Lon 76-17-02.2W
Chart 10ft in Lat 39-01-23.1N, Lon 76-17-08.0W
Chart 500ft radius danger curve centered in Lat 39-01-20N Lon 76-17-05W
Add note Oyster Reef (auth min 12ft)

Name 138_175_1645_2

Offset 28
Shad Len 0
Correlating Contact

Correlating Dist
0

☐ Second Hit

Con Lat 39-01-17.21 N
Con Lon 076-17-01.91 W

Development

Least Depth	2.6 (8)	#Selected	1957
LD Fix	169683	AWOIS#	
Day of LD	229	AWOIS Dist	0
Contact Dist	6.9	LD Lat	39-01-17.22 N
		LD Lon	076-17-02.2 W

Comments

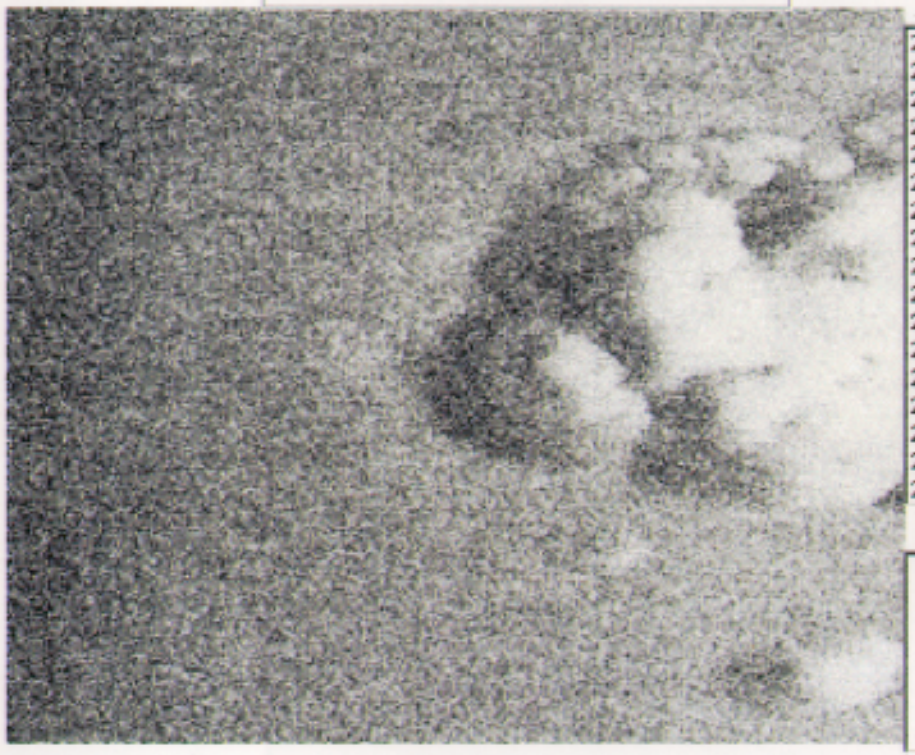
Contact Remark: oyster mound
Investigation: Multibeam development - DN 229

Charting Rec: Chart an 8 ft sounding at LD position stated above DTON

☑ Chart Item

Matching Swath Info
Line Day Fix Range

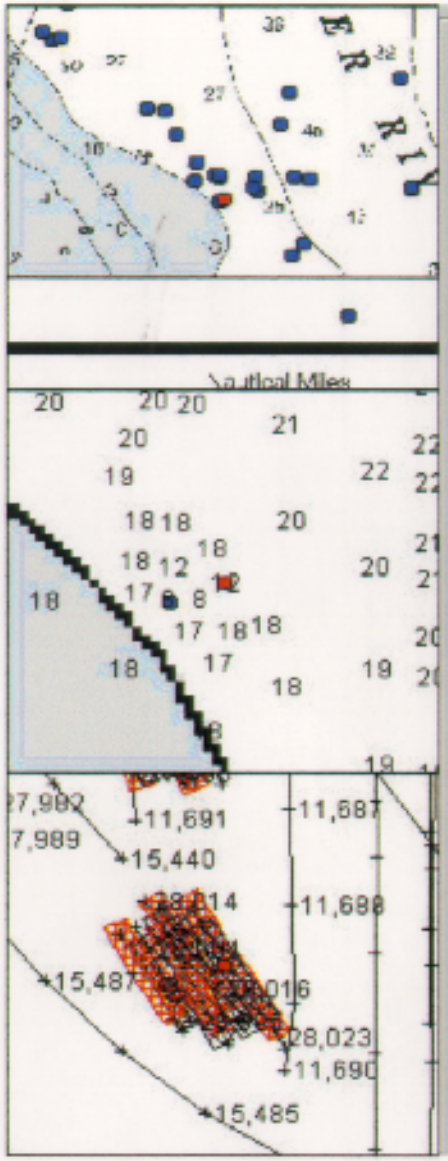
175 130 11627-11690



Fixes <Radius VM

2
229 168278
229 168283
229 168284
229 168288
229 168291
229 168292
229 168295
229 168302
229 168303
229 168304
229 168311
229 168497
229 168503
229 168507
229 168510
229 168511

Local Contacts



Resolution

Height	0.5
Apparent	3.1
Average Depth	5.3
Top Depth	4.8

Significance Criteria

0.5 > 1 m< 20 m or 10 % ●
4.8 < 25 ●

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
3.1 > 100 % 0.5 ●

Multibeam Coverage ☑ ●

Number of Depths is greater than X
1957 > 7 ●

Top Depth is greater than local
4.8 > 2.7 ●

Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

N16. - **Contact 139_429_1926_2**

See Correlator sheet for above contact number.

Charts Affected: 12278,12272,12273

INVESTIGATION

Investigation Summary: This item was covered with 200% SSS and developed with shallow-water multibeam.

Charting Recommendation: The hydrographer recommends charting an obstruction at least depth position and least depth as indicated on the Correlator sheet. See also Ex A Report Section N.16

Chart (39) obstn in Lat 39-07-19.63N
Lon 76-19-12.39W

Name **139_429_1926_2**

Offset -35
Shad Len 0
Correlating Contact

Correlating Dist
0

☐ Second Hit

Con Lat 39-07-19.42 N
Con Lon 076-19-12.49 W

Development

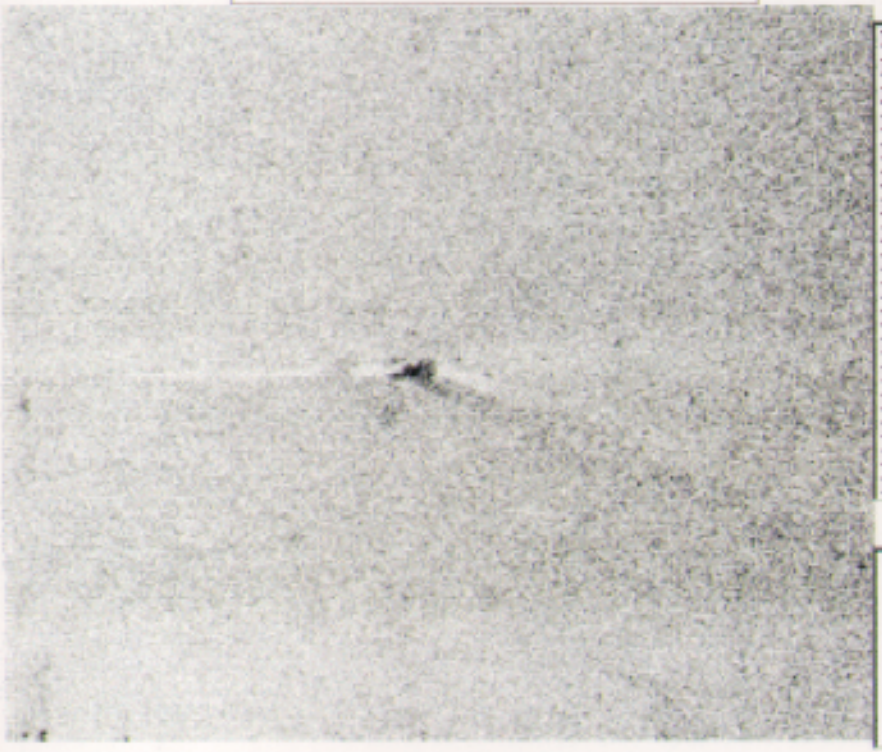
Least Depth	12	(39)	#Selected	1190
LD Fix	80410		AWOIS#	
Day of LD	197		AWOIS Dist	0
Contact Dist	7		LD Lat	39-07-19.63 N
			LD Lon	076-19-12.39 W

Comments

Contact Remark: could be large(investigate)
Investigation: MB investigation on DN 197
Charting Rec: Chart obstruction with least depth and position as above
☑ Chart Item

Matching Swath Info

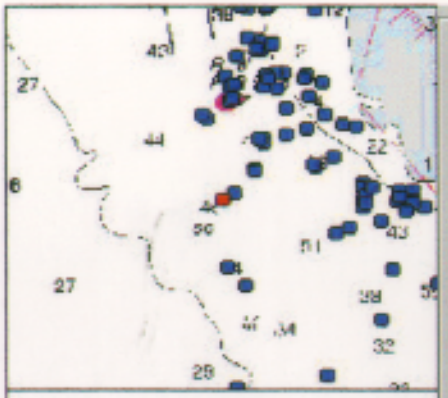
Line	Day	Fix Range
228	76	218-399
429	139	12975-13137
429	141	13139-13319

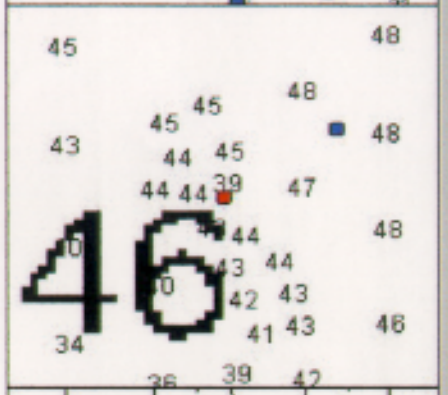


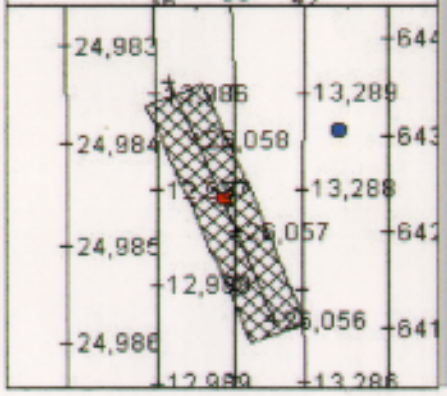
Fixes <Radius VM

197 79718
197 79736
197 79737
197 79741
197 79749
197 79762
197 79763
197 79767
197 79787
197 79789
197 79790
197 79799
197 79805
197 79823
197 79824
197 79845
197 79871

Local Contacts







Resolution

Height	0.6
Apparent	2.1
Average Depth	13.5
Top Depth	12.9

Significance Criteria

0.6 > 1 m< 20 m or 10 % ●
12.9 < 25 ●

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
2.1 > 100 % 0.6 ●
Multibeam Coverage ☑ ●
Number of Depths is greater than X
1190 > 7 ●
Top Depth is greater than local
12.9 > 12 ●
Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

O.COMPARISON WITH THE CHART - See also Evaluation Report

O.1 Four charts are affected by this survey:

Chart 12278
"Eastern Bay and South River"
~~69~~70th Ed. ~~31 Oct 1998~~ 4 MAR 2000
Scale: 1:40,000

Chart 12273
"Sandy Point to Susquehanna River"
50th Ed. 2 Oct 1999
Scale: 1:80,000

Chart 12272
"Chester River"
27th Ed. 7 June 1997
Scale: 1:40,000

Chart 12263
"Cove Point to Sandy Point"
49th Ed. 9 May. 1998
Scale: 1:80,000

O.2 One Danger to Navigation report addressing 8 items was submitted for this survey on March 1, 2000. See **Appendix I** for a copy of the report.

O.3 a. Comparisons were made between H-10859 and chart 12278. In general, agreement between charted soundings and surveyed soundings was adequate, with most charted depths agreeing with survey soundings to within 3 ft. The overall trend appears to be shoaling throughout the survey area. At the southern end of H-10859, surveyed soundings were up to 7 ft shoaler than charted soundings. - See also Evaluation Report

O.3 b. The fish stakes charted on 12278, 12272, and 12273, at approximate lat: 39°02'12N and long: 76°17'41W were not assigned as an AWOIS item. The stakes were not visible, and 200% side scan was not completed due to shallow water depths. Side scan contact # 153_399_1335_1 was found in the area of the fish stakes that fell within H-10859 survey limits. This contact resembled a submerged pile lying on its side. The hydrographer recommends removing the fish stakes symbol and text and charting submerged piles at the

* Report appended to this Report.

LD position as shown on Correlator sheet for contact # 153_399_1335_1. Refer to figure 0.3 for preliminary field chart compilation. Concur - Chart Submpiles in Lat 39-02-12.2N Lon 76-17-36.33W Delete fish stakes note and symbol in Lat 39-02-12N, Lon 76-17-41W
0.3 c. Two areas were found on H-10859 that contain numerous small contacts. 100% multibeam development was run over these two areas. The hydrographer recommends charting a bottom characteristic of "rocky (rky)" in the center of each area and charting surveyed least depths. The approximate positions for these center points are as follows:

Northern rocky area:	39°07'~~13~~17.98N
	76°18'~~27~~39.93W
Southern rocky area:	39°03'30.45N
	76°18'46.51W

See figure 0.3 for preliminary field chart compilation. - See also Evaluation Report Section 0.3.c.

P. ADEQUACY OF SURVEY - See also Evaluation Report

This survey is complete and fully adequate to supersede prior survey data within common areas.

Q. AIDS TO NAVIGATION - See also Evaluation Report

The survey limits for this project contain seven aids to navigation, as listed in the table below. During 200% side scan operations, all Aids to Navigation were picked off as contacts in Caris Sips. They were then added to the HPS contact database and overlaid on Chart 12278. All Aids to Navigation appear to serve their intended purpose. No new aids were found.

Nav. Aid	Latitude	Longitude
R "8"	39°07'35"N	076°19'11"W - LL# 8375
G C "3"	39°02'06"N	076°16'04"W LL# 26505
G "1UC"	39°04'49"N	076°18'50"W LL# 8335
G "3"	39°05'23"N	076°18'18"W - LL# 8345
R "4"	39°05'39"N	076°17'53"W - LL# 8360
G "7"	39°06'35"N	076°18'17"W LL# 8370
G "5"	39°06'02"N	076°18'07"W - LL# 8365

R. STATISTICS.

R.1 a. Number of Positions. 416362

Name 153_399_1335_1

Offset -36
Shad Len 0
Correlating Contact
153_399_1345_2
Correlating Dist
4.9

☐ Second Hit

Con Lat 39-02-12.16 N
Con Lon 076-17-36.35 W

Development

Least Depth	6.6 (21)	#Selected	568
LD Fix	173830	AWOIS#	
Day of LD	229	AWOIS Dist	0
Contact Dist	1.1	LD Lat	39-02-12.2 N
		LD Lon	076-17-36.33 W

Comments

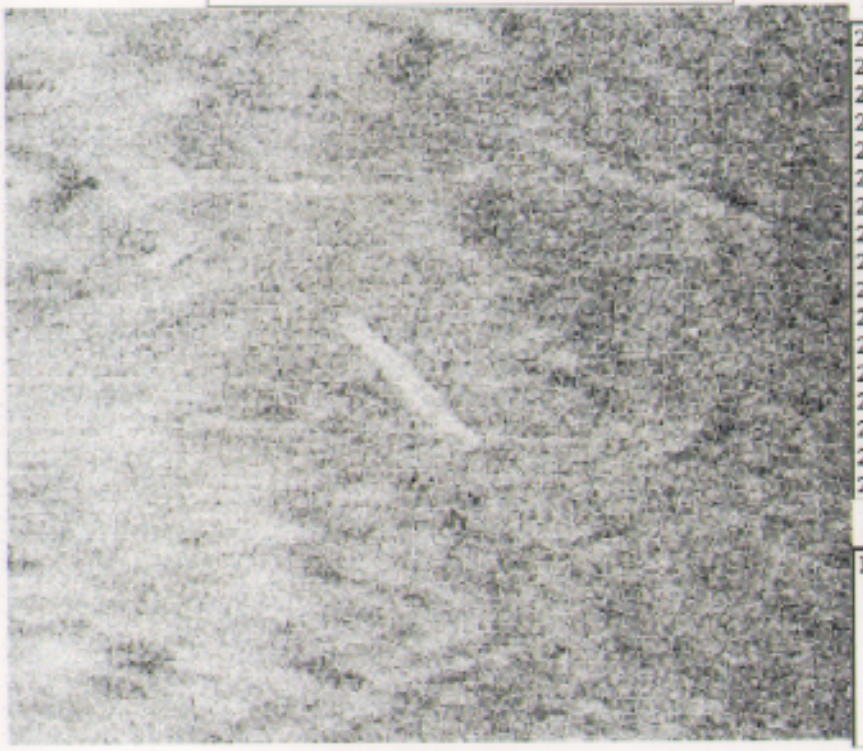
Contact Remark
Investigation: multibeam development - DN 139

Charting Rec: Fish Stakes not visible- area not covered with 200% sss. Replace "fish stakes" with submerged piles

☐ Chart Item

Matching Swath Info

Line	Day	Fix Range
197	139	12162-12185
399	145	14907-14929
399	153	18050-18071
397	153	18072-18097

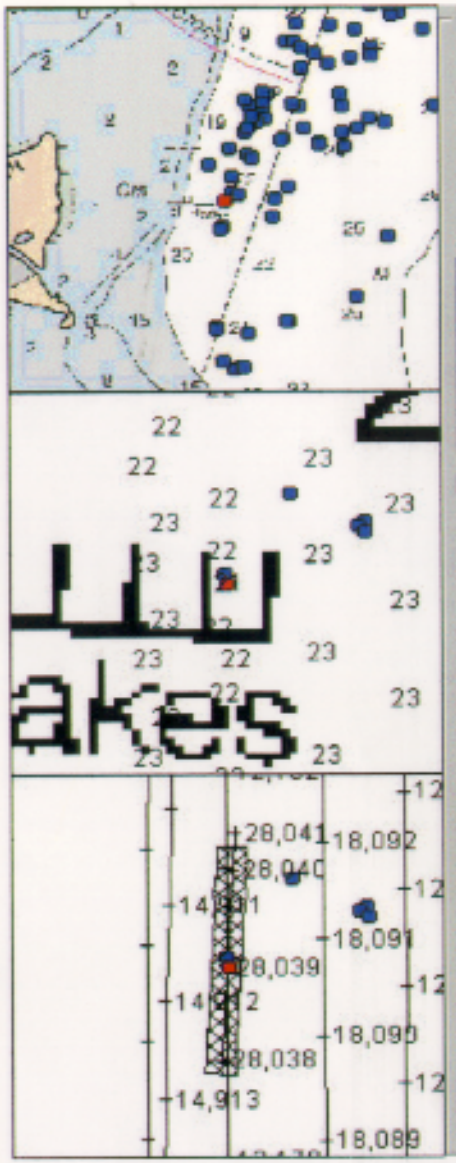


Fixes <Radius VM

2
229 173950
229 173952
229 173953
229 173956
229 173957
229 173960
229 173961
229 173967
229 173968
229 173975
229 173976
229 173977
229 173978
229 173980
229 173981
229 173989

Local Contacts

153_399_1345_2 4.87



Resolution

Height	0.2
Apparent	0.4
Average Depth	6.9
Top Depth	6.7

Significance Criteria

0.2 > 1 m < 20 m or 10 % 🟢
6.7 < 25 🔴

Both Criteria must be red for

☐ Auto-Signify Significant ☑

Resolution Criteria

Relief is greater than X% of contact
0.4 > 100 % 0.2 🟢
Multibeam Coverage ☑ 🟢
Number of Depths is greater than X
568 > 7 🟢
Top Depth is greater than local
6.7 > 6.7 🔴
Any green means resolved

☐ Auto-Resolve Resolved ☑

Resolution Notes

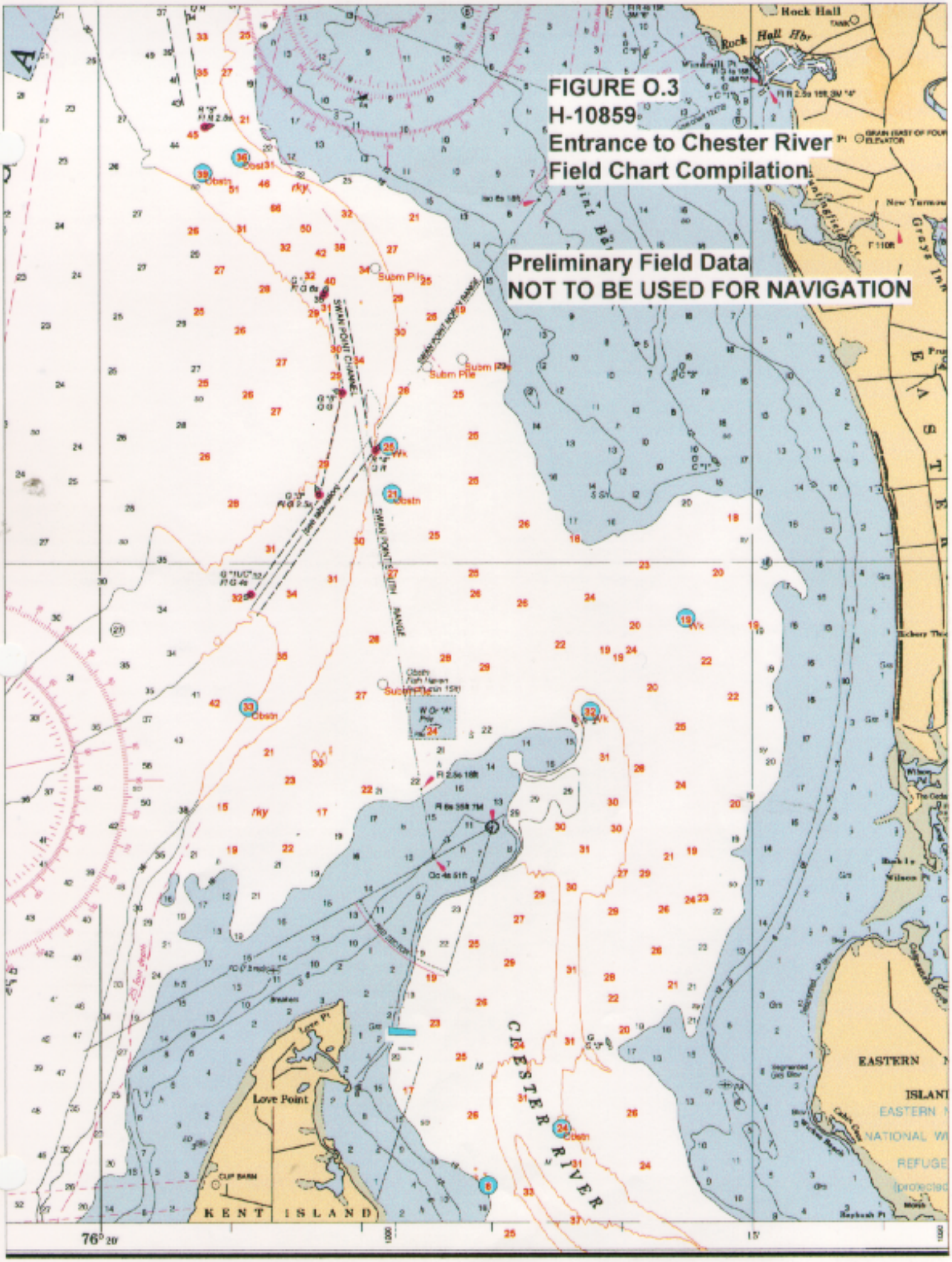


FIGURE O.3
H-10859
Entrance to Chester River
Field Chart Compilation
Preliminary Field Data
NOT TO BE USED FOR NAVIGATION
Rock Hall
Rock Hall Hbr
Swan Point Channel
Swan Point South Range
Love Point
KENT ISLAND
CHESTER RIVER
EASTERN
76° 20'

b. Linear Nautical Miles of Sounding Lines:
Nautical Miles of Survey with the Use
of Side Scan Sonar 638.31
Nautical Miles of Survey Without the Use
of Side Scan Sonar 54.70

R.2 a. Square Nautical Miles of Hydrography
per 100% of Coverage 12.5
b. Days of Production 29
c. Detached Positions 0
d. Bottom Samples 26
e. Tide Stations 1
g. Velocity Casts. 18

S. MISCELLANEOUS.- See also Evaluation Report

S.1 b. No evidence of anomalous tides or tidal current conditions was found during this survey.

S.2 Bottom samples were taken at 1000-meter intervals. Additional samples were collected to confirm bottom characteristics that were evident on the side scan mosaics. All samples were retained and shipped to the Smithsonian Institute in Washington, D.C.

T. RECOMMENDATIONS.

There are no additional recommendations for this survey.

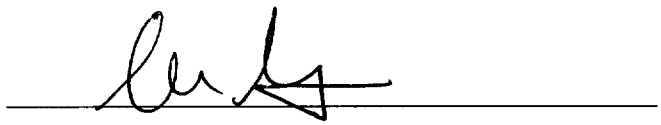
U. REFERRAL TO REPORTS - See Reports appended to this Report

No reports or data are referred to in this Descriptive Report that are not included with this survey. (CANCEL

This report is respectfully submitted.

Monica M. Cisternelli

Monica M. Cisternelli
Survey Technician
NOAA Survey Vessel BAY HYDROGRAPHER



LT Shepard M. Smith, NOAA
Officer-in-Charge,
NOAA Survey Vessel BAY HYDROGRAPHER

APPENDIX III

LIST OF HORIZONTAL CONTROL STATIONS

No horizontal control stations were needed for this survey since Differential GPS was employed exclusively for all positioning control. The geographic positions for the two Differential GPS radio beacons used during this survey are as follows:

Cape Henry, VA 289 KHz	36°55'37.580"N 076°00'23.884"W
Cape Henlopen, DE 298 KHz	38°46'36.421"N 075°05'15.667"W

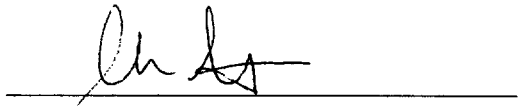
APPENDIX VII

LETTER OF APPROVAL

REGISTRY NO. H-10859

Field operations contributing to the accomplishment of this Navigable Area survey were conducted under my direct supervision with frequent personal checks of progress and adequacy. All field sheets and reports were reviewed in their entirety and all supporting records were checked as well.

This survey was completed with 200% side scan sonar coverage and multibeam sonar and is more than adequate to supersede all prior surveys in common areas. The survey is considered complete and adequate for nautical charting.



Shepard M. Smith, LT., NOAA
Officer-in-Charge
NOAA Survey Vessel BAY HYDROGRAPHER

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Silver Spring, Maryland 20910

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: May 30, 2000

HYDROGRAPHIC BRANCH: Atlantic
HYDROGRAPHIC PROJECT: OPR-E346-BH-99
HYDROGRAPHIC SHEET: H-10859

LOCALITY: Entrance to Chester River, Chesapeake Bay, MD
TIME PERIOD: March 17 - August 18, 1999

TIDE STATION USED: 857-2955 Love Point Pier, MD
Lat. 39° 1.9'N Lon. 76° 18.1'W
PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 0.424 meters

REMARKS: RECOMMENDED ZONING
Use zone(s) identified as: NCB6, NCB7, NCB8, NCB22 & NCB23.

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.

For ----------
CHIEF, REQUIREMENTS AND DEVELOPMENT DIVISION

Final tide zone node point locations for OPR-E346-BH-99, Sheet H-10859.

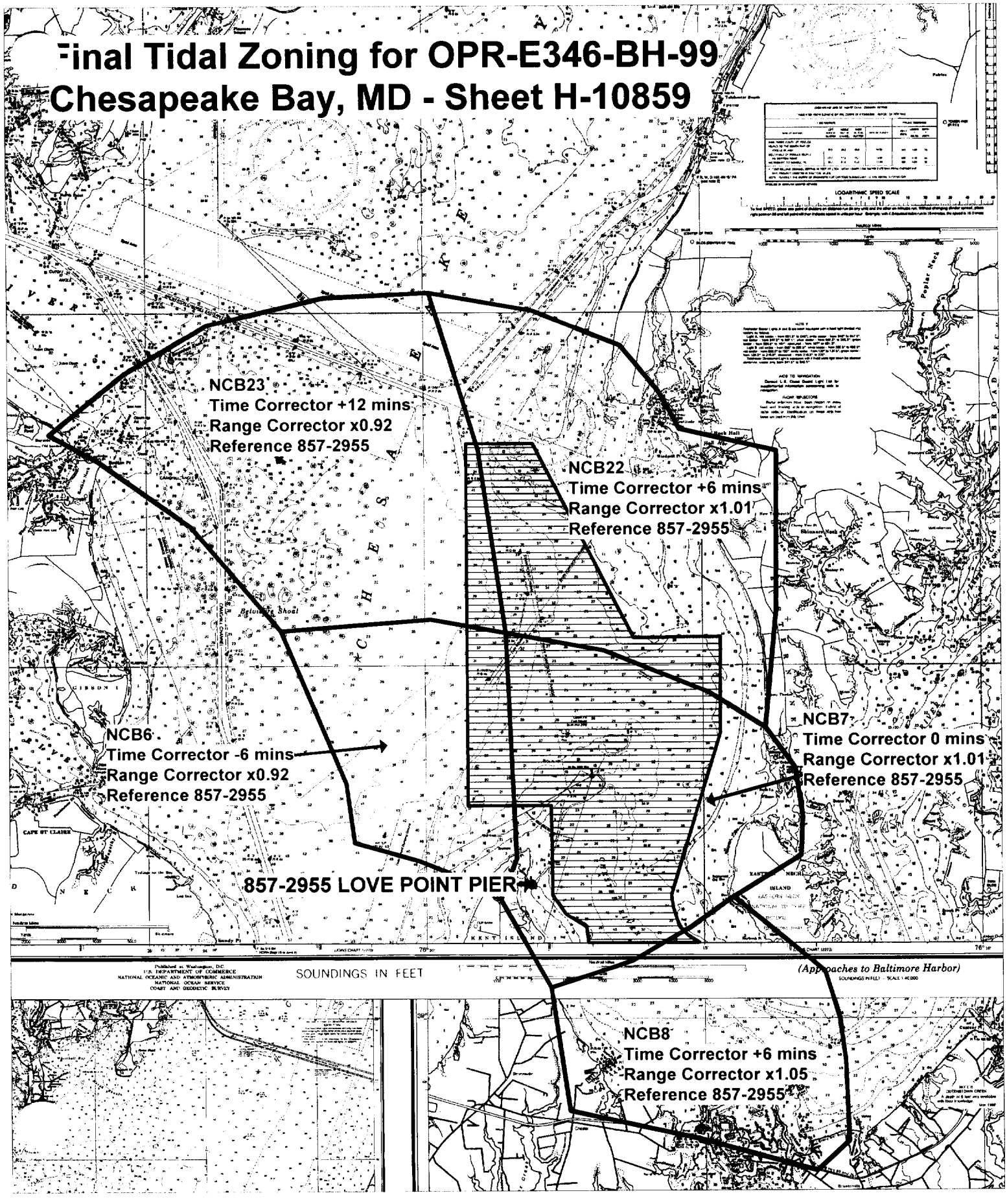
Format: Longitude in decimal degrees (negative value denotes Longitude West),
Latitude in decimal degrees
Tide Station (in recommended order of use)
Average Time Correction (in minutes)
Range Correction

	Tide Station Order	AVG Time Correction	Range Correction
Zone NCB6			
-76.320724 39.032536	857-2955	-6	0.92
-76.335392 39.03719			
-76.354773 39.041433			
-76.357207 39.055451			
-76.37658 39.091553			
-76.331582 39.094228			
-76.30901 39.091024			
-76.306112 39.037712			
-76.310991 39.028085			
-76.320724 39.032536			
Zone NCB7			
-76.30901 39.091024	857-2955	0	1.01
-76.306112 39.037712			
-76.310991 39.028085			
-76.295934 39.007291			
-76.271528 39.013532			
-76.253855 39.021578			
-76.241341 39.028603			
-76.221106 39.038423			
-76.220572 39.047485			
-76.22271 39.059045			
-76.231573 39.068577			
-76.24832 39.076887			
-76.279646 39.086844			
-76.30901 39.091024			
Zone NCB8			
-76.241341 39.028603	857-2955	+6	1.05
-76.214202 39.011094			
-76.209835 39.000191			

-76.208088 38.989967
-76.207213 38.970877
-76.216864 38.963807
-76.252145 38.971445
-76.290438 38.978075
-76.295934 39.007291
-76.271528 39.013532
-76.253855 39.021578
-76.241341 39.028603

Zone NCB22			
-76.30901 39.091024	857-2955	+6	1.01
-76.317036 39.134293			
-76.331632 39.171345			
-76.300454 39.167051			
-76.274148 39.158841			
-76.262844 39.148003			
-76.260493 39.144813			
-76.256628 39.139107			
-76.227844 39.13392			
-76.228173 39.096089			
-76.231573 39.068577			
-76.24832 39.076887			
-76.279646 39.086844			
-76.30901 39.091024			

Zone NCB23			
-76.30901 39.091024	857-2955	+12	0.92
-76.317036 39.134293			
-76.331632 39.171345			
-76.36324 39.170206			
-76.39839 39.163742			
-76.42314 39.152404			
-76.44595 39.13804			
-76.431188 39.131742			
-76.403357 39.116315			
-76.37658 39.091553			
-76.331582 39.094228			
-76.30901 39.091024			


Final Tidal Zoning for OPR-E346-BH-99
Chesapeake Bay, MD - Sheet H-10859
NCB23
Time Corrector +12 mins
Range Corrector x0.92
Reference 857-2955
NCB22
Time Corrector +6 mins
Range Corrector x1.01
Reference 857-2955
NCB6
Time Corrector -6 mins
Range Corrector x0.92
Reference 857-2955
NCB7
Time Corrector 0 mins
Range Corrector x1.01
Reference 857-2955
857-2955 LOVE POINT PIER
NCB8
Time Corrector +6 mins
Range Corrector x1.05
Reference 857-2955
SOUNDINGS IN FEET
(Approaches to Baltimore Harbor)

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10859

Name on Survey	A ON CHART NO. 12272, 12273	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	
CHESAPEAKE BAY	X		X							1
CHESTER RIVER	X		X							2
DEADMAN POINT	X		X							3
GRATITUDE (ppl)	X		X							4
HUNTINGFIELD CREEK	X		X							5
HUNTINGFIELD POINT	X		X							6
KENT ISLAND	X		X							7
LITTLE NECK ISLAND	X		X							8
LOVE POINT	X		X							9
LOVE POINT (ppl)	X		X							10
MARYLAND (title)	X		X							11
ROCK HALL	X		X							12
ROCK HALL HARBOR	X		X							13
SWAN POINT BAR	X		X							14
SWAN POINT CHANNEL	X									15
THE HAVEN	X		X							16
WICKES BEACH	X		X							17
WINDMILL POINT	X		X							18
										19
										20
										21
										22
										23
										24
										25

[redacted]

Dennis J. Romberg

AUG 15 2000

NOAA FORM 76-155 SUPERSEDES C&GS 197

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.
N/CS33-80-2000

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*:

☐ ORDINARY MAIL ☐ AIR MAIL

☐ REGISTERED MAIL ☒ EXPRESS

☐ GBL *(Give number)* _____

TO:

CHIEF, DATA CONTROL GROUP, N/CS3X1
NOAA/NATIONAL OCEAN SERVICE
STATION 6815, SSMC3
1315 EAST-WEST HIGHWAY
SILVER SPRING, MARYLAND 20910-3282

DATE FORWARDED
NOV 20 , 2000

NUMBER OF PACKAGES
ONE TUBE

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H10859

MARYLAND, CHESAPEAKE BAY, ENTRANCE TO CHESTER RIVER

ONE TUBE CONTAINING THE FOLLOWING:

1 SMOOTH SHEET FOR H10859
ORIGINAL DESCRIPTIVE REPORT FOR H10859
RECORD OF APPLICATION TO CHART (NOAA FORM 76-96) FOR SURVEY H10859
1 H-DRAWING FOR NOS CHART 12272
1 COMPOSITE DRAWING FOR NOS CHART 12272

FROM: *(Signature)*

DEBORAH A. BLAND Deborah A. Bland

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

ATLANTIC HYDROGRAPHIC BRANCH
N/CS33
439 WEST YORK STREET
NORFOLK, VA 23510-1114

NOAA FORM 61-29 SUPERSEDES FORM C & GS 413 WHICH MAY BE USED.

*U.S.GPO:1983-0-664-006/1192

ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10859 (1999)

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 (HPS)
NADCON, version 2.10
SITE WORKS 02.01.02.00
MicroStation 95, version 5.05
I/RAS B, version 5.01

The smooth sheet was plotted using an HEWLETT-PACKARD 2500CP 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. The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27 datum move the projection lines 0.400 seconds (12.328 meters or 1.23 mm at the scale of the survey) north in latitude, and 1.162 seconds (27.932 meters or 2.79 mm at the scale of the survey) east in longitude.

All geographic positions listed in this report are on NAD 83 datum unless otherwise specified.

J. SHORELINE

Brown shoreline originates with National Ocean Service (NOS) chart 12272 (27TH Edition, June 7, 1997) and is for orientation purposes only.

L. JUNCTION

H10757 (1998) 1:10,000 to the northwest

A standard junction could not be made with H10757 (1998). The smooth sheet for this survey is archived at NOS headquarters in Silver Spring, Maryland. In this case the note "ADJOINS" has been shown on the present survey smooth sheet. Any adjustments to the depth curves in the junctional area will have to be made on the chart during chart compilation.

M. COMPARISON WITH PRIOR SURVEYS

A comparison with prior surveys was not performed. This is in accordance with section 4. Of the memorandum titled, "Changes to Hydrographic Survey Processing," dated May 24, 1995.

N. ITEM INVESTIGATION REPORTS

N3) AWOIS Item #9734, is an *Obstn (Fish Haven)* in Latitude 39°04'04.39"N, Longitude 76°17'26.83"W with an authorized least depth of 22 feet. A 24 foot least depth was found on this item by the present survey. NOS chart 12272 shows this item with an authorized minimum depth of 22 feet and as an *Obstn PA*, while charts 12273 and 12278 show an authorized minimum depth of 15 feet and no *PA*. It is recommended that the true authorized depth and position on this item be resolved by the Marine Chart Division in Silver Spring, Maryland and that the *PA* notation be removed from the chart.

N15) The Maryland Department of Natural Resources was issued a permit to have an *oyster reef* in the vicinity of Latitude 39°01'19.0"N, Longitude 76°17'05.0"W with an authorized minimum depth of 12 feet (3^6m). Three of the following oyster mounds were reported in a Danger to Navigation Report (DtoN) dated October 11, 2000. The obstruction in Latitude 39°01'17.2"N, Longitude 76°17'02.2"W was not included on the DtoN Report. The oyster mounds were found as follows.

Least depth	Latitude	Longitude
8ft (2.6m)	39°01'17.2"N	76°17'02.2"W
8ft (2.6m)	39°01'20.3"N	76°17'08.1"W
10ft (3.1m)	39°01'21.0"N	76°17'03.5"W
10ft (2.3m)	39°01'23.1"N	76°17'08.0"W

This area is being shown on the smooth sheet with a dashed 500 foot radius circle from the center of these four

obstructions as recommended by the Department of National Resources of the state of Maryland and the hydrographer. It is recommended that an *8 ft sounding* be charted in Latitude 39°01'17.2"N, Longitude 76°17'02.2"W and a *10 ft sounding* be charted in Latitude 39°01'23.1"N, Longitude 76°17'08.0"W. It is further recommended that a *500 foot radius danger curve* be added centered in Latitude 39°01'20"N, Longitude 76°17'05"W and that the notation *Oyster Reef (auth min 12ft)* be added.

N16) The uncharted *39 ft* depth on a *dangerous obstruction* found by the field in Latitude 39°07'19.63"N, Longitude 76°19'12.39"W was incorrectly listed as a *wreck* in the DtoN Letter submitted on October 11, 2000. This item should be charted as a sounding on a *dangerous obstruction*, not a *wreck*.

N17) During office processing, an uncharted *18 ft* depth, in Latitude 39°02'24.12"N, Longitude 76°16'05.197"W, was found. This feature was not addressed by the field unit. Surrounding depths range from 25 to 28 feet. It is recommended that an *18 foot dangerous obstruction* be charted in the present survey location Additional work is required to obtain the best depth SJV

Except as noted, the present survey is adequate to supersede the charted hydrography within the common area.

O. COMPARISON WITH CHART 12272 (27th Edition, Jun 07/97)
12273 (50th Edition, Oct 02/99)
12263 (49th Edition, May 08/98)
12278 (70th Edition, Mar 04/00)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and requires no further consideration. The hydrographer makes adequate chart comparisons in Section O. of the Descriptive Report. The following should be noted:

O.3.A) Comparisons were made between H-10859 and chart 12278. In general, agreement between charted soundings and surveyed soundings was adequate, with most charted depths agreeing with survey soundings to within 3 feet. In some cases, there were major differences. The depths in question have been listed below:

Surveyed Depth	Charted Depth	Latitude	Longitude
45	41	39°07'30.4"N	76°19'06.2"W
37	24	39°07'12.7"N	76°18'23.8"W

29	34	39°06'58.5"N	76°18'59.5"W
30	35	39°06'33.4"N	76°17'45.5"W
28	34	39°06'28.7"N	76°18'29.1"W
27	32	39°06'29.9"N	76°18'46.3"W
26	30	39°06'12.0"N	76°19'00.0"W
27	31	39°06'03.5"N	76°18'45.0"W
27	32	39°06'18.7"N	76°18'40.5"W
28	33	39°06'10.0"N	76°18'26.0"W
28	33	39°05'57.7"N	76°18'28.5"W
28	32	39°05'45.8"N	76°18'37.7"W
27	31	39°05'27.0"N	76°19'04.0"W
28	32	39°05'15.0"N	76°19'02.7"W
28	33	39°05'11.1"N	76°19'15.0"W
23	27	39°04'42.8"N	76°15'36.5"W
23	29	39°05'04.0"N	76°16'15.0"W
33	45	39°01'29.5"N	76°16'43.5"W
31	36	39°01'47.5"N	76°16'52.5"W
33	45	39°01'29.5"N	76°16'43.8"W
36	41	39°00'53.5"N	76°16'13.8"W

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

O.3.B) Two rocky areas, one in Latitude 39°07'17.98"N, Longitude 76°18'39.93"W and the other in Latitude 39°03'30.45"N, Longitude 76°18'46.51"W, have been shown on the smooth sheet with dashed black lines. The positions for these limits were determined during verification using mapinfo information. It is recommended that a *rky* note be added to the chart in these areas.

b. Dangers to Navigation

One Danger to Navigation (DtoN) report addressing eight items was submitted on March 1, 2000, to Commander(OAN), Fifth Coast Guard District, Norfolk, Virginia 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 the Descriptive Report.

During office verification eight additional items were found to be Dangers to Navigation. A Danger to Navigation (DtoN) report, containing these items and two items which were in the first report, was submitted on October 11, 2000, to the Marine Chart Division, N/CS3x1, Silver Spring, Maryland. A copy of this report is also appended to the Descriptive Report.

The eight items in the Danger to Navigation Report submitted on March 1, 2000 have been applied to NOS chart 12273, 50th Ed., Oct. 2, 1999. The items in the Danger to Navigation Report submitted on October 11, 2000 have not been applied to any NOS charts.

c. Controlling Depths

One conflict exists with the charted controlling depth of 34 feet in AUG of 1995 in Swan Point Channel. Several 33 and 32 ft depths can be found throughout the western edge of the channel. It is recommended that the note be revised by Marine Chart Division Personnel in Silver Spring, MD to read *32 FT FOR A WIDTH OF 600 FT AUG 1999*.

P. ADEQUACY OF SURVEY

This is an adequate Hydrographic survey. No additional work is recommended. Additional work to obtain least depths is required as noted. SJV

Q. Aids to Navigation

The hydrographer located seven (7) floating aids to navigation on the present survey. These aids appear adequate to serve their intended purposes.

The following aid to navigation is in the Light List, but was not verified by the hydrographer during the present survey. No change in charting is recommended.

DESCRIPTION	LATITUDE	LONGITUDE	LL#
Chester River Entrance Nun "2"	39°04'04"N	76°16'21.6"W	26500

The following privately maintained buoy marking a fish haven was not verified by the hydrographer during the present survey. No change in charting is recommended.

DESCRIPTION	LATITUDE	LONGITUDE
Priv maintd buoy	39°04'03.5"N	76°17'29"W

S. MISCELLANEOUS

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

The following NOS Charts were used for compilation of the present survey:

12272 (27th Edition, Jun 07/97)

H10859

Douglas V. Mason
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10859

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 disapproval 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.

Deborah A. Bland Date: 11/9/2000

Deborah A. Bland
Cartographer,
Atlantic Hydrographic Branch

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.

Andrew L. Beaver Date: 11/16/00

Andrew L. Beaver
Lieutenant Commander, NOAA
Chief, Atlantic Hydrographic Branch

****

Final Approval:

Approved: Samuel P. de Bow, Jr. Date: December 5, 2000

Samuel P. De Bow, Jr.
Captain, NOAA
Chief, Hydrographic Surveys Division

RETURN TO SOURCE
DATA SECTION FILES

Minute Memo 1265

ubject: 1999 KSK

To	Message/Comment	From/Date
Products Branch C	Cartog, Each center point for the three oyster reef locations were determined by NDB because Gary Smith of the Maryland Department of Natural Resources could not provide them. He suggested that we find the midpoint of each site so that a 500'radius can encompass all the deployments for that area. These points were used as the center points of each ~~of the~~ oyster reef. The authorized minimum depth for all three reefs are 12 feet. Nautical Data Branch	NDB 08/17/99

	CODE	OUT	IN
KK	A	8.17	

(C) 4 (B)

PRODUCTS

CP3 ¯NC #89 8/24/99

12231
12231 ENC
12266
12266 ENC
12272
12278
12278 ENC
12230
12263
12273
12285A
12280 Ext.
13003 N/C

1265
AUG 18 1999

Parris N. Glendening
Governor

Maryland Department of Natural Resources
FISHERIES SERVICE
Cooperative Oxford Laboratory
904 S Morris Street
Oxford, Maryland 21654-9724

John R. Griffin
Secretary

Carolyn D. Davis
Deputy Secretary

Memorandum
Sept. 8, 1997

To QM1 - Aids to Navigation (AOW) U.S. Coast Guard - Portsmouth Va

From Gary Smith - Chief Mapping and Analysis Project.

Subject: Notice to Mariners - Important Information

We have recently constructed oyster shell reefs in the Maryland portion of Chesapeake Bay at three locations. These reefs were permitted by the Corps of Engineers. They were constructed in approximately 22 feet of water at all locations, and potentially reduce water depth over their tops to 12 feet. Auth min depth

At each location, four individual reefs were constructed within an approximate 500 foot radius locations are.

Kedges Straits - Southwest Middle Ground:
Cook's Pt. Choptank River
Strong Bay - Chester River

The first two sites were built in the past two weeks. I phoned in my request for this construction to be put in Notices to Mariners at several Coast Guard offices I was clearly told that these notices would be posted. Please check if this really happened.

I now wish to notify you that we are beginning construction at the third site - Strong Bay
Coordinates in degrees and decimal minutes for the center point of these reefs are

~~76 19.110~~ ~~39 01.341~~ [redacted]

Reefs will be within a 500 ft. radius of this point Please contact me with any questions

Thank you.

Telephone

1265

AUG 18 1999

Parris N. Glendening
Governor

Maryland Department of Natural Resources
FISHERIES SERVICE
Cooperative Oxford Laboratory
904 S. Morris Street
Oxford, Maryland 21654-9724

John R. Griffin
Secretary

Carolyn D. Davis
Deputy Secretary

Memorandum
June 6, 1999

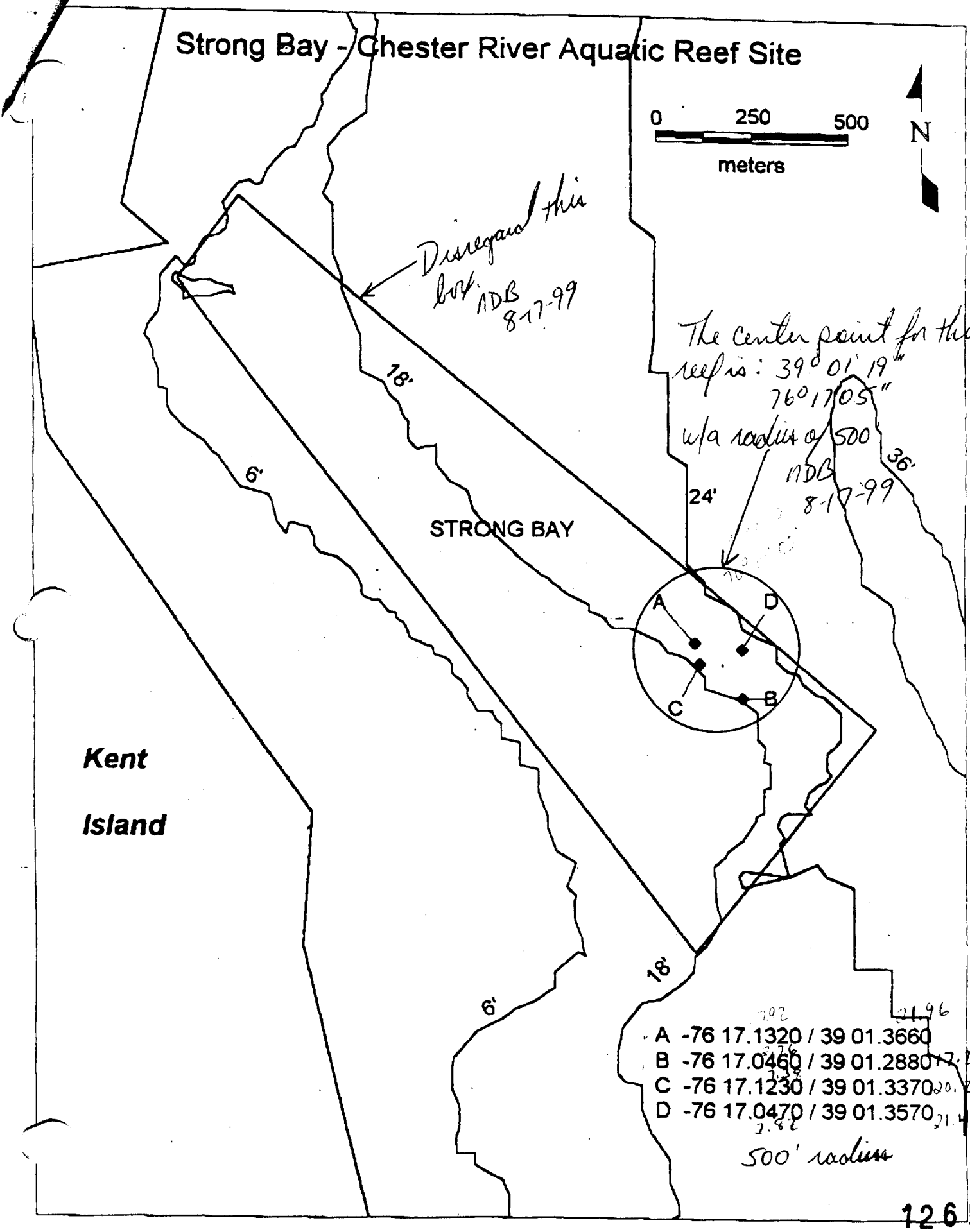
To: Stephen Kerry
Hydrographic Survey
NOS / NOAA — 410-226-0078
From: Gary Smith
Chief, Mapping and Analysis Project
Cooperative Oxford Laboratory
Fisheries Service
MD Dept. of Natural Resources
Subject: Oyster Reef Construction - Summer 1997

In response to your phone call I am including charts showing oyster reefs constructed under EPA/NOAA funding at three locations in the MD bay. At each site four reefs were constructed of oyster shell. Each individual reef was constructed of 2,000 cu. yds. of oyster shell. Water depth at each site was approximately 22 ft. Reef surfaces were leveled at 10 ft. above the seabed. An amendment to an existing Corps of Engineers permit was obtained to construct these reefs [CENAB-OP-RS - 92-65749-9].

At the time of construction we notified the Coast Guard immediately after the completion of each individual reef, for posting in Notices to Mariners. On Sept. 8, 1997, I additionally faxed the included memo to the location I was instructed to by the Coast Guard.

Telephone:
DNR TTY for the Deaf: (410) 974-3683

1265
AUG 18 1999


Strong Bay - Chester River Aquatic Reef Site
0 250 500
meters
N
Disregard this
bot NDB 8-17-99
The center point for this reef is: 39° 01' 19" 76° 17' 05"
w/a radius of 500'
NDB 8-17-99
18'
6'
24'
36'
STRONG BAY
A
B
C
D
Kent
Island
A -76 17.1320 / 39 01.3660
B -76 17.0460 / 39 01.2880
C -76 17.1230 / 39 01.3370
D -76 17.0470 / 39 01.3570
500' radius

DEPARTMENT OF THE ARMY
BALTIMORE DISTRICT, U.S. ARMY CORPS OF ENGINEERS
P.O. BOX 1715
BALTIMORE, MD 21203-1715

REPLY TO
ATTENTION OF

AUG 20 1997

Operations Division

Subject: CENAB-OP-RS(MD DNR/Shell Dredging)92-65749-9

Mr. Gary Smith
Maryland Department of Natural Resources
Cooperative Oxford Laboratory
904 Morris Street
Oxford, Maryland 21654

Dear Mr. Smith:

I am replying to your request dated August 19, 1997, for an amendment to the subject Department of the Army (DA) permit issued on June 16, 1993, and modified on July 2, 1996, and May 23, 1997, to perform work in the Chesapeake Bay near Pooles Island and the mouth of Fairlee Creek, Kent County, Maryland.

As a result of our reevaluation of your project, including the requested modification, the project with the modification has been found to be "not contrary to the public interest."

Therefore, the modification is approved and the permit work description is amended to read:

"To hydraulically dredge approximately 2.25 million cubic yards of fossil oyster shell and associated bottom material. Approximately 35% of the solid material will be redeposited within the dredged area. The redeposited solids will be spread in a uniform layer in the excavations to a depth below the elevation of the existing bottom by means of an elephant trunk discharge pipe extended over the side of the dredge vessel. The areas to be dredged are outlined on the plan map as areas "D" and "F". The width of a dredge cut will not exceed 500 feet. The dredged shells will be planted on selected natural oyster bars throughout the Chesapeake Bay and its tributaries. Some of the dredged oyster shell will be placed as mounds 50 meters in diameter and 3 meters high in the following locations: Strong Bay near Kent Island, Queen Anne's County (2 mounds); the Choptank River near Cook Point, Dorchester County (2 mounds); and the Chesapeake Bay west of Smith Island, Somerset County (1 mound). All work is to be completed in accordance with the attached plans."

1265
AUG 18 1997

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

March 1, 2000

Commander(oan)
U.S. Coast Guard District Five
431 Crawford Street
Portsmouth, Virginia 23704-5004

Dear Sir,

While conducting a hydrographic survey in the vicinity of the entrance to the Chester River, Maryland (project OPR-E346-BH, registry H-10859), the following wrecks, and obstructions (Obstn) were discovered by the NOAA S/V BAY HYDROGRAPHER. I recommend all items be included in the next danger to navigation notice to local mariners. All items were investigated with 200% side scan sonar coverage and least depths were determined with multibeam sonar. Positions were determined using DGPS. All positions are NAD 83.

Depth Item with least depth	Latitude	Longitude
Obstruction 36 ft	39° 07' 25.1"N	76° 18' 54.8"W
Obstruction 21 ft	39° 05' 24.8"N	76° 17' 45.6"W
Wreck 19 ft	39° 04' 40.0"N	76° 15' 30.6"W
Wreck 32 ft	39° 04' 06.5"N	76° 16' 14.3"W
Obstruction 33 ft	39° 04' 08.6"N	76° 18' 51.6"W
Submerged Pile	39° 06' 45.6"N	76° 17' 53.1"W
Submerged Pile	39° 06' 12.5"N	76° 17' 13.3"W
Sounding 8 ft	39° 01' 17.2"N	76° 17' 02.2"W

Affected Nautical Charts:

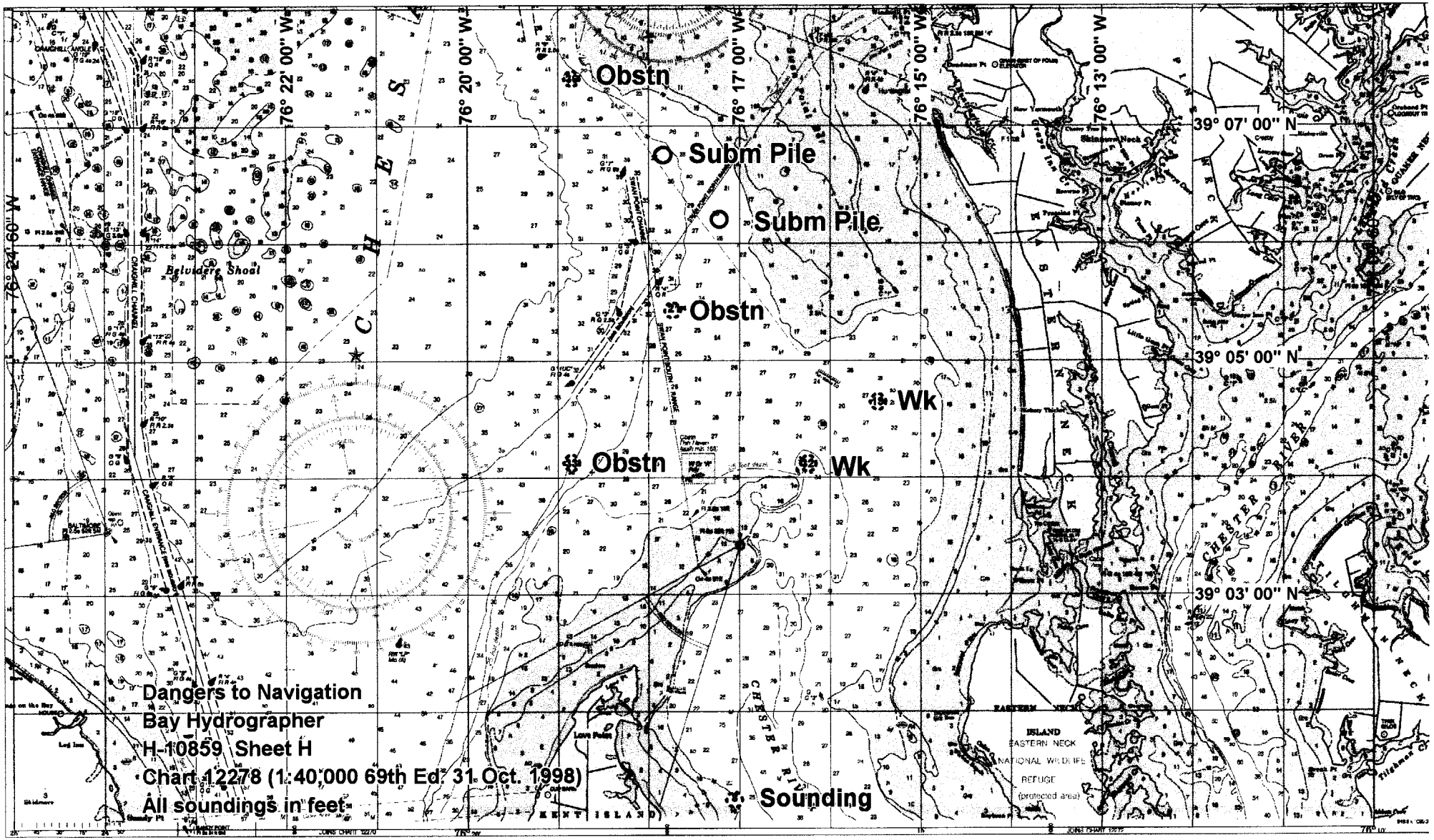
Chart Number	Edition Number	Date	Horizontal Datum
12278	69th ed.	31 Oct 1998	NAD 83
12273	50th ed.	02 Oct 1999	NAD 83
12272	27th ed.	07 June 1997	NAD 83
12263	48th ed.	11 Oct 1997	NAD 83

The attached chartlet from chart 12278 depicts the wrecks, and obstructions to be added to the chart. Questions concerning this report should be directed to the Atlantic Hydrographic Branch by calling 757-441-6746.

Sincerely,

LT Shepard M. Smith
OIC, BAY HYDROGRAPHER

Attachment
cc: NIMA
N/CS26
N/CS31


Obstn
Subm Pile
Subm Pile
Obstn
Wk
Obstn
Wk
Sounding
76° 22' 00" W
76° 20' 00" W
76° 17' 00" W
76° 15' 00" W
76° 13' 00" W
76° 24' 60" W
39° 07' 00" N
39° 05' 00" N
39° 03' 00" N
Belvidere Shoal
CHESAPEAKE
CHURCHILL CHANNEL
CHESTER RIVER
EASTERN NECK
ISLAND
NATIONAL WILDLIFE
REFUGE
(protected area)
KENT ISLAND
Dangers to Navigation
Bay Hydrographer
H-10859 Sheet H
Chart 12278 (1:40,000 69th Ed. 31 Oct. 1998)
All soundings in feet

REPORT OF DANGERS TO NAVIGATION

Hydrographic Survey Registry Number: H10859

Survey Title: State: Maryland
Locality: Chesapeake Bay
Sublocality: Entrance To Chester River

Project Number: OPR-E346-BH

Survey Date: March 17 - August 18, 2000

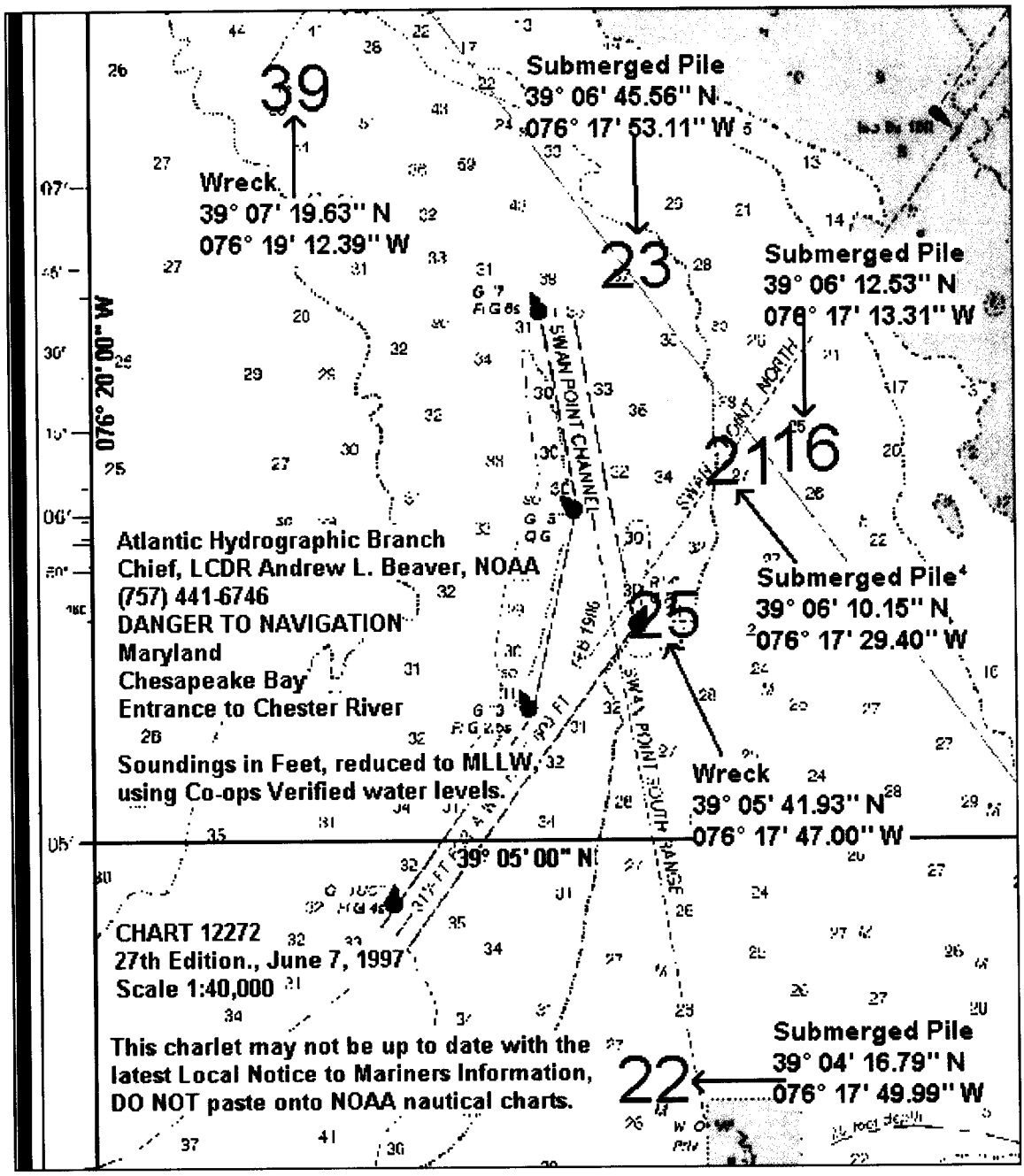
Features are reduced to Mean Lower Low Water (MLLW) using predicted tides.
Horizontal datum is North American Datum of 1983 (NAD83).
Positions were determined using Differential Global Positioning System (DGPS).

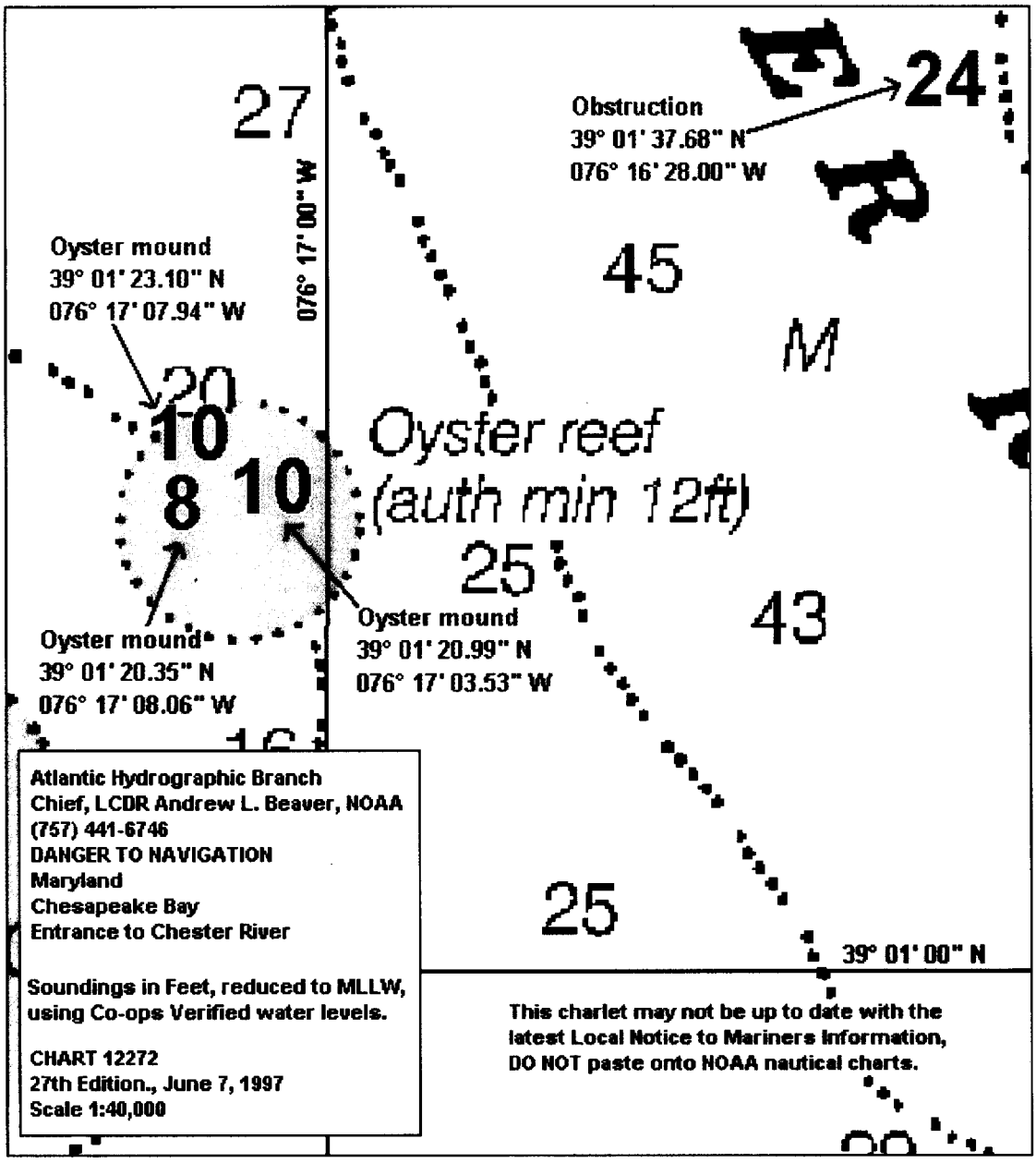
Charts affected: 12263 49th Edition/ May 09, 1998, scale 1:80,000, NAD83
12272 27th Edition/ June 07, 1997, scale 1:40,000, NAD83
12273 50th Edition/ October 02, 1999, scale 1:80,000, NAD83
12278 70th Edition/ Mar 04, 2000, scale 1:40,000, NAD83

DANGERS TO NAVIGATION

FEATURE	DEPTH	LATITUDE (N)	LONGITUDE (W)
Submerged Pile	23 feet	39/06/45.56	076/17/53.11-Already Reported
Submerged Pile	22 feet	39/04/16.79	076/17/49.99
Submerged Pile	16 feet	39/06/12.53	076/17/13.31-Already Reported
Submerged Pile	21 feet	39/06/10.15	076/17/29.40
Wreck	25 feet	39/05/41.93	076/17/47.00
Obstruction	24 feet	39/01/37.68	076/16/28.00
Oyster Mound	10 feet	39/01/23.10	076/17/07.94
Oyster Mound	8 feet	39/01/20.35	076/17/08.06
Oyster Mound	10 feet	39/01/20.99	076/17/03.53
Wreck	39 feet	39/07/19.63	076/19/12.39

Questions concerning this report should be directed to the Chief, Atlantic Hydrographic Branch at (757) 441-6746.


39
Wreck
39° 07' 19.63" N
076° 19' 12.39" W
Submerged Pile
39° 06' 45.56" N
076° 17' 53.11" W
23
Submerged Pile
39° 06' 12.53" N
076° 17' 13.31" W
2116
Submerged Pile
39° 06' 10.15" N
076° 17' 29.40" W
25
Wreck
39° 05' 41.93" N
076° 17' 47.00" W
22
Submerged Pile
39° 04' 16.79" N
076° 17' 49.99" W
076° 20' 00" W
39° 05' 00" N
SWAN POINT CHANNEL
SWAN POINT SOUTH RANGE
SWAN POINT NORTH
Atlantic Hydrographic Branch
Chief, LCDR Andrew L. Beaver, NOAA
(757) 441-6746
DANGER TO NAVIGATION
Maryland
Chesapeake Bay
Entrance to Chester River
Soundings in Feet, reduced to MLLW,
using Co-ops Verified water levels.
CHART 12272
27th Edition., June 7, 1997
Scale 1:40,000
This charlet may not be up to date with the
latest Local Notice to Mariners Information,
DO NOT paste onto NOAA nautical charts.


27
076° 17' 00" W
Obstruction
39° 01' 37.68" N
076° 16' 28.00" W
24
Oyster mound
39° 01' 23.10" N
076° 17' 07.94" W
45
M
20
10
8
10
Oyster reef
(auth min 12ft)
25
43
Oyster mound
39° 01' 20.99" N
076° 17' 03.53" W
Oyster mound
39° 01' 20.35" N
076° 17' 08.06" W
Atlantic Hydrographic Branch
Chief, LCDR Andrew L. Beaver, NOAA
(757) 441-6746
DANGER TO NAVIGATION
Maryland
Chesapeake Bay
Entrance to Chester River
Soundings in Feet, reduced to MLLW,
using Co-ops Verified water levels.
CHART 12272
27th Edition., June 7, 1997
Scale 1:40,000
25
39° 01' 00" N
This charlet may not be up to date with the
latest Local Notice to Mariners Information,
DO NOT paste onto NOAA nautical charts.

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H10859

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
12272	11-9-2000	Deborah C. Ol	Full [redacted] After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM [illegible] WHICH MAY BE USED