

H10744

NOAA FORM 76-35A	
U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL OCEAN SERVICE	
DESCRIPTIVE REPORT	
Type of Survey	Hydrographic Side Scan Sonar
Field No.	AHP-10-2-97
Registry No.	H-10744
LOCALITY	
State	South Carolina
General Locality	Charleston Harbor
Sublocality	Morris Island to Crab Bank
19 97	
CHIEF OF PARTY LT J. A. Illg	
LIBRARY & ARCHIVES	
DATE	AUG 20 1998

Substitute for NOAA Form 77-28

Hydrographic Title Sheet

Register No. : H-10744

Field No. :AHP-10-02-97

State: South Carolina

General locality: Charleston, Harbor, ~~Atlantic Coast~~

Locality: Morris Island to Hog Island *CRAB BAY*

Scale 1:10,000 Dates of Survey: 4/29/97-8/13/97

Instruction dated: March 19, 1997

Vessel: 0518

Chief of Party: Lt. James Illg

Surveyed by: DBE, RWR, PMW

Soundings taken by echo sounder, leadline: Innerspace Fathos #175

Graphic record scaled by: RWR, DBE, PMW, **

Graphic record checked by RWR, DBE, PMW, **

Protracted: _____ Automated plot by: ^(FIELD) Mapinfo/HP750C

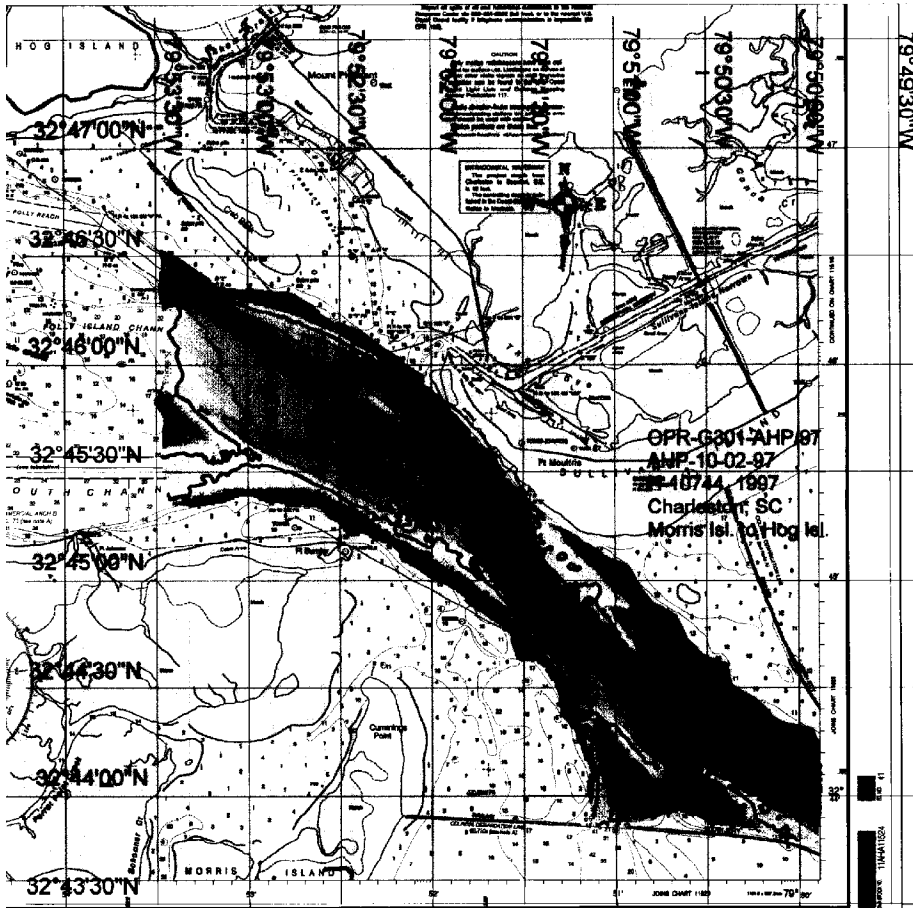
Verification by: Atlantic Marine Center *Atl. Hydrographic Branch*
PERSONNEL

Soundings in : Meters at MLLW _____
=====

Remarks: ** = Robert W. Ramsey Jr., David B. Elliott, Phillip M. Wolf,
NOTES IN RED WERE MADE IN THE DESCRIPTIVE REPORT
DURING THE OFFICE PROCESSING

Awois ✓ § SURF ✓ by MBH 8/4/98

INDEX OF SHEETS



SOUNDINGS IN FEET

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Charleston Harbor
SOUNDINGS IN FEET SCALE 1:25,000

11524

OPR-0301-AHP/97
ANP-10-02-97
1-10744, 1997
Charleston, SC
Morris Is. to Hog Is.

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY H-10744
OPR-G301-AHP
FIELD NO. AHP-10-2-97
SCALE: 1:10,000
1997
ATLANTIC HYDROGRAPHIC PARTY TWO
CHIEF OF PARTY: LT James A. Illg, NOAA

A. PROJECT

This survey was conducted according to Hydrographic Project Instructions OPR-G301-AHP, Charleston Harbor, South Carolina, Morris Island to Hog Island, dated March 19, 1997.

The purpose of project OPR-G301-AHP is to provide a navigable area survey with 200 percent side scan sonar coverage within selected areas of Charleston Harbor, South Carolina and adjoining waterways to the 12-foot contour, except as modified by the project instructions.

The survey is being conducted in response to a request from the Charleston Branch Pilots Association.

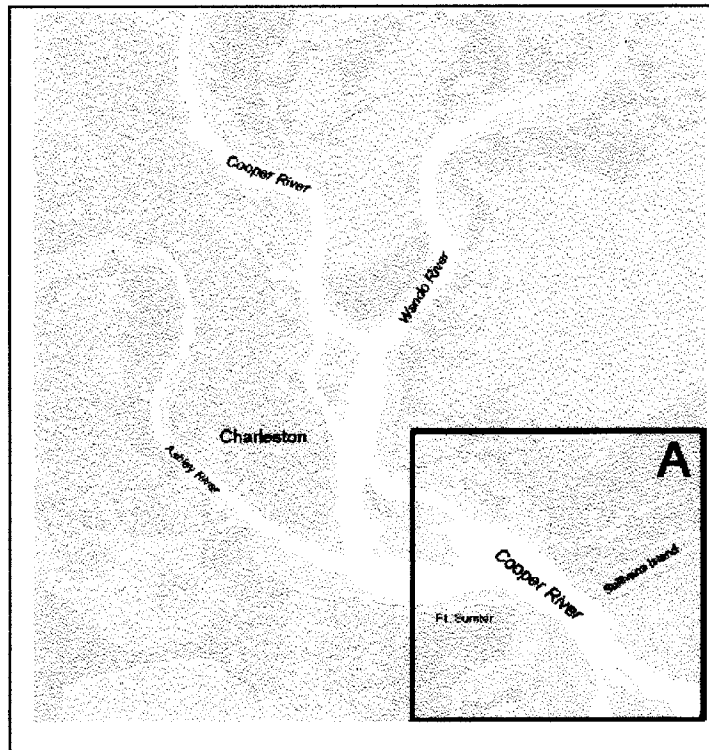


Figure 1

B. AREA SURVEYED

The area surveyed as specified by the Project Instructions (Figure 1) is defined as Sheet "A." The approximate survey area limits are :

North - 32°46'30.72"N
South - 32°43'41.52"N
East - 079°49'50.88"W
West - 079°53'31.20"W

This survey was conducted from April 29, 1997 (DN 119) through August 13, 1997 (DN 225).

C. SURVEY VESSEL

NOAA launch 0518, a 21-foot MonArk, was used to collect all survey data. There were no unusual vessel configurations or problems encountered with the vessel.

D. AUTOMATED DATA ACQUISITION AND PROCESSING *SEE ALSO THE EVALUATION REPORTS.*

HYPACK version 6.4a was used for on-line data acquisition. HPS programs updated through July 29, 1997 were used for data processing. MapInfo Professional Version 4.0.2 with Vertical Mapper Version 1.5 was used to support processing and plot all survey data. The NOS program VELOCITY (Version 2.10) and Microsoft Word (Version 7.0) were also used during this survey.

E. SONAR EQUIPMENT

An Edgetech model 260-TH image correcting side scan sonar recorder (S/N 020417) with a model 272-TD towfish (S/N 020892) was used throughout this survey. The side scan sonar equipment was used to obtain 200% bottom coverage and to investigate AWOIS items using NOAA launch 0518. The system frequency used was 100 kHz. The recorder was set on 50/75/100/150-meter range scales depending on the depth of water being surveyed. There were no water depths greater than 24.4 meters. Confidence checks were performed daily on existing buoys in the Charleston, SC channels.

Bottom coverage of 200% was obtained in all the required survey areas and AWOIS items where water depth and/or hazards permitted. Side scan sonar coverage was conducted to the 12-foot curve and single beam hydrography at reduced line spacing was performed in areas less than twelve feet. The towfish was deployed off the starboard quarter of the vessel, which proved very stable. Distorted images caused by strong tidal currents were seen periodically. All contacts and shadows were manually scaled and entered into an HDPS contact table to determine the height off the bottom. The significant contacts were then compared by position as well as common depth and relationship to channels to determine if diver investigations were warranted. A total of 18

diver investigations were made on this survey utilizing a Diver Hand Held sonar (DLS) as the primary targeting tool. A total of 28 contacts were resolved by hydrographic development at 10-meter line spacing. A total of 103 contacts were deemed insignificant to warrant further investigation. All areas surveyed were track line or swath line plotted to insure complete coverage.

F. SOUNDING EQUIPMENT

An Innerspace model 448 depth sounder, S/N 175, was used to collect all echo soundings on this survey. A standard lead line calibrated in meters, S/N 0518, was used during this survey for comparison with the echo sounder. No problems were encountered with any of the sounding equipment.

G. CORRECTIONS TO ECHO SOUNDINGS

The instrument used for determining corrections for the speed of sound through the water column was a Seabird-Seacat Velocity Profiler, model 19-03, S/N 198671-1477. This unit was calibrated by the manufacturer on December 18, 1996. Data quality assurance tests were performed after each cast. Program VELOCITY was used for computing the correctors. Corrections were applied to the sounding plot using the HPS REAPPLY program. Copies of the velocity tables and support documentation are in the Survey Separates. *FILED WITH THE ORIGINAL FIELD RECORDS*

Correctors for the velocity of sound through water were determined from the casts listed below:

<u>Cast No.</u>	<u>Table No.</u>	<u>Deepest * Depth(m)</u>	<u>Applicable DN(s)</u>	<u>Cast Position</u>		<u>Day Taken</u>
1	1	18.7	118-122	32°44'30"N	079°51'20"W	119
2	2	20.4	125-129	32°44'12"N	079°51'20"W	119
3	3	31.5	132-136	32°44'45"N	079°51'25"W	133
4	4	23.9	139-143	32°45'00"N	079°51'30"W	139
5	5	22.2	153-164	32°46'00"N	079°52'30"W	154
6	6	20.6	169	32°46'00"N	079°52'45"W	169
7	7	29.4	176 (Dives)	32°45'06"N	079°51'36"W	176
8	8	21.2	189	32°45'18"N	079°52'00"W	189
9	9	29.8	196-198	32°45'00"N	079°51'36"W	196
10	10	18.9	209-211	32°44'54"N	079°51'12"W	210
11	11	19.4	216-218	32°46'24"N	079°53'30"W	217
12	12	22.2	223-225	32°45'24"N	079°51'48"W	223

* extended depth after processing

The lead line for launch 0518 was calibrated using a steel tape on January 6, 1997. No corrections were necessary. A copy of the calibration form is in the Survey Separates.* A static draft of 0.3 meters was applied to the final sounding plot by the HPS REAPPLY program. The draft was measured by subtracting the difference from a punch mark on the side of launch 0518, 0.6 meter above the transducer, to the water surface.

Settlement and squat measurements for launch 0518 were taken on April 28, 1997 (DN 118). These measurements were conducted in the Cooper River using the level method. The data from this test is included in the Survey Separates.* Settlement and squat correctors were applied to the final sounding plot using the HPS REAPPLY program.

Field tide reduction of soundings is based on predicted tides from station 866-5530, Charleston, SC. The Product and Services Branch, Datums Section (N/OES231), provided predicted tides for this reference station on diskette for HPS. Correctors for one tidal zone on this survey were used as designated by the Project Instructions. The zone was numbered with the following correctors:

Zone #CH1	Time (min.)		Range Ratio x0.97
	High Water + 00 min	Low Water + 00 min	

All elevations and soundings on survey H-10744 are based on MLLW unless otherwise specified.

Approved tide levels were requested from the Product and Services Branch, Datums Section (N/OES231), in a letter dated September 3, 1997. A copy is appended to this report. *
APPROVED TIDE + ZONING WERE APPLIED DURING OFFICE PROCESSING
 All tide gauges required for survey H-10744 were NGWLMS gauges installed by Atlantic Hydrographic Party and Atlantic Operations Section personnel.

H. CONTROL STATIONS *SEE ALSO THE EVALUATION REPORT*

The horizontal control datum for this project is the North American Datum (NAD) of 1983. The control reference station used for this survey was the USCG DGPS Charleston beacon (Station ID 808) located at 32°45'27.214"N, 079°50'34.335"W.

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used for all hydrographic data acquired on this survey. An Ashtech sensor (S/N 700417A1065) and antenna (S/N 70039A10542) were used as the remote station on launch 0518.

DGPS performance checks were conducted in accordance with FPM 3.4.4 by comparing the DGPS position of the vessel to the third-order position of the Mt. Pleasant Rear Range Light at

** FILED WITH THE ORIGINAL FIELD RECORDS*

32°45'27.214"N, 079°50'34.335"W. To obtain a performance check, the launch was brought alongside the checkpoint and the easting, northing, number of SVs, HDOP, and time of observation were noted on the echogram. These values were then entered into an Excel spreadsheet which computes the acceptable error margin (based on the HDOP) and also the observed difference between the known and observed position. The table of these comparisons is included in the Survey Separates.* All of the observed differences fell well within the allowable limit.

J. SHORELINE *SEE ALSO THE EVALUATION REPORT*

There were no photogrammetric source data for this project.

K. CROSSLINES

A total of 9.2 linear nautical miles of crosslines were run. Crossline soundings agree with the main scheme soundings within 0.2 meter, with the exception of some 0.5 meter differences caused by weather influence on the tides. The application of smooth tides should create a closer agreement in sounding comparison.

L. JUNCTIONS *SEE ALSO THE EVALUATION REPORT.*

This survey junctions with the following:

<u>Survey No.</u>	<u>Year</u>	<u>Scale</u>	<u>Junction Area</u>
OPR-G301 Sheet "B"	Pending	1:10,000	North and West edge

M. COMPARISON WITH PRIOR SURVEYS *SEE ALSO THE EVALUATION REPORT*

See the Atlantic Hydrographic Branch's "Evaluation Report for H-10744."

N. ITEM INVESTIGATION REPORTS *SEE ALSO THE EVALUATION REPORT*

There were a total of 5 AWOIS items addressed for this survey. Methods for investigating the AWOIS items were visual investigations, diver investigations, 200% side scan sonar investigations, and echo sounder investigations. The following AWOIS reports are supplemented by dive reports that can be found in the Survey Separates.*

* FILE WITH THE ORIGINAL SURVEY RECORDS

N.1. AWOIS 7589 - Wreck (Ft Helms)

Reported Position: 32°44'00.63"N 079°51'47.30"W

Chart 11524

Survey Position Number: 6100

Reported as 25 foot sailboat wreck on LNM 36/82. This small sailboat wreck was reported to lie in a shallow flats area approximately 220 meters north of the South Jetty, off Cummings Point. The area was too shallow to conduct side scan sonar operations. Therefore, a 120-meter diver search was conducted with the Diver Locator Sonar (DLS) with negative results. The reported wreckage was most likely broken up or moved to shore during Hurricane Hugo. The hydrographer recommends removal from the chart. *CONCUR. DELETE (F), MASTS PA.*

N.2. AWOIS 7590 - Obstruction

Reported Position: 32°44'54.73"N 079°51'46.10"W

Chart 11524

Survey Position Number: 10



Figure 2

Reported as destroyed dredge range tower PA with foundation remaining in LNM 43/83. This item was found to exist as an abandoned front range tower exposed 7 meters at the surveyed position of 32°44'55.07"N, 079°51'46.25"W (Figure 2). The hydrographer recommends removal of the charted obstruction and adding an unlighted platform at the surveyed position. *CONCUR*

IN PART. SEE SECTION N. OF THE EVALUATION REPORT.

N.4. AWOIS 7592 - Submerged Wreck

Reported Position: 32°45'59.63"N 079°52'19.30"W

Chart 11524

Survey Position Numbers: 3434 and 3435

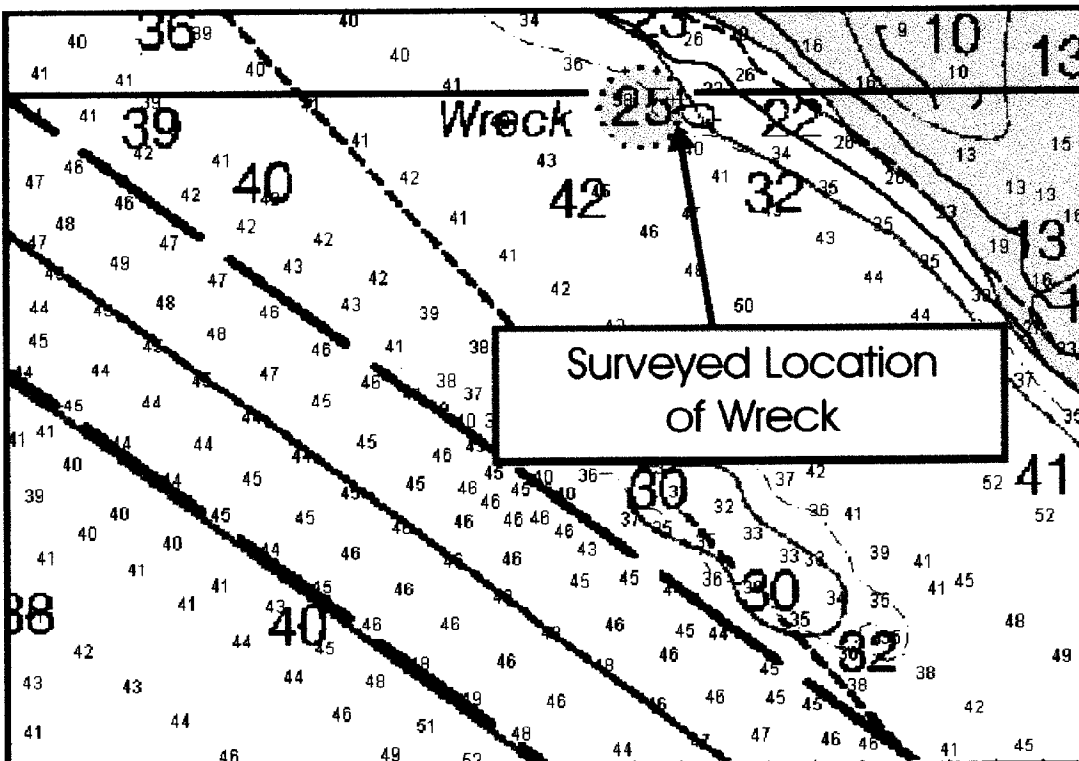


Figure 4

Reported as a wreck in 33 feet of water with a 25 foot least depth at MLW on CL/559/55 USGS. This item was found to exist while conducting side scan sonar operations. A diver investigation was conducted. The submerged wreck was found partially buried in the bottom and was located approximately 30 meters due east of the currently charted position, lying on a NW/SE axis. A detached position was acquired at each end of the wreck. The northwest position marks the least depth. The wreck was located at:

Northwest End - 32° 45'59.77"N 079°52'18.15"W 7.4 meters (24.3 ft) *

Southeast End - 32° 45'59.18"N 079°52'16.90"W 7.6 meters (24.9 ft)

The hydrographer recommends revising the currently charted wreck symbol to the position found by this survey with the surveyed least depth. * CONCUR. CHART AS (24) WK.

N.5. AWOIS 9666 - Anchorage Area A

Reported Position: 32°45'50.90"N 079°52'58.00"W

Chart 11524

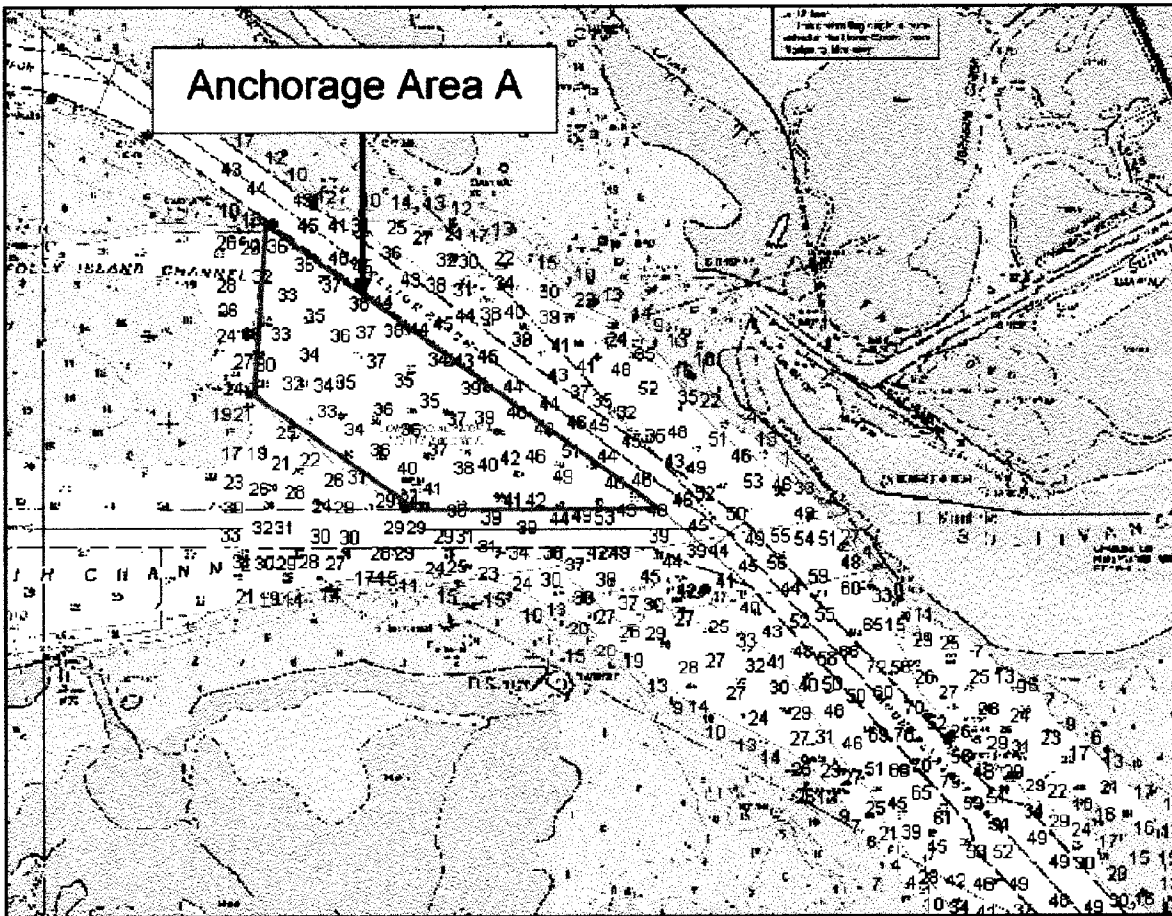


Figure 5

Reported as "Anchorage Area A" in CL890/84--CFR VOL. 29, No. 126, part 110. This area (Figure 5) was surveyed with 200% side scan sonar coverage and was found to contain some submerged obstructions which are addressed in the diver reports in the Survey Separates. * Charted soundings throughout this area agree with those acquired on H-10744. The hydrographer recommends that the anchorage area designation be retained. The yellow "L" buoy (LL No. 2140) is still being maintained as a limit buoy for the anchorage. *CHART PRESENT*

SURVEY DEPTHS

** FILED WITH THE ORIGINAL FIELD RECORDS*

O. COMPARISON WITH THE CHART *SEE ALSO THE EVALUATION REPORT*

Comparison was made with the following charts:

<u>Chart No.</u>	<u>Edition</u>	<u>Edition Date</u>
11524	41st	Feb 24/96
11521	22nd	Jan 29/96

There were two danger to navigation letters submitted for H-10744. They describe three uncharted obstructions, a submerged groin and an uncharted wreck as listed below.

<u>DESCRIPTION</u>	<u>NAD 83 POSITION</u>	<u>DEPTH (ft)</u>	<u>Letter Dated</u>
Submerged Wreck	32°44'31.00"N 079°50'54.22"W	41	Aug 13, 1997
Obstruction	32°45'20.06"N 079°52'29.88"W	10	Aug 13, 1997
Obstruction	32°45'27.41"N 079°51'33.86"W	43	Aug 13, 1997
Obstruction	32°45'28.97"N 079°51'37.07"W	27.26	Aug 13, 1997
Submerged Groin	32°45'41.72"N 079°51'48.16"W	10.5	Oct 29, 1997

A copy of the letters are *APPENDED TO THIS REPORT* in the Appendices.

Discrepancies with the chart found by this survey were:

- The "RN2" buoy located at the break in the south jetty is charted in the wrong location on Chart 11521. The position on chart 11524 is correct. The survey position is 32°43'51.21"N 079°51'00.00"W. *CHARTED-OFFSET TO PORTRAY 18-FT SOUNDING*
- The 30-foot sounding charted at 32°45'21.2"N, 079°52'00.0"W on the 42nd edition of chart 11524 is shown as a 39 foot depth on the 16th edition of chart 11523 (see Figure 6). This survey found depths of 41 feet at MLLW. The hydrographer recommends charting soundings from this survey on both charts. *CONCUR*

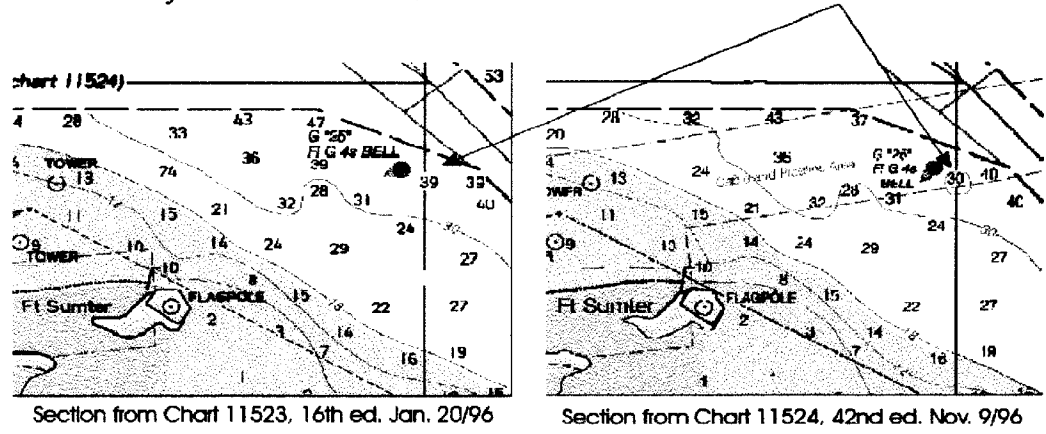
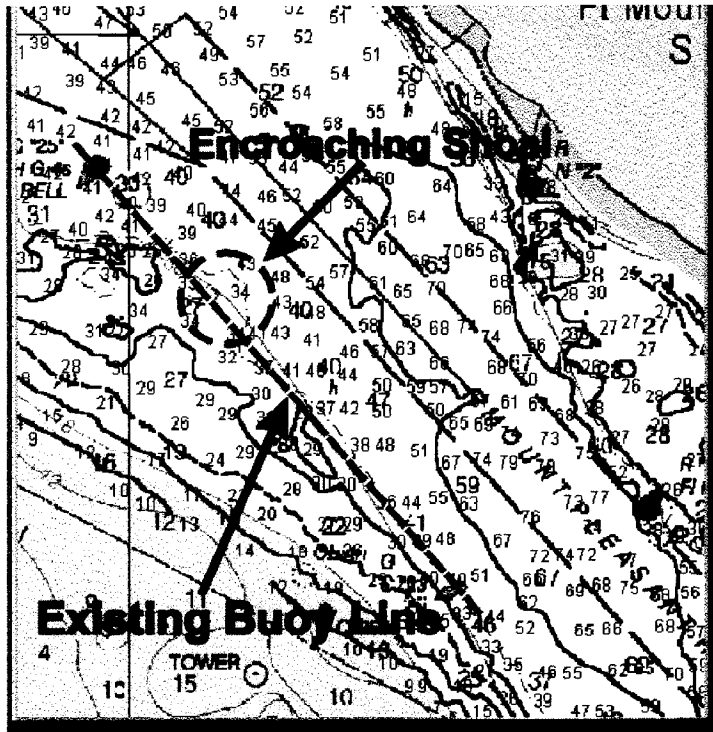


Figure 6

- Lighted buoys G"23" and G"25" along the SW side of the Mount Pleasant Range do not adequately mark this section of the channel at their current locations. A 34-foot shoal is within the channel limits when a line is drawn between these buoys (see figure 7). The controlling depth published on the charts for the left outside quadrant of this channel is 41 feet. The USCG has been advised of the need to re-locate these buoys. *CONCUR.*



VICINITY OF

*LAT: 32-45-14 N
 LON: 79-51-51 W*

Figure 7

Survey soundings agree within 2 feet (0.6m) in areas charted in white. Discrepancies between the survey soundings and charted depths in blue tinted areas were more varied. An exhaustive comparison of these areas was not completed because of the use of predicted tides for field reduction of soundings and the six foot tide range within the survey area. Survey soundings from H-10744 should supersede those currently charted in the common area. *CONCUR*

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

This is a complete basic hydrographic survey of the area required in the Project Instructions and is adequate to supersede all prior surveys within the common area.

Q. AIDS TO NAVIGATION *SEE ALSO THE EVALUATION REPORT.*

The following non-floating aid to navigation is maintained by the U. S. Coast Guard and lies within the survey area. The position of this aid to navigation was determined by DGPS during hydrographic operations. A comparison of the position of this fixed aid was made with the charted and USCG Light List, Volume 3, 1996 positions. The results are shown in the following table:

<u>Position No.</u>	<u>Name and (Light List No.)</u>	<u>Light List Position</u>	<u>Survey Position</u>	<u>Distance and Direction from Charted Position*</u>
9	Ft. Sumter FNT RNG LT LL # 1900	32°44.8' N 079°51.8' W	32-44-50.87 N 079-51-45.58 W	10 m / N

* Source (Chart: 11524)

There were no bridges, overhead cables or ferry routes within the limits of this survey. A submerged cable and pipeline area charted at 32°27'40.9"N, 079°52'02.2"W should remain as charted.

R. STATISTICS

<u>Description</u>	<u>Quantity</u>
Total Number of Positions	6849
Total Linear Nautical Miles of Single Beam Hydrography	60
Total Linear Nautical Miles of Cross Lines	9
Total Linear Nautical Miles of Side Scan Sonar	83
Square Nautical Completed	4
Days of Production	26
Detached Positions	33
Bottom Samples	30
Velocity Casts	12

S. MISCELLANEOUS *SEE ALSO THE EVALUATION REPORT.*

Bottom samples were taken as directed in Section 6.7 of the Project Instructions. Bottom sample positions and descriptions can be found on the DP editor printout appended to this report. The Oceanographic Log Sheet-M, NOAA Form 75-44, is included in the "Survey Separates." Bottom samples were submitted to the Smithsonian Institution as requested in the Project Instructions.

Secchi disk observations were not acquired on this survey due to the continually poor water clarity. No anomalous tidal currents were observed within the survey limits.

T. RECOMMENDATIONS

No additional field work was identified after field processing was completed. Specific recommendations are made in sections N, O and Q of this report.

U. REFERRAL TO REPORTS

None

Submitted by: Robert W. Ramsey Jr.
Atlantic Hydrographic Party

I. DANGER TO NAVIGATION REPORTS



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

Atlantic Hydrographic Party
439 West York St.
Norfolk, VA 23510-1114

August 13, 1997

Commander (oan)
U.S. Coast Guard District Seven
Brickell Plaza Federal Bldg.
909 SE First Ave.
Miami, Florida 33131-3050

Dear Sir:

While conducting a hydrographic survey of Charleston Harbor, South Carolina (registry H-10744, project OPR-G301-AHP) three uncharted obstructions and an uncharted wreck were found, as listed below. I recommend this information be included in the Local Notice to Mariners. The positions are based on NAD 83 datum and the soundings have been reduced to Mean Lower Low Water (MLLW) using predicted tides. These features were located using Differential GPS and were verified by diver investigation.


This information affects the following charts:

<u>CHART NO.</u>	<u>EDITION</u>	<u>DATE</u>
11524	42nd	Nov 09/96
11523	17th	Mar 29/97
11518	29th	May 11/96

<u>DESCRIPTION</u>	<u>NAD 83 POSITION</u>	<u>DEPTH (ft)</u>
Submerged Wreck	32°44'31.00"N 079°50'54.22"W	41
Obstruction	32°45'20.06"N 079°52'29.88"W	10
Obstruction	32°45'27.41"N 079°51'33.86"W	4
Obstruction	32°45'28.97"N 079°51'37.07"W	27

This is advance information which is subject to office review. A chart section showing the location of these dangers is attached. Questions concerning this report should be directed to me at (410) 437-9811.

Sincerely,

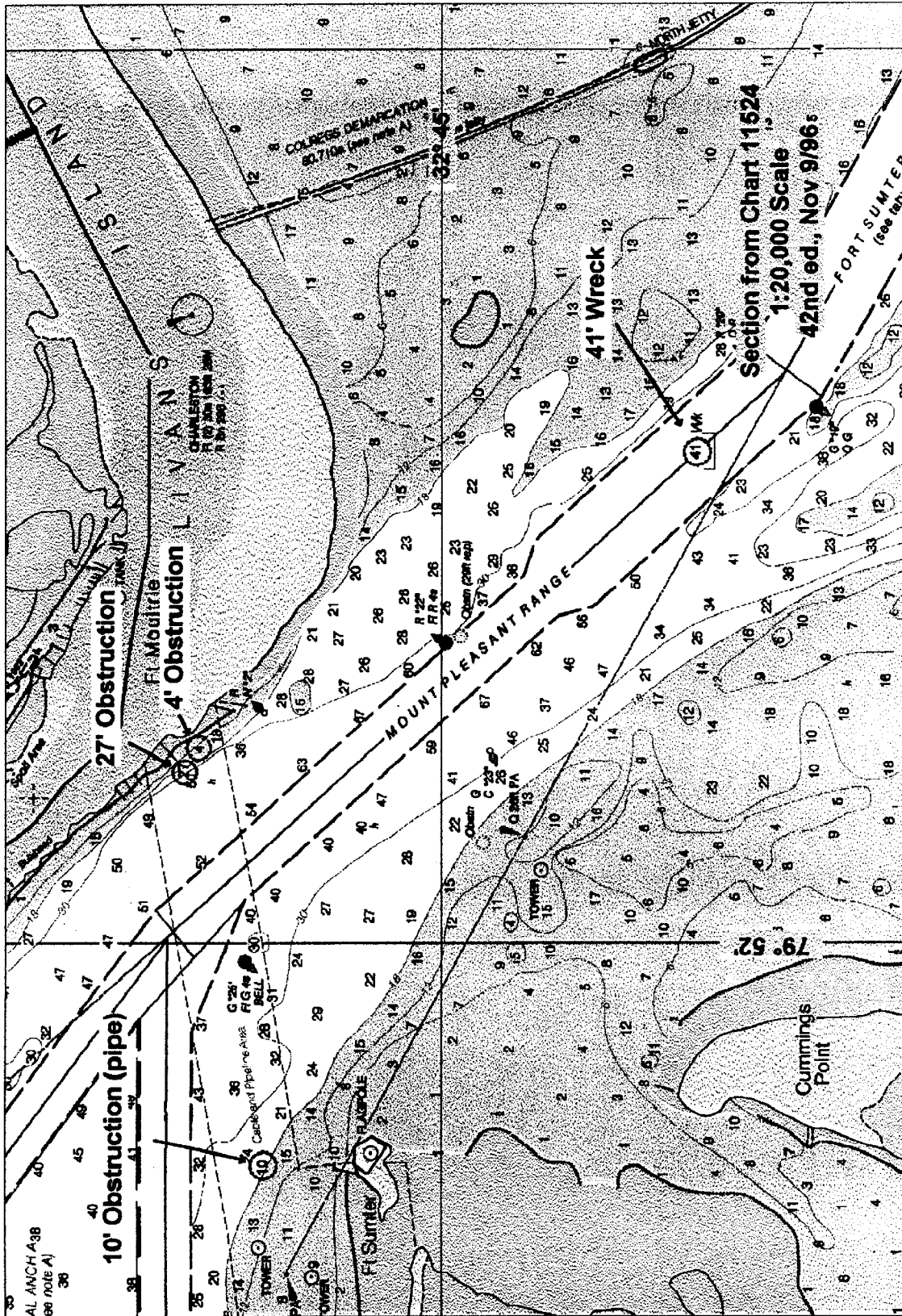

LT James A. Illg, NOAA
Chief, Atlantic Hydrographic Party

Attachment

cc: N/CS26
N/CS33
DMAHTC
Charleston Branch Pilots Assoc.



ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE, Office of Coast Survey
Atlantic Hydrographic Party
439 West York Street
Norfolk, VA 23510-1114

October 29, 1997

Commander (oan)
U.S. Coast Guard District Seven
Brickell Plaza Federal Bldg.
909 SE First Ave.
Miami, Florida 33131-3050

Dear Sir:

While conducting a hydrographic survey of Charleston Harbor, South Carolina (registry H-10744, project OPR-G301-AHP) an uncharted submerged rock groin was found, as listed below. I recommend this information be included in the Local Notice to Mariners. The position is based on NAD 83 datum and the sounding has been reduced to Mean Lower Low Water (MLLW) using predicted tides. This feature was located using Differential GPS.

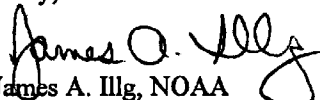
This information affects the following charts:

<u>CHART NO.</u>	<u>EDITION</u>	<u>DATE</u>
11524	42nd	Nov 09/96
11523	17th	Mar 29/97
11518	29th	May 11/96

<u>DESCRIPTION</u>	<u>NAD 83 POSITION</u>	<u>DEPTH (ft)</u>
Submerged Groin	32°45'41.72"N 079°51'48.16"W	1

This is advance information which is subject to office review. A chart section showing the location of these dangers is attached. Questions concerning this report should be directed to me at (410) 437-9811.

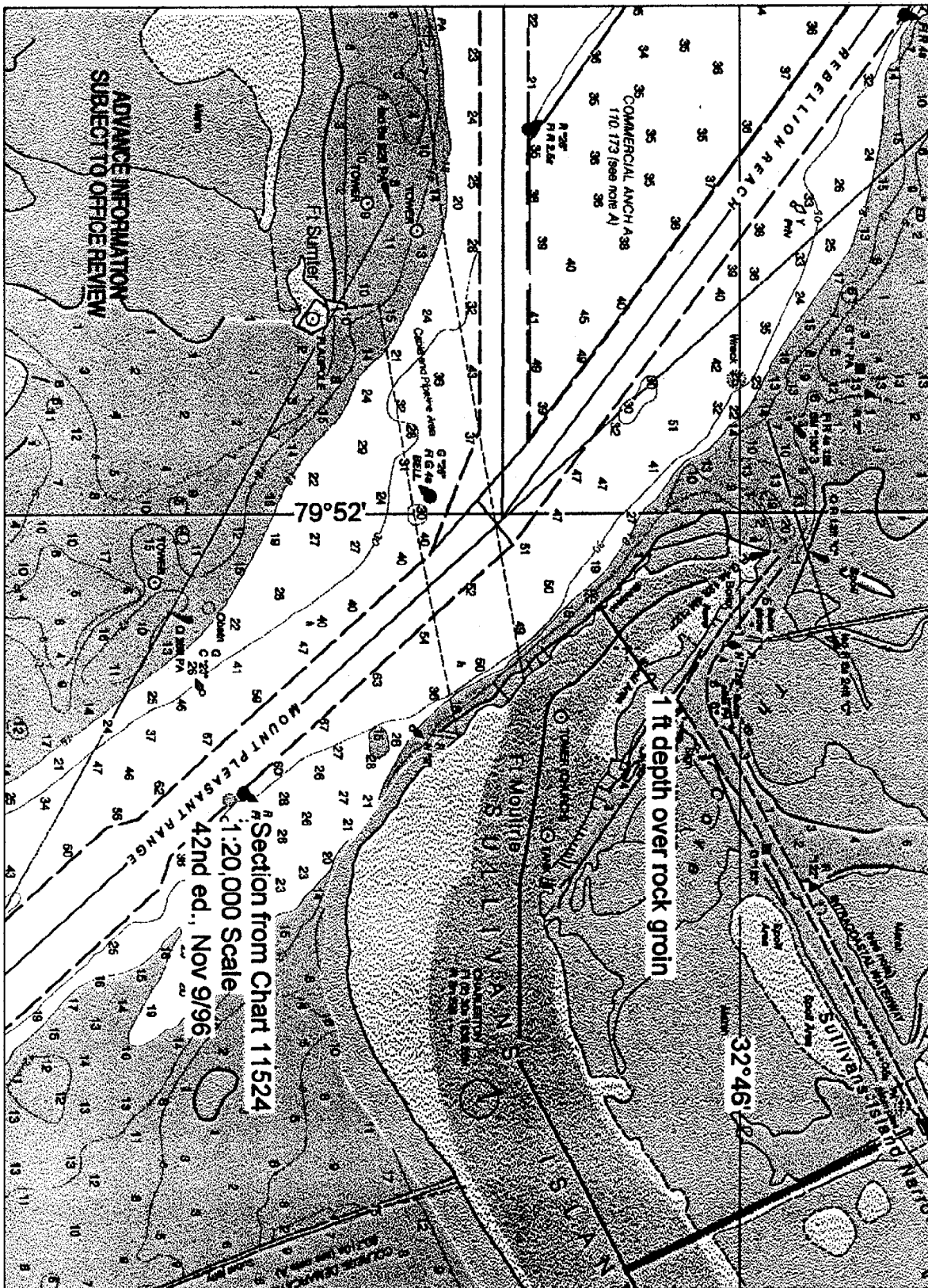
Sincerely,


LT James A. Illg, NOAA
Chief, Atlantic Hydrographic Party

Attachment

cc: N/CS26
N/CS33
NIMA/NMD/STD44





ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

79°52'

1 ft depth over rock groin


Section from Chart 11524
1:20,000 Scale
42nd ed., Nov 9/96

32°46'

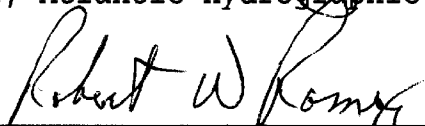
APPROVAL SHEET
Basic Hydrographic Survey
OPR-G301-AHP
AHP-10-2-97
H-10744
1997

This basic hydrographic survey was completed in accordance with the Project Instructions for OPR-G301-AHP, the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual. All reports, records, and survey sheets were reviewed by Mr. Brian A. Link, Assistant Chief, AHP. Project reports were also reviewed by the Chief, AHP. The chief of party did not directly supervise any part of this survey.

This survey is a complete basic hydrographic survey for the area described in Section B of this report.



LT James A. Illg, NOAA
Chief, Atlantic Hydrographic Party



Robert W. Ramsey
Hydrographer-in-charge of daily operations

DGPS PERFORMANCE CHECK FORM - ATLANTIC HYDROGRAPHIC PARTY (Charleston, SC)

OPR: G301-AHP AHP 10-2-97 H-10744 SHEET A

Charleston Antenna Beacon RESTA Ant. Location (A)
Lat: 32°45'.45357[#]N Lon: 079° 50'.57225[#]W

Cal. Point- Mt Pleasant Rear Range Lt.

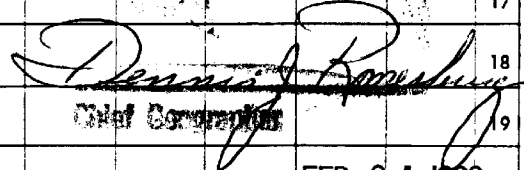
Offset to Launch Antenna: 02m due Southeast (Observed value corrected for offset)
 East : 15507.4
 North: 14935.7

Date	DN	Time	SVs	HDOF	Max. Allow. Error ' (4*HDOP)	Observed East	Observed North	Observed Diff
17 Apr.97	107	13:02	9	0.9	3.6	15507.1	14934.4	1.334166
13 Aug.97	225	17:06	7	1.2	4.8	15509.1	14933.7	2.624881



GEOGRAPHIC NAMES

Name on Survey	<div style="display: flex; justify-content: space-between;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">A CHART NO. 11524</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">B ON PREVIOUS SURVEY NO.</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">C ON U.S. QUADRANGLE MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">D FROM LOCAL INFORMATION</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">E ON LOCAL MAPS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">F P.O. GUIDE OR MAP ATLAS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">G GRAND McNALLY ATLAS</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">H U.S. LIGHT LIST</div> <div style="writing-mode: vertical-rl; transform: rotate(180deg);">K</div> </div>										
	CRAB BANK	X		X							
FORT SUMTER	X		X								2
FORT SUMTER RANGE	X										3
MOUNT PLEASANT RANGE	X										4
REBELLION REACH	X										5
SOUTH CAROLINA (title)	X										6
SOUTH CHANNEL	X										7
SULLIVANS ISLAND	X		X								8
MORRIS ISLAND	X										9
CUMMINGS POINT	X										10
											11
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 Chief Cartographer

FEB 24 1998



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 19, 1997

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G301-AHP

HYDROGRAPHIC SHEET: H-10744

LOCALITY: Charleston Harbor, S.C., Morris Island to Hog Island

TIME PERIOD: April 29 - August 13, 1997

TIDE STATION USED: 866-5530 Charleston S.C.

Lat. 32° 46.9'N Lon. 79° 55.5'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 0.000 meters

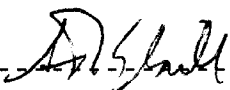
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 1.664 meters

REMARKS: RECOMMENDED ZONING

Use zone(s) identified as: EC150, SC100, CH1 & CH2

Refer to attachments for zoning information.

Note: Provided time series data are tabulated in metric units
(Meters), relative to MLLW and on Greenwich Mean Time.



CHIEF, OPERATIONAL ANALYSIS BRANCH



N/CS33-67-98

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL AIR MAIL
- REGISTERED MAIL EXPRESS
- GBL (Give number) _____

TO:

NOAA/National Ocean Service
 Chief, Data Control Group, N/CS3x1
 SSMC3, Station 6815
 1315 East-West Highway
 Silver Spring, MD 20910-3282

DATE FORWARDED

July 28, 1998

NUMBER OF PACKAGES

1 Box, 1 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.

H10744

South Carolina, Charleston Harbor, Morris Is. To Crab Bank


1 Box Containing:

- 1 Original Descriptive Report for H10744
- 1 Envelope with two (2) HISTORY OF CARTOGRAPHIC WORK (NOAA form 76-71) for H10744 for chart 11523 and 11524

1 Tube Containing:

- 1 Original Smooth Sheet for H10744
- 1 Paper Composite plot of survey H10744 for chart 11523
- 1 Paper Composite plot of survey H10744 for chart 11524
- 1 Mylar H-Drawing of H10744 for chart 11523
- 1 Mylar H-Drawing of H10744 for chart 11524

FROM: (Signature)



Richard H. Whitfield

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

Atlantic Hydrographic Branch N/CS331
 439 W. York Street
 Norfolk, VA 23510-1114

07/28/98

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: H10744

NUMBER OF CONTROL STATIONS		2
NUMBER OF POSITIONS		6849
NUMBER OF SOUNDINGS		6849
	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	31	12/24/97
VERIFICATION OF FIELD DATA	168	06/19/98
EVALUATION AND ANALYSIS	53	
FINAL INSPECTION	46	06/26/98
COMPILATION	83	07/23/98
TOTAL TIME	381	
ATLANTIC HYDROGRAPHIC BRANCH APPROVAL		07/01/98

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR H10744 (1997)**

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)
SiteWorks, version 2.01
MicroStation 95, version 5.05
NADCON, version 2.10
I/RAS B, version 5.01

The smooth sheet was plotted using a Hewlett Packard Design Jet 350C plotter.

H. CONTROL

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). 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, move the projection lines 0.637 seconds (19.64 meters or 1.96 mm at the scale of the survey) north in latitude, and 0.692 seconds (18.01 meters or 1.80 mm at the scale of the survey) east in longitude.

J. SHORELINE

Brown shoreline originates with National Ocean Service (NOS) chart 11524, 43rd Edition, Nov. 1/97 and is for orientation purposes only.

L. JUNCTIONS

There are no junctional surveys at the time of completion of the present survey.

M. COMPARISON WITH PRIOR SURVEYS

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

The present survey is adequate to supersede the prior surveys in the common area.

N. ITEM INVESTIGATION

AWOIS item #7590 is a charted dangerous obstruction in Latitude 32°44'54.73"N, Longitude 79°51'46.10"W. The obstruction was located by the hydrographer and found to be an abandoned front range tower. It is recommended that the charted dangerous obstruction be removed from the charts. It is recommended that a tower be charted. It should be noted that a tower is currently charted only on the latest edition of chart 11523 and should be retained.

**O. COMPARISON WITH CHART 11521 (22nd Edition Jan 29/96)
11523 (16th Edition Jan 20/96)
11524 (41st Edition Feb 24/96)**

Hydrography

The charted hydrography originating with prior surveys and requires no further consideration. The hydrographer makes an adequate chart comparison in section O. of the Descriptive Report. The following should be noted:

1. At the time of the survey, the hydrographer located an uncharted sunken wreck in Latitude 32°44'31.00"N, Longitude 79°50'54.22"W. This item was submitted as a danger to navigation. The wreck is shown on the latest edition of charts 11523 and 11524 as a dangerous sunken historic wreck (41 ft rep 1997). It is recommended that the charted wreck be revised a dangerous sunken wreck with a depth of 41 feet (41 Historic Wreck).

2. At the time of the survey, the hydrographer located an uncharted obstruction in Latitude 32°45'20.06"N, Longitude 79°52'29.88"W. This item was submitted as a danger to navigation. The obstruction is shown on the latest edition of charts 11523 and 11524 as a dangerous obstruction (10 ft rep 1997). It is recommended that the charted obstruction be revised to a dangerous obstruction with a depth of 10 feet (10 Obstn).

3. A danger to navigation report was submitted by the hydrographer on an uncharted obstruction with a depth of 4 feet in Latitude 32°45'27.41"N, Longitude 79°51'33.86"W. The obstruction was described as concrete pier ruins extending to the shore. A depth of 4 feet on the obstruction was computed with predicted tides and is presently charted on the latest edition of charts 11521, 11523 and 11524. During office

processing approved tides were applied to the present survey. The obstruction is shown on the present survey as pier ruins with a revised depth of 3 feet on the offshore end. It is recommended that the charted dangerous submerged obstruction (4 ft rep 1997) be deleted and pier ruins be charted as shown on the present survey.

4. A danger to navigation report was submitted by the hydrographer on an uncharted obstruction with a depth of 27 feet in Latitude 32°45'28.97"N, Longitude 79°51'37.07"W. The obstruction was described as the submerged offshore end of a charted visible groin. The groin is presently charted as visible on the latest edition of chart 11524. During office processing approved tides were applied to the present survey. The obstruction is shown on the present survey as a groin with a revised depth of 26 feet at the offshore end. It is recommended that the charted dangerous submerged obstruction (27 ft rep 1997) be deleted and the submerged groin be added to the presently charted groin as shown on the present survey.

It should also be noted that the groin discussed above and shown on chart 11523 is charted as submerged. The same groin shown on chart 11524 is charted as visible at MLLW. It is recommended that the submerged groin on chart 11523 be revised to a groin visible at MLLW. This is in agreement with the description of the groin as discussed in the hydrographer's Dive Report filed with the original field records.

5. A danger to navigation report was submitted by the hydrographer on an uncharted obstruction (submerged groin) awash at MLLW in Latitude 32°45'41.72"N, Longitude 79°51'48.16"W. The item was described as the offshore end of a submerged groin extending to shore. The depth on the obstruction was computed with predicted tides and is presently charted on the latest edition of chart 11521 as a dangerous obstn (subm groin) with a depth of 1-foot. The obstruction is not charted on the latest edition of charts 11523 and 11524. During office processing approved tides were applied to the present survey. The obstruction is shown on the present survey as a submerged groin awash at MLLW. It is recommended that a submerged groin be charted as shown on the present survey. It is also recommended that the charted dangerous obstruction (subm groin) with a depth of 1-foot shown on chart 11521 be revised to a subm groin and charted as shown on the present survey should the scale of chart allow.

6. The following uncharted obstructions were located by the present survey.

<u>Obstruction</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
22-ft	32°45'41.43"	79°53'12.54"
34-ft	32°45'56.53"	79°52'49.93"

It is recommended that these obstructions be charted as shown on present survey.

7. A dangerous sunken wreck, PA has been charted subsequent to the present survey in Latitude 32°45'22"N, Longitude 75°53'09"N. It is recommended that the dangerous sunken wreck, PA be retained as charted.

8. Three charted groins in the vicinity of Latitude 32°45'36"N, Longitude 75°51'39"N are shown on the latest edition of chart 11524 (43rd Ed., Nov.1/97) as visible. The latest edition of chart 11523 (18th Ed., Sept.20/97) shows only two groins in ruins. It is recommended that the groins in ruins shown on chart 11523 be revised and charted as three visible groins as shown on chart 11524.

9. A charted groin in Latitude 32°45'26"N, Longitude 75°51'28"N is shown on the latest edition of chart 11524 (43rd Ed., Nov.1/97). The groin is not shown on the latest edition of chart 11523 (18th Ed., Sept.20/97). It is recommended that the groin be charted as shown on chart 11524.

The present survey is adequate to supersede the chart in the common area.

Controlling Depths

1. There are no conflicts between the present survey depths and the charted controlling depths in Rebellion Reach Fort Sumpter Range and South Channel.

2. A conflict exists with the charted controlling depth in Mount Pleasant Range in Latitude 32°45'22.15"N, Longitude 79°51'47.51"W. The present survey shows a depth of 44 feet with a controlling depth of 45.5 feet.

P. ADEQUACY OF SURVEY

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

Q. AIDS TO NAVIGATION

The hydrographer located 12 floating and one fixed aids to navigation on the present survey. These aids appear adequate to serve their intended purpose.

S. MISCELLANEOUS

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

It should be noted that charted data, curves and depths, in the vicinity of Latitude 32°46'06"N, Longitude 79°52'14"W are not adequately portrayed the same on charts 11523 and 11524. It is recommended that the latest data be applied to the charts within the common area.

The following NOS charts were used for compilation of the present survey: 11523 (18th Ed., Sept. 20/97)
11524 (43rd Ed., Nov. 1/97)

H10744

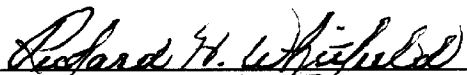


Reginald L. Keene Sr.
Cartographic Technician
Verification of Field Data
Evaluation and Analysis

APPROVAL SHEET
H10744

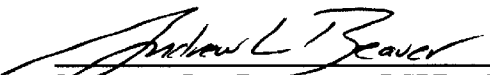
Initial Approvals:

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.


Richard H. Whitfield
Cartographer
Atlantic Hydrographic Branch

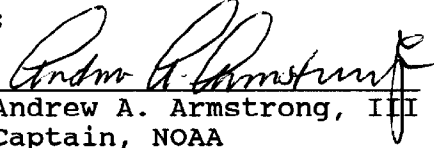
Date: 7/1/98

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, LCDR, NOAA
Chief, Atlantic Hydrographic Branch

Date: 7/1/98

Final Approval:

Approved: 
Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

Date: Aug 20, 1998

