

F00443

NOAA FORM 78-35A

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

DESCRIPTIVE REPORT

Type of Survey FIELD EXAMINATION

Field No. AHP-10-5-98

Registry No. F00443

LOCALITY

State SOUTH CAROLINA

General Locality CHARLESTON HARBOR

Sublocality FORT SUMTER RANGE

.....

..... 19 98

CHIEF OF PARTY
B. A. LINK

LIBRARY & ARCHIVES

DATE FEB 10 1999

*U.S. GOV. PRINTING OFFICE: 1967-750-980

Ref: BP 167447

Information for
Compiler -
Fort Sumter Channel
has been dredged
subsequent to the
survey. Therefore, chart '59'
should be superseded
George Nipes

Substitute for NOAA Form 77-28

Hydrographic Title Sheet

Register No: F00443

Field No: AHP-10-05-98

State: South Carolina

General locality: Approaches to Charleston Harbor

Locality: Fort Sumter Range

Scale 1:10,000 Dates of Survey: 07/06/98-07/29/1998

Instruction dated: March 19, 1997 & Change No. 1 Dated April 9, 1998

Vessel: 1210

Chief of Party: Mr. Brian Limk

Surveyed by: DBE, RWR & PMW

Soundings taken by echo sounder & leadline: Innerspace Fathos #188

Graphic record scaled by: RWR, DBE, PMW,

Graphic record checked by RWR, DBE, PMW.

Protracted: N/A Automated plot by: Mapinfo/HP750C

HP DesignJet 2500C (office)

Verification by: Atlantic Marine Center (Atlantic Hydrographic Branch Personnel)

Soundings in : Meters at MLLW

Remarks: DBE = David B. Elliott

RWR = Robert W. Ramsey

PMW = Philip M. Wolf

*Notes in the Descriptive Report will
made in red during office processing*

AWOIS / & SURF / 2/1/99 by MBH

DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY F00443
OPR-G301-AHP
FIELD NO. AHP-10-5-98
SCALE: 1:10,000
1998
ATLANTIC HYDROGRAPHIC PARTY TWO
CHIEF OF PARTY: Brian A. Link, NOAA

A. PROJECT

This survey was conducted according to Hydrographic Project Instructions OPR-G301-AHP, Charleston Harbor, South Carolina and adjoining waterways, dated March 19, 1997 and Change No.1 dated April 9, 1998.

The purpose of project OPR-G301-AHP is to provide a navigable area survey with 200 percent side scan sonar coverage within the assigned area of the Fort Sumter Range, South Carolina, 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.

B. AREA SURVEYED

The area surveyed as specified by the Project Instructions is defined as Sheet "F". The approximate survey limits are:

North - $32^{\circ}44'32''$ ¹⁷N
South - $32^{\circ}42'45''$ ⁴⁹N
East - $079^{\circ}48'18''$ ²⁰W
West - $079^{\circ}50'17''$ ⁰⁴W

This survey was conducted from July 6, 1998 (DN: 187) through July 29, 1998 (DN: 210).

C. SURVEY VESSEL

NOAA launch 1210, a 27-foot SeaArk, 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 Evaluation Report

HYPACK version 7.1A was used for on-line data acquisition. HPS version 8.2 programs

updated through May 29, 1998 and HP Tools version 1.72 were used for data processing. MapInfo Professional Version 4.5, with Vertical Mapper Version 1.5, was used to support processing and for plotting all survey data. The NOS programs VELOCITY (Ver. 3.0) and Microsoft Word 97 were also used during this survey.

E. SONAR EQUIPMENT

An Edge Tech 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 conduct dual beam surveying and investigate AWOIS items using NOAA launch 1210. The system frequency used was 100 kHz. The recorder was set on one of either 50/75/100/150-meter range scales. There were no water depths greater than ~~25 meters~~ ^{25 ft}. The confidence checks were performed daily on existing buoys in the Charleston, SC channels at 100kHz.

A 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 depth curve and single beam reduced line spacing was performed in other areas where warranted. 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 a DPS 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 needed. A total of eight diver investigations were made on this survey, utilizing the diver hand held sonar (DLS) as the primary targeting tool. A total of 34 contacts were addressed by 10-meter reduced line spacing development. A total of 37 contacts were deemed insignificant to warrant further investigation. All areas surveyed were track line/swath line plotted to insure complete coverage. Additional information can be found in the Survey Separates.

F. SOUNDING EQUIPMENT

An Innerspace model 448 depth sounder, S/N 188, was used to collect all echo soundings on this survey. A standard lead line calibrated in meters, S/N 1210, 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

Correctors for the velocity of sound through water were determined from the casts listed in the following table:

<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	17.7	187-189	32°43'18"N	079°48'30"W	188
2	2	20.8	196-197	32°43'36"N	079°49'12"W	196
3	3	20.0	202-203	32°43'42"N	079°49'18"W	203
4	4	20.2	209-210	32°43'18"N	079°49'00"W	209

*extended depth after processing

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. The manufacturer calibrated this unit 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.

The lead line for launch 1210 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 0.5 meter 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 1210, 0.6 meter above the transducer, to the water surface.

Settlement and squat measurements for launch 1210 were taken on September 23, 1997 (DN: 266). These measurements were conducted in the Cooper River, Charleston, SC 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 unverified actual heights from the internet (<http://www.opsd.nos.noaa.gov/ftp/pwldata.html>) from station 866-5530, Charleston, SC. Correctors for one tidal zone on this survey were used as designated by the Project Instructions. The zone was numbered with the following correctors:

	<u>Time (min.)</u>		
	<u>High Water</u>	<u>Low Water</u>	<u>Range Ratio</u>
Zone #EC150	- 24 min	- 24 min	x0.95

All elevations and soundings on this survey are based on MLLW unless otherwise specified.

Approved tide levels were requested from the Product and Services Branch, Datums Section, N/OES23, in a letter dated September 9, 1998. A copy is appended to this report.

All tides gauges required for this survey were NGWLMS gauges installed by Atlantic Hydrographic Party and Atlantic Operations Section personnel.

H. CONTROL STATIONS - See also 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°45.45357'N, 079°50.57225'W.

I. HYDROGRAPHIC POSITION CONTROL

Differential GPS (DGPS) was used for all hydrographic data acquired on this survey. A Starlink DGPS Beacon Receiver (S/N 795) and antenna (S/N 4132) were used as the remote station on launch 1210.

DGPS performance checks were conducted in accordance with FPM 3.4.4 by comparing the DGPS position of the vessel to the position of the following calibration point:

Opening / Closing: Mt. Pleasant Rear Range Lt. 32°45.45357'N 079°50.57225'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 Evaluation Report

There was no photogrammetric source data for this project.

K. CROSSLINES

A total of 3.0 linear nautical miles of crosslines were run. Crossline soundings agree with the main scheme soundings within ^{0.1 ft} 0.2 meter. The only exceptions were some 0.4 meter differences caused by weather influence on the tides. The application of smooth tides will create a closer agreement in sounding comparison.

L. JUNCTIONS - See also Evaluation Report

This survey junctions with the following:

<u>Survey No.</u>	<u>Year</u>	<u>Scale</u>	<u>Junction Area</u>
H-10744	1998	1:10,000	Eastern edge Northwest
H 10670	1997	1:10,000	Southwest

Junction soundings and soundings from this survey are in close agreement, with differences of 0.2 meters or less, except where noted in Section "O" of this report.

M. COMPARISON WITH PRIOR SURVEYS - See also Evaluation Report

See the Atlantic Hydrographic Branch's "Evaluation Report for F00443".

N. ITEM INVESTIGATION REPORTS

There was one AWOIS item, described below, addressed on this survey.

- AWOIS 10012 - ~~Obstruction~~ ^{Subm Wk (Pft)} 32° 52' 39.62" ^{43' 36"}N 079° 51' 26.00" ^{48' 36"}W Chart: 11523 ✓

This feature is charted as a submerged wreck. The charted geographic region was covered by 200% side scan sonar. There was no evidence of a wreck within the 200-meter radius search area or outside of the area. This wreck must have been salvaged. The hydrographer recommends removing the submerged wreck from the chart. CONCUR

N.1 DIVE INVESTIGATIONS

There were three uncharted rock ridges discovered during this survey. These features were developed with reduced ten-meter line spacing and diver identified for least depth with the DLS. These items were reported as dangers to navigation in a letter dated August 4, 1998. A copy can be found in the appendix of this report.

The following is a table of diver investigations conducted on this survey.

<u>Pos#</u>	<u>Time</u>	<u>DN</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Description</u>	<u>Least Depth</u>
2224	161232	209	32°43'52.78" ^a N	079°49'50.19"W	Rock Obstr.	39.0 ft* ^{Chart 39; Obstr} no change in charting
2225	165316	209	32°43'58.02" ^b N	079°49'27.62"W	Conc. Block	11.5 ft ^{Chart 11; obstr} no change in charting
2226	171301	209	32°43'55.21"N	079°49'45.23"W	Rock Obstr.	44.8 ft ^{no change in charting}
2227	174623	209	32°43'30.67"N	079°49'13.16"W	Rock Obstr.	25.3 ft ^{Chart 25; RK} no change in charting
2228	153605	210	32°43'46.18" ^c N	079°49'23.38" ^d W	Rock Obstr.	44.7 ft no change in charting
2229	155542	210	32°43'47.03" ^e N	079°49'24.08" ^f W	Rock Obstr.	42.3 ft* no change in charting
2230	163543	210	32°43'26.92"N	079°48'45.09" ^g W	Rock Obstr	44.6 ft no change in charting
2232	165800	210	32°43'28.18"N	079°48'58.90"W	Rock Obstr.	41.3 ft* no change in charting

* included in Dangers to Navigation letter submitted

Dive Reports are included in the Survey Separates.

O. COMPARISON WITH THE CHART - See also Evaluation Report

Comparison was made with the following charts:

<u>Chart No.</u>	<u>Source Edition</u>	<u>Raster Edition</u>	<u>Edition Date</u>
11521	24 th ED	04	Dec. 13, 1997 ✓
11523	18 th ED	03	Sept. 20, 1997 ✓
11524	43rd ED	03	Nov. 1, 1997 ✓

There was one Danger to Navigation letter submitted for F00443. A copy is included in the appendix of this report.

In general the soundings from this survey agree with the charted soundings within 1 to ² feet, although some signs of erosion and scouring to as much as 12 feet, in charted depths less than 30 feet was also noted. All survey soundings from F00443 should supersede those currently charted in the common area. *Concur*

- The 18-foot contour at 32°43'00"N, 079°48'39"W, has receded to the south approximately 150 meters. *Concur*
- The charted 24-foot obstruction at 32°42'57"N, 079°48'23"W, was addressed by H-10670, 1996. *Concur*
- The charted 29-foot obstruction at 32°43'29"N, 079°48'32"W, was addressed by H-10670, 1996. *Concur*
- The charted 30-foot obstruction at 32°43'34"N, 079°48'33"W, was addressed by H-10670, 1996. *Concur*
- The 18-foot contour at 32°43'51"N, 079°49'11"W, has migrated to the south approximately 60 meters. *Concur*
- The charted mooring buoy at 32°43'55"N, 079°49'20"W, no longer exists and was not seen during the 200% side scan sonar coverage. *Concur*
- The 12-foot contour at 32°44'15"N, 079°49'50"W, has migrated to the south approximately 220 meters. *Concur*
- Notable scouring has occurred on the southern side of the channel. The result of this is depth increases of three to twelve feet. *Concur*
- All currently charted ranges serve their intended purpose. *Concur*

P. ADEQUACY OF SURVEY - See also Evaluation Report

This is a complete field examination survey of the area required by the Project Instructions and is adequate to supersede all prior surveys within the common area.

Q. AIDS TO NAVIGATION

There are no non-floating aids to navigation within the limits of F00443. There are four floating aids maintained by the U. S. Coast Guard that lie within the survey area. Positions of these aids were determined by DGPS during hydrographic operations and are included in the hydrographic records.

R. STATISTICS

<u>Description</u>	<u>Quantity</u>
Total Number of Positions	2242
Total Linear Nautical Miles of Hydrography	6.5
Total Linear Nautical Miles of Cross Lines	3.0
Total Linear Nautical Miles of (SSS) Hydrography	37.7
Square Nautical Completed	1
Days of Production	9
Detached Positions	12
Bottom Samples	0
Velocity Casts	4

S. MISCELLANEOUS - See also Evaluation Report

Bottom samples were not taken as directed in Section 6.7 of the Project Instructions. The survey limits of this region lie between two rock jetties, which would make anchoring illegal. There are no bottom sample symbols charted in this survey area.

Secchi disk observations were not acquired on this survey due to the continually poor water clarity.

The flood and ebb tidal currents were observed at two to three knots within the survey limits.

There are no submerged cable areas, or overhead power cables within the limits of this survey.

T. RECOMMENDATIONS

No additional fieldwork was identified after field processing was completed. Specific recommendations are made in section N and O of this report.

U. REFERRAL TO REPORTS

<u>Title</u>	<u>Transmittal Information</u>
Descriptive Report for H-10744, 1997-98	Atlantic Hydrographic Branch N/CS331, Norfolk, VA (1997)
User Evaluation Report	Atlantic Hydrographic Branch N/CS331, Norfolk, VA (1998)
Coast Pilot Report	Atlantic Hydrographic Branch N/CS331, Norfolk, VA (1998)

Submitted by: David B. Elliott
Atlantic Hydrographic Party

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

OPR: G301-AHP AHP 10-5-98 F00443 SHEET F

Charleston Antenna Beacon RESTA Ant. Location (A) (016)

Lat: 32°45' 27.21"N Lon: 079° 50' 34.33"W

Cal. Point- Mt Pleasant Rear Range Lt. Lat 32° 47' 4.848"N Long 079° 53' 40.499"W

East : 15507.4

North: 14935.6

Date	DN	Time	SVs	HDOP	Max. Allow. Error ' (4*HDOP)	Observed East	Observed North	Observed Diff
06-Jul-98	187	13:10	7	1.2	4.8	15507.2	14935.8	0.282843
29-Jul-98	210	17:20	7	1.1	4.4	15507.9	14935.2	0.640312



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

August 4, 1998

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 FE00443, project OPR-G301-AHP) uncharted obstructions were found in the Fort Sumter Range of the Charleston Harbor Entrance Channel, 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 unverified actual tide heights. These features were located using Differential GPS and were verified by diver investigation.

This information affects the following chart:

<u>CHART NO.</u>	<u>EDITION</u>	<u>DATE</u>
11523	18th	Sept 20/96

<u>DESCRIPTION</u>	<u>NAD 83 POSITION</u>	<u>DEPTH (ft)</u>
Obstruction	32°43'52.79"N 079°49'50.19"W	39✓
Obstruction <i>RK</i>	32°43'47.06"N 079°49'24.04"W	42✓
Obstruction <i>RK</i>	32°43'28.18"N 079°48'58.90"W	41✓

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 or LCDR Andrew Beaver, Chief of the Atlantic Hydrographic Branch at 757-441-6746.

Sincerely,

Brian A. Link
Chief, Atlantic Hydrographic Party (acting)

Attachment

cc: N/CS26
N/CS33
NIMA/NMD/STD44
Charleston Branch Pilots Assoc.



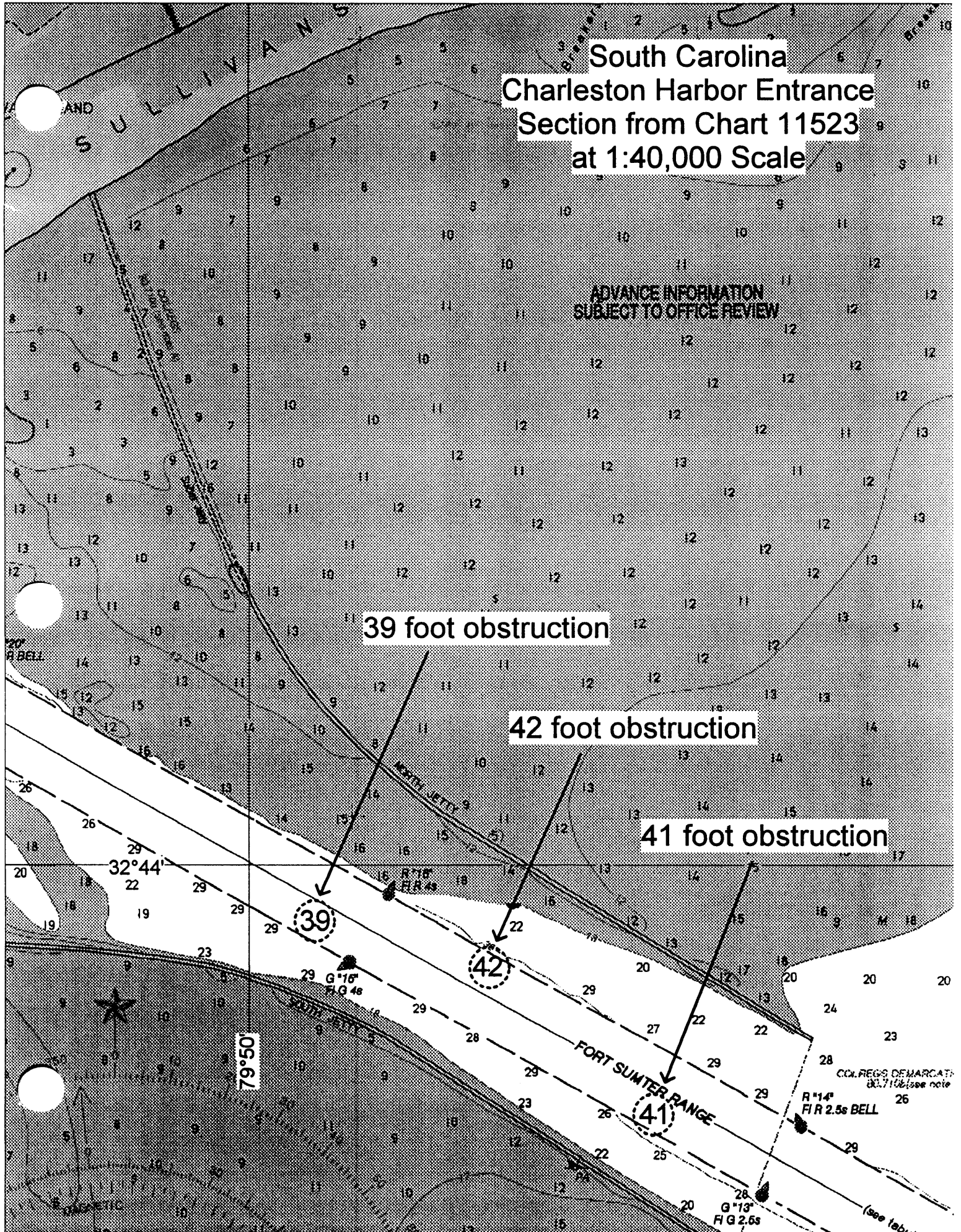
South Carolina
Charleston Harbor Entrance
Section from Chart 11523
at 1:40,000 Scale

ADVANCE INFORMATION
SUBJECT TO OFFICE REVIEW

39 foot obstruction

42 foot obstruction

41 foot obstruction



APPROVAL SHEET
Field Examination Survey
OPR-G301-AHP
AHP-10-5-98
F00443
1998

This field examination survey was conducted 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 the Launch Hydrographer-in-charge. The descriptive report was reviewed and approved by the Chief of Party. The Chief of Party did not directly supervise any part of this survey

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



Brian A. Link
Chief, Atlantic Hydrographic Party (acting)



David B. Elliott
Launch Hydrographer-in-charge



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

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: September 22, 1998

HYDROGRAPHIC BRANCH: Atlantic

HYDROGRAPHIC PROJECT: OPR-G301-AHP

HYDROGRAPHIC SHEET: F00443

LOCALITY: Charleston Harbor, SC

TIME PERIOD: July 6 - July 29, 1998

TIDE STATION USED: 866-5530 Charleston, SC

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: SEC150.

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.

Thomas V. Mearns 9/22/98

CHIEF, REQUIREMENTS AND ENGINEERING BRANCH



Final tide zone node point locations for OPR-H300-AHP-98,
F00443.

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 SEC150			
-79.890309 32.684928	866-5530	-24	0.97
-79.887072 32.70193			
-79.872458 32.726677			
-79.86897 32.738784			
-79.849823 32.756581			
-79.842504 32.760363			
-79.809105 32.776502			
-79.78007 32.789013			
-79.896408 32.178136			
-79.980575 31.916102			
-80.020937 31.785394			
-80.16679 31.797539			
-80.019476 32.169959			
-79.890309 32.684928			

GEOGRAPHIC NAMES

FE-443

Name on Survey	A		B		C		D		E		F		G		H		K	
	ON CHART NO.	ON PREVIOUS SURVEY NO.	CON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND MCNALLY ATLAS	U.S. LIGHT LIST										
FORT SUMTER RANGE (title)	X																	1
NORTH ATLANTIC OCEAN	X		X															2
SOUTH CAROLINA (title)	X		X															3
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~~REMOVED~~

Dennis J. Roseberry
Chief Geographer

OCT 27 1998

N/CS33-02 -99

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

JAN 27, 1999

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.

F00443

SOUTH CAROLINA, APPROACHES TO CHARLESTON HARBOR, FORT SUMPTER RANGE

(ONE) 1 TUBE CONTAINING THE FOLLOWING:

- 1 ORIGINAL DESCRIPTIVE REPORT AND ACCOMPANYING SMOOTH SHEET FOR F00443
- DRAWING HISTORY FORM (NOAA FORM #76-71) FOR NOS CHART 11523
- RECORD OF APPLICATION TO CHART FORM (NOAA FORM #75-96) FOR SURVEY F00443
- 1 H-DRAWING FOR NOS CHART 11523
- 1 COMPOSITE DRAWING FOR NOS CHART 11523

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

**ATLANTIC HYDROGRAPHIC BRANCH
EVALUATION REPORT FOR F00443 (1998)**

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 DesignJet 2500CP plotter.

H. CONTROL STATIONS

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

To place this survey on the NAD 27 datum move the projection lines 0.639 seconds (19.697 meters or 1.97 mm at the scale of the survey) north in latitude, and 0.698 seconds (18.179 meters or 1.82 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 Survey (NOS) chart 11523 (18th Edition, September 20, 1997) and is for orientation purposes only.

L. JUNCTIONS

H10670 (1997) to the East
H10744 (1997) to the West

A standard junction could not be made with the junctional surveys. These surveys are archived at NOS headquarters, Silver Spring, Maryland. The note "ADJOINS" is shown on the

present survey in the junctional areas. Any adjustments to the depth curves in the junctional areas will have to be made by the compilers in Silver Spring 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.

**O. COMPARISON WITH CHART 11521 (24th Edition, Dec 13/97)
11523 (18th Edition, Sep 20/97)
11524 (43rd Edition, Nov 01/97)**

a. Hydrography

The charted hydrography originates with the 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:

The following charted depths originate with prior surveys and other sources unavailable at the time of office processing and were not brought forward to the smooth sheet. These depths were neither disproved nor verified by the present survey.

<u>Depth</u> <u>ft/m</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
19/5 ⁸	32°42'57.0"	79°48'46.0"
30/9 ¹	32°43'23.4"	79°48'27.0"
23/7	32°43'29.8"	79°49'18.4"
29/8 ⁸	32°43'54.4"	79°50'01.8"
13/4	32°44'09.9"	79°50'03.6"

No change in charting status is recommended.

b. Dangers to Navigation

There was one Danger to Navigation Notice submitted by the field unit. The hydrographer identified three (3) dangers to navigation and submitted information for inclusion into a Local Notice to Mariners, to the Commander, Seventh Coast Guard District, Miami, Florida. A copy of the letter

was forwarded to Chief, Nautical Data Branch, N/CS26, Silver Spring, Maryland.

No additional dangers were discovered during office processing.

c. Controlling Depths

The following conflict exists between the charted controlling depths in "Fort Sumpter Range" and the depths found on the present survey:

In the Left Inside Quarter the tabulated depth is 41⁵ feet. There was a 39 foot depth on a dangerous submerged obstruction found on the present survey in Latitude 32°43'52.79"N, Longitude 79°49'50.19"W. It is recommended that a 39 foot dangerous submerged obstruction be charted in the present survey location.

The present survey is adequate to supersede the charted hydrography within the common area, except where noted in this report.

P. ADEQUACY OF SURVEY

This is an adequate hydrographic survey. No additional work is recommended.

S. MISCELLANEOUS

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

The following NOS chart was used for compilation of the present survey:

11523 (18th Ed., September 20/97) 1:20,000

A handwritten signature in cursive script, reading "Douglas V. Mason", written in black ink. The signature is positioned above a horizontal line.

Douglas V. Mason
Cartographic Technician
Verification of Field Data

APPROVAL SHEET
F00443

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 disproof 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
Deborah A. Bland
Cartographer,
Atlantic Hydrographic Branch

Date: 1-19-99

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

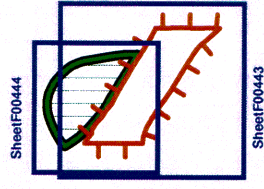
Date: 1/20/99

Final Approval:

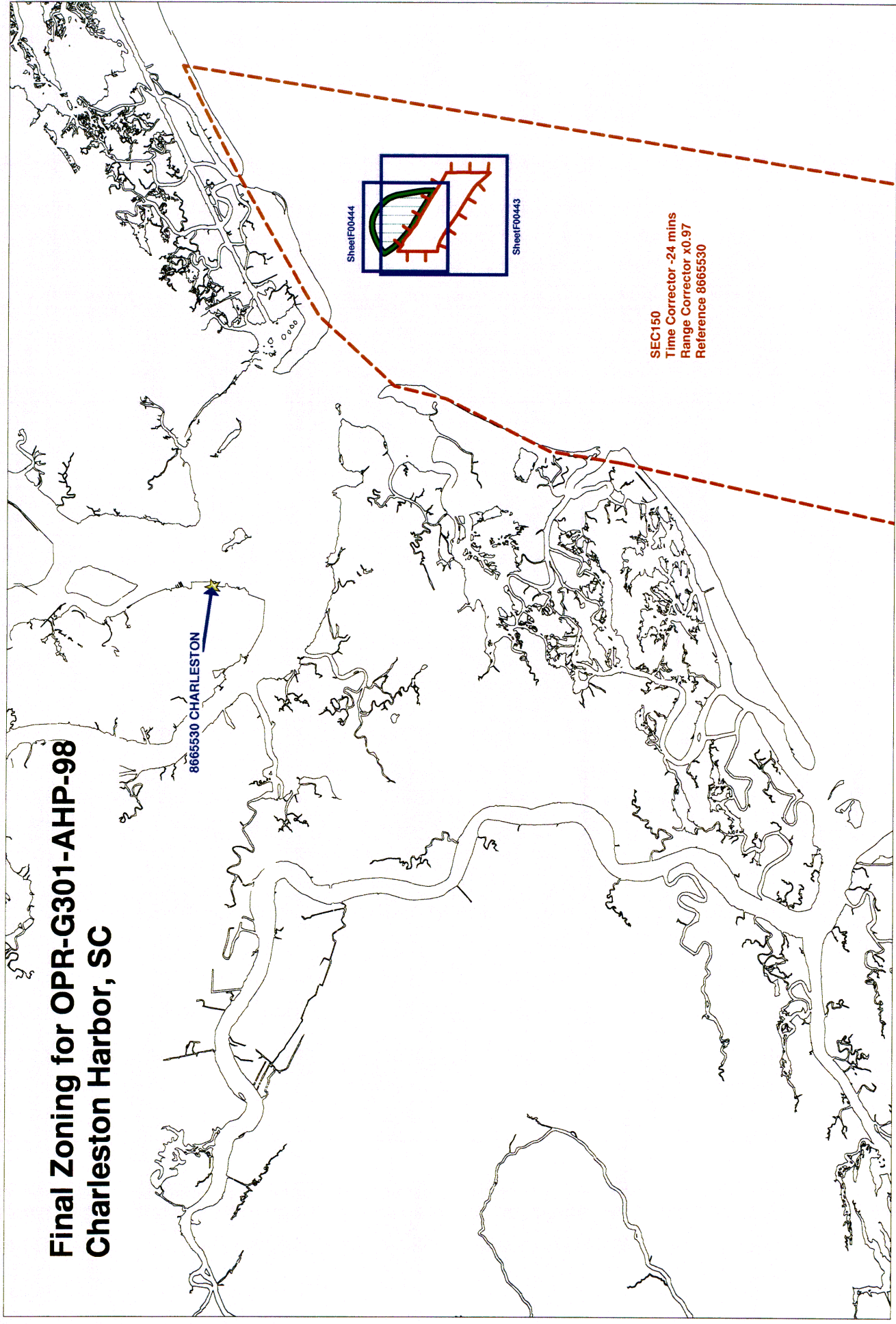
Approved: Andrew A. Armstrong Date: Feb 9, 1999
Andrew A. Armstrong, III
Captain, NOAA
Chief, Hydrographic Surveys Division

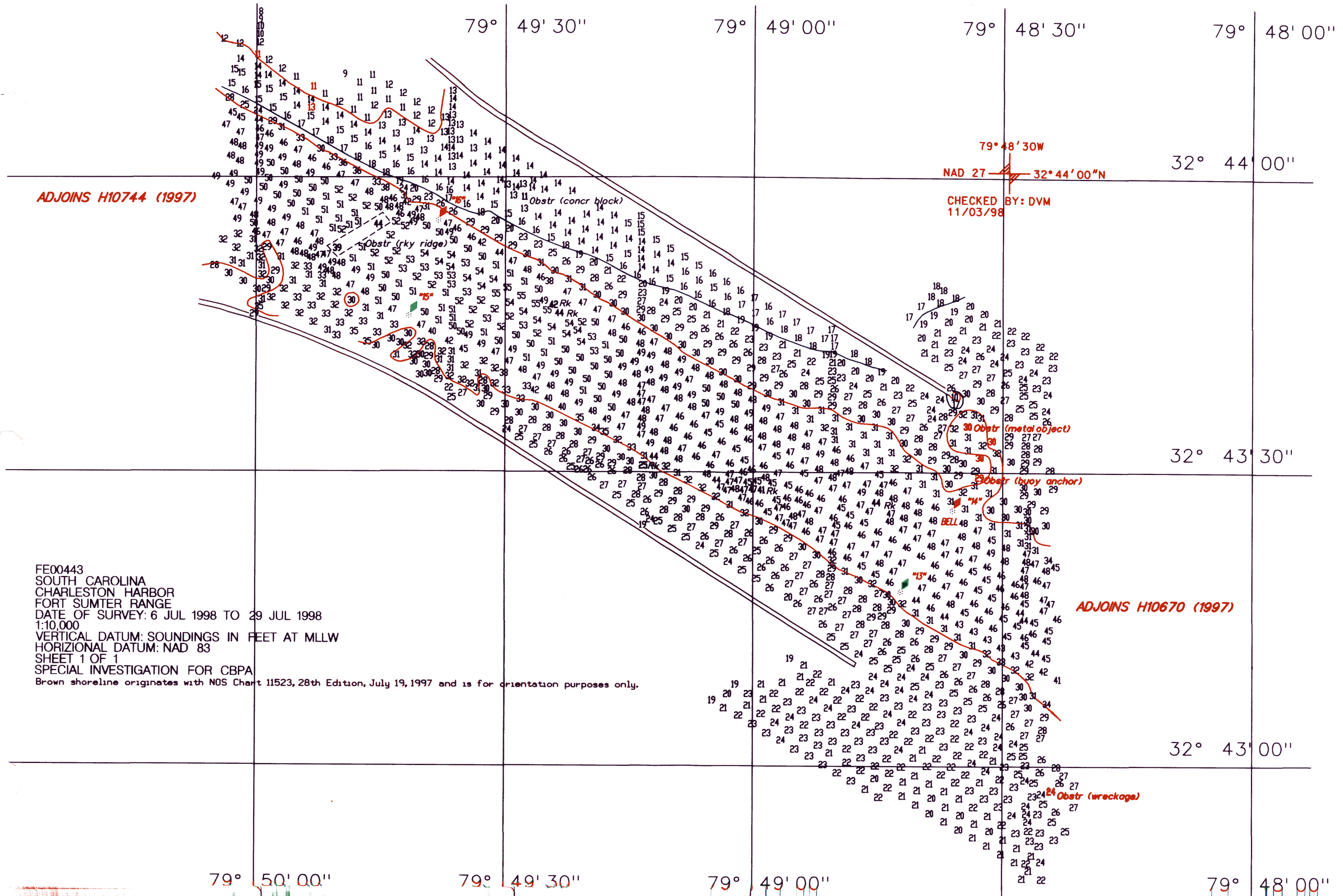
Final Zoning for OPR-G301-AHP-98 Charleston Harbor, SC

8665530 CHARLESTON



SEC150
Time Corrector -24 mins
Range Corrector x0.97
Reference 8665530





FE00443
 SOUTH CAROLINA
 CHARLESTON HARBOR
 FORT SUMTER RANGE
 DATE OF SURVEY: 6 JUL 1998 TO 29 JUL 1998
 1:10,000
 VERTICAL DATUM: SOUNDINGS IN FEET AT MLLW
 HORIZONTAL DATUM: NAD 83
 SHEET 1 OF 1
 SPECIAL INVESTIGATION FOR CBPA
 Brown shoreline originates with NOS Chart 11523, 28th Edition, July 19, 1997 and is for orientation purposes only.

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. F00443

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
11523	1/21/99	D.A. Bland	Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
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