

**FE-429**

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

### FIELD EXAMINATION

Type of Survey .....

Field No. .... **AHP 5-1-96** .....

Registry No. .... **FE-429** .....

### LOCALITY

State .... **SOUTH CAROLINA** .....

General Locality **COOPER RIVER** .....

Sublocality .... **CLOUTER CREEK REACH** .....

19 **96**

CHIEF OF PARTY

..... **LT. J. A. ILLG, NOAA** .....

### LIBRARY & ARCHIVES

DATE ..... **FEB 25 1997** .....

**HYDROGRAPHIC TITLE SHEET**

FE-42<sup>9</sup><sub>X</sub>

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 NO.

AHP-5-1-96

State South Carolina

General locality Cooper River

Locality Clouter Creek Reach

Scale 1:5,000

Date of survey November 19, 1996 (DN 324)

Instructions dated 9-4-96

Project No. OPR-G902-AHP

Vessel NOAA Launch 519

Chief of party LT James A. Illg, NOAA

Surveyed by Atlantic Hydrographic Party

Soundings taken by echo sounder, hand lead, pole Innerspace Model 448 echosounder

Graphic record scaled by DBE, RWR, PMW

Graphic record checked by DBE

Protracted by AHP

Automated plot by AHB ENCAD Nova Jet III Plotter

Verification by Atlantic Hydrographic Branch Personnel

Soundings in feet meters at MLLW

REMARKS: DBE - David B. Elliott, RWR - Robert W. Ramsey, Jr., PMW - Philip M. Wolf

*Notes in The Descriptive Report were made in red during Office Processing.*

*Surv/Aucis 2/24/97 MCR*

*SC 2-26-97*



DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY

FE - 427<sup>9</sup>

AHP-5-1-96

SCALE: 1:5,000

1996

Atlantic Hydrographic Party

CHIEF OF PARTY: LT. James A. Illg, NOAA

A. PROJECT

This survey was conducted according to Hydrographic Project Instructions OPR-G902-AHP, Charleston, South Carolina, Cooper River, Clouter Creek Reach, dated September 4, 1996 and change No. 1, dated October 31, 1996.

The purpose of project OPR-G902-AHP is to respond to requests from the Office of NOAA Corps Operations, Atlantic Marine Center, for a field examination survey of the Charleston U.S. Naval Base piers N, R, Q, P, and S. This project area was last surveyed in May 1996 as FE-426. This survey will help determine the rate of bottom sediment movement and shoaling around these piers.

B. AREA SURVEYED

The area surveyed for FE-427<sup>9</sup> covers Clouter Creek Reach, on the Cooper River. The approximate survey limits are:

North: 32° 50' 45"N  
South: 32° 51' 45"N  
East : 079° 57' 15"W  
West : 079° 56' 00"W

This survey was conducted on November 19, 1996 (DN 324).

C. SURVEY VESSELS

NOAA launch 0519, a 21-foot MonArk, was used to collect all survey data. There were no unusual vessel configurations nor problems encountered with the vessels.

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

Coastal Oceanographics, Inc. HYPACK version 5.9 was used for on-line data acquisition. A list of all HP-DPS programs and versions used for data processing can be found in the appendix of this report. The NOS programs VELOCITY (Ver. 2.10) and WordPerfect (Ver. 6.1) were also used during this survey.

E. SONAR EQUIPMENT

Not Applicable

F. SOUNDING EQUIPMENT

An Innerspace model 448 depth sounder, S/N 186, was used to collect all echo soundings on this survey. A standard lead line calibrated in meters, S/N 0519 was used during this survey for comparison readings 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 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                | 16.9                    | 324                     | 32°51'15"N, 079°56'35"W | 324              |

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, which was calibrated by the manufacturer on December 22, 1995. Data quality assurance tests were performed after each cast. Program VELOCITY was used for computing the speed of sound correctors. Speed of sound corrections were applied to the sounding plot using the HDAPS REAPPLY program. Copies of the velocity tables and support documentation are in the "Survey Separates." \* *DATA filed with Field Records.*

The lead line for launch 0519 was calibrated using a steel tape on March 29, 1996. No corrections were necessary.

A static draft of 0.3 meters was applied to the final sounding plot by the HDAPS REAPPLY program. The draft was measured by subtracting the difference from a punch mark on the side of launch 0519, 0.6 meter above the transducer, to the water surface.

Predicted tides were manually entered in the HDAPS based on the primary station at "Charleston, SC". The correctors listed below were entered and applied as well and were based on Station 3057 "Clouter Creek South Entrance" (from the 1996 Tide Tables published by McGraw-Hill.) The correctors for station 6671 requested in the Project Instructions were not listed in the Tide Tables. Hydrographic Surveys Division, Operations Branch was notified about the change in stations used.

| <u>Time (min.)</u> |                  | <u>Range Ratio</u> |
|--------------------|------------------|--------------------|
| <u>High Water</u>  | <u>Low Water</u> | H=1.03 L=1.05      |
| +00.26             | +00.19           |                    |

All elevations and soundings on survey FE-427<sup>9</sup> 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 December 10, 1996. A copy is appended to this report. \* *Approved Tides and Zoning were applied during office processing.*

#### H. CONTROL STATIONS

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 Beacon (ID 808), Charleston, SC, located at 32°45'27.212"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 # 700417B1207) and antenna (S/N #700378A0232 )were used as the remote station on launch 0519.

DGPS performance checks were conducted in accordance with FPM 3.4.4, by comparing the DGPS position of the vessel, while on its trailer, positioned over first order Station "Mound, 1979", at 32°50'42.521"N 079°56'06.436"W. To obtain a performance check, the launch was trailered over the station and the easting, northing, number of SVs, HDOP, and time of observation were logged as data (raw printouts of this data are included)\* These values were then entered into a Lotus spreadsheet table which would compute the acceptable error margin (based on the HDOP) and also our observed difference between the known and observed position. The table of these comparisons is included in the "Survey Separates."\*The observed differences fell well within the allowable limit.

\* *Data listed with Field Records.*

#### J. SHORELINE

There was no photogrammetric source data for this project.

#### K. CROSSLINES

A total of 1.67 linear nautical miles of crosslines were run , which is approximately 8% of the total miles of hydrography run. Crossline soundings agree with the main scheme soundings within 0.2 meter.

#### L. JUNCTIONS

None

#### M. COMPARISON WITH PRIOR SURVEYS *See ALSO Evaluation Report.*

See the Atlantic Hydrographic Branch's Evaluation Report for FE-426.

The following was noted during this survey:

- 1) Soundings deeper than 30 feet showed agreement within 1 foot when compared to FE-426.
- 2) Soundings less than 30 feet were found to be 2 to 3 feet shallower than those acquired on FE-426.
- 3) An 18-foot shoal has developed parallel to the south face of pier "Q", approximately 35 meters off the middle of the pier, between 32°51'03"N, 079°56'36"W and 32°51'04"N, 079°56'35"W. The shoal is approximately 25 meters wide. FE-426 soundings in this area show 20 foot depths.
- 4) The 18-foot contour paralleling the shoreline between piers "Q & R", has migrated seaward approximately 30 meters.
- 5) An 18-foot shoal has developed parallel to the south face of pier "R", approximately 30 meters off the pier, between 32°51'02"N, 079°56'28"W and 32°51'03"N, 079°56'27"W. The shoal is approximately 15 meters wide. FE-426 soundings in this area show 20-21 foot depths.

#### N. ITEM INVESTIGATION REPORTS

Not Applicable.

O. COMPARISON WITH THE CHART *see also Evaluation Report.*

Comparison was made with the following chart:

| <u>Chart No.</u> | <u>Edition</u> | <u>Edition Date</u> |
|------------------|----------------|---------------------|
| 11524            | 41st           | Feb. 24/96          |

Soundings found on this survey are as much as 10 feet shallower than charted soundings in the areas between the piers. Recurring sediment deposit is evident along the southern side of the Cooper River, in Clouter Creek Reach, between the surveyed piers.

Two detached positions were taken on this survey.\* One was on a vertical section of railroad track marking the offshore end of a submerged outfall at 32°51'00.27"N, 079°56'28.52"W. The track section was exposed 1.7m<sup>5 FT.</sup> at MLLW corrected by predicted tides.\* The other was on the offshore pair of piles of a row of three sets extending from shore at 32°51'00.09", 079°56'28.02"W. These piles were exposed 2.6m<sup>8 FT.</sup> at MLLW corrected by predicted tides. Neither of these features are charted nor are they considered dangers to navigation because of their proximity to shore. These features lie between piers R and S. The shoreline between these piers is rip-rap.\* *see section C, of The Evaluation Report.*

P. ADEQUACY OF SURVEY

This is a complete field examination 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

Not Applicable.

R. STATISTICS

| <u>Description</u>                         | <u>Quantity</u> |
|--|-----------------|
| Total Number of Positions                  | 1623            |
| Total Linear Nautical Miles of Hydrography | 22.06           |
| Total Linear Nautical Miles of Cross Lines | 1.67            |
| Days of Production                         | 1               |
| Detached Positions                         | 2               |
| Bottom Samples                             | 0               |
| Velocity Casts                             | 1               |

S. MISCELLANEOUS

None

T. RECOMMENDATIONS

No additional field work was identified after field processing was completed.

U. REFERRAL TO REPORTS

Title

Descriptive Report for  
FE-426

Transmittal Information

Atlantic Hydrographic Branch  
N/CS331, Norfolk, VA (1996)

Submitted by: Robert W. Ramsey Jr.  
Hydrographer in charge Launch 0519  
Atlantic Hydrographic Party

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

OPR: G-902-AHP

USCG Charleston Antenna Beacon  
Lat: 32 45 27.212N Lon: 079 50 34.335W

Offset to Launch Antenna: <1m due West (Observed value corrected for offset)

East : 14832.6  
North: 3158.2

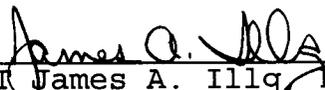
| Date       | DN  | Time  | SVs | HDOP | Max. Allow. Error<br>' (4*HDOP) | Observed<br>East | Observed<br>North | Observed<br>' Diff |
|------------|-----|-------|-----|------|---------------------------------|------------------|-------------------|--------------------|
| Nov. 18 96 | 323 | 16:52 | 8   | 1.3  | 5.2                             | 14832.7          | 3158.3            | 0.141421           |
| Nov. 19 96 | 324 | 19:34 | 7   | 1.1  | 4.4                             | 14833.8          | 3158.3            | 1.204159           |

DGPS performance check was accomplished by positioning the survey launch, while on it's trailer over the Control Station "Mound". The logging position data was at a 2 second rate in the Survey mode. The data printout was then meaned for the Easting and Northing values; which were then entered above for calculations.

**APPROVAL SHEET**  
**Field Examination Survey**  
OPR-G902-AHP  
AHP-5-1-96  
FE-427  
1996

This field examination survey was conducted in accordance with the project instructions for OPR-G902-AHP, the Hydrographic Manual, the Hydrographic Survey Guidelines, and the Field Procedures Manual. All reports, records, and survey sheets were reviewed by Brian A. Link, Assistant Chief of AHP. 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.

  
\_\_\_\_\_  
LT James A. Illg, NOAA  
Chief, Atlantic Hydrographic Party (acting)

  
\_\_\_\_\_  
David B. Elliott  
for Launch Hydrographer-in-charge

GEOGRAPHIC NAMES

| Name on Survey         | A ON CHART NO. 11524<br>B ON PREVIOUS SURVEY NO.<br>C ON U.S. QUADRANGLE MAPS<br>D FROM LOCAL INFORMATION<br>E ON LOCAL MAPS<br>F P.O. GUIDE OR MAP<br>G RAND McNALLY ATLAS<br>H U.S. LIGHT LIST<br>K |   |   |   |  |  |  |  |  |  |  |    |
|------------------------|---|---|---|---|--|--|--|--|--|--|--|----|
|                        | CHARLESTON (title)  | X |   | X |  |  |  |  |  |  |  |    |
| CLOUTER CREEK REACH    | X   |   |   |   |  |  |  |  |  |  |  | 2  |
| COOPER RIVER           | X   |   | X |   |  |  |  |  |  |  |  | 3  |
| SOUTH CAROLINA (title) | X   |   | X |   |  |  |  |  |  |  |  | 4  |
| UNITED STATES NAVAL    |   |   |   |   |  |  |  |  |  |  |  | 5  |
| RESERVATION            |   |   | X |   |  |  |  |  |  |  |  | 6  |
|                        |   |   |   |   |  |  |  |  |  |  |  | 7  |
|                        |   |   |   |   |  |  |  |  |  |  |  | 8  |
|                        |   |   |   |   |  |  |  |  |  |  |  | 9  |
|                        |   |   |   |   |  |  |  |  |  |  |  | 10 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 11 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 12 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 13 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 14 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 15 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 16 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 17 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 18 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 19 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 20 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 21 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 22 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 23 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 24 |
|                        |   |   |   |   |  |  |  |  |  |  |  | 25 |

Approved

*Christa C. Long*  
Chief Geographer

JAN 28 1997

**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR FE-429 (1996)**

This Evaluation Report has been written to supplement and/or clarify the original Descriptive Report. Sections in this report refer to the corresponding sections of the Descriptive Report.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

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

Hydrographic Processing System  
NADCON, version 2.10  
AUTOCAD, Release 12  
QUICKSURF, version 5.1  
MicroStation 95, version 5.05  
I/RAS B, version 5.01

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

**H. CONTROL STATIONS**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. 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 0.631 seconds (19.432 meters or 3.88 mm at the scale of the survey) north in latitude, and 0.687 seconds (17.859 meters or 3.57 mm at the scale of the survey) east in longitude.

**J. SHORELINE**

No photogrammetric shoreline data was available for this project. Brown shoreline originates with National Ocean Service (NOS) chart 11524 (41<sup>st</sup> Edition, Feb. 24/96) and is for orientation purposes only.

**M. COMPARISON WITH PRIOR SURVEYS**

**FE-426 (1996)**

The hydrographer makes adequate comparisons with FE-426 (1996) in section M. of the Descriptive Report.

Comparison was made with an unregistered survey done by

the Atlantic Hydrographic Party on October 24, 1994. Significant shoaling, up to 18 feet (5<sup>5</sup> m), has occurred between the four piers in the survey area.

**O. COMPARISON WITH CHART 11524 (41<sup>st</sup> Edition, Feb. 24/96)**

**Hydrography**

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

1) An uncharted pier ruin, in Latitude 32°51'00.09"N, Longitude 79°56'28.01"W, was located by the field unit. It is recommended that pier ruins be charted as shown on the present survey.

2) An uncharted obstruction (railroad track), in Latitude 32°51'00.27"N, Longitude 79°56'28.52"W, was located by the field unit. It was noted that this obstruction marked the offshore end of an submerged outfall. It is recommended that an obstruction be charted as shown on the present survey.

3) An uncharted submerged outfall, in Latitude 32°51'00.27"N, Longitude 79°56'28.52"W, was located by the field unit. It is recommended that submerged outfall be charted as shown on the present survey. DO NOT CHART DUE TO CHART SCALE

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

**Controlling Depths**

There are no conflicts between the tabulation shown on the chart and present survey depths.

**P. ADEQUACY OF SURVEY**

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

**S. MISCELLANEOUS**

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

**WHITING Processing Team**

*Robert Snow*

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**Robert Snow**  
Cartographic Technician  
Verification of Field Data  
Evaluation and Analysis

02/14/97

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: FE-429

|                                       |            |                |
|---------------------------------------|------------|----------------|
| NUMBER OF CONTROL STATIONS            |            | 2              |
| NUMBER OF POSITIONS                   |            | 1623           |
| NUMBER OF SOUNDINGS                   |            | 1623           |
|                                       | TIME-HOURS | DATE COMPLETED |
| PREPROCESSING EXAMINATION             | 2          | 01/15/97       |
| VERIFICATION OF FIELD DATA            | 26         | 01/23/97       |
| QUALITY CONTROL CHECKS                | 0          |                |
| EVALUATION AND ANALYSIS               | 4          |                |
| FINAL INSPECTION                      | 2          | 02/04/97       |
| COMPILATION                           | 16         | 02/13/97       |
| TOTAL TIME                            | 50         |                |
| ATLANTIC HYDROGRAPHIC BRANCH APPROVAL |            | 02/10/97       |

APPROVAL SHEET  
FE-429

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.

Robert G. Roberson Date: FEBRUARY 10, 1997  
Robert G. Roberson  
Cartographer  
Chief, Cartographic Section

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

Nicholas E. Perugini Date: February 10, 1997  
Nicholas E. Perugini  
Commander, NOAA  
Chief, Atlantic Hydrographic Branch

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Final Approval:

Approved: Andrew A. Armstrong Date: Feb. 25, 1997  
Andrew A. Armstrong, III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

79° 57' 00"

79° 56' 45"

79° 56' 30"

79° 56' 15"

79° 56' 00"

32° 51' 30"

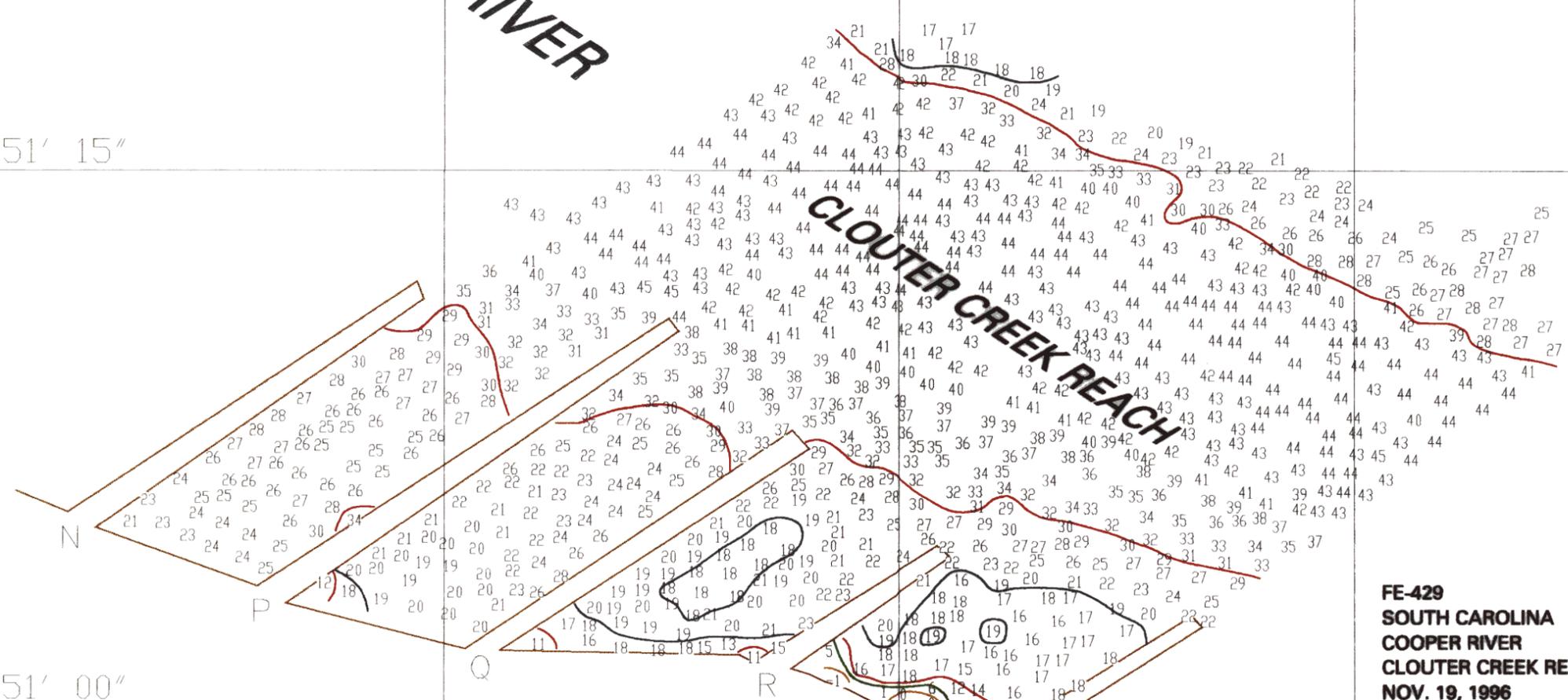
79°56'15"W  
NAD 27  
CHECKED BY:RS  
1/17/1997

32° 51' 30"

COOPER RIVER

32° 51' 15"

32° 51' 15"



32° 51' 00"

32° 51' 00"

UNITED STATES NAVAL RESERVATION

FE-429  
SOUTH CAROLINA  
COOPER RIVER  
CLOUTER CREEK REACH  
NOV. 19, 1996  
1:5,000  
VERTICAL DATUM: SOUNDINGS IN FEET AT MLLW  
HORIZONTAL DATUM: NAD 83  
SHEET 1 OF 1  
FIELD EXAMINATION SURVEY

**Brown shoreline originates with  
NOS Chart 11524, 41st Edition, Feb. 24/96  
and is for orientation purposes only**

79° 57' 00"

79° 56' 45"

79° 56' 30"

79° 56' 15"

79° 56' 00"

