

9489

Diag. Cht. No. 1236-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. AHP 10-7-74
Office No..... H-9489

LOCALITY

State NORTH CAROLINA
General Locality CAPE FEAR RIVER
Locality FORT CASWELL TO ZEKES ISLAND

19 74-75

CHIEF OF PARTY
F. T. SMITH

LIBRARY & ARCHIVES

DATE 3-7-77

9489

Chart 3

*Chart
426
23550 April 11/2/77
1206*

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HYDROGRAPHIC TITLE SHEET

H-9489

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-10-7-74

State North Carolina

General locality Cape Fear River

Locality Lower Cape Fear River Fort Caswell to Zekes Island

Scale 1:10,000 Date of survey JD 310 062
4 November 1974 - 3 March 1975

Instructions dated 10 July 74 Project No. OPR-437-AHP-74

Vessel Launch 1277

Chief of party F. T. Smith

Surveyed by W.A. Wert, F.L. Kleinschmidt, J.S. Bradford, D.M. Bryant, W.L. Sprye

Soundings taken by echo sounder, hand lead, pole

Graphic record scaled by Launch Personnel

Graphic record checked by Launch Personnel

Protracted by N/A Automated plot by PDP 8/a Calcomp Plotter 618

Verification by N/A ✓ B.J. Stephenson, AMC

Soundings in ~~XXXXXX~~ feet at MLW ~~XXXXXX~~

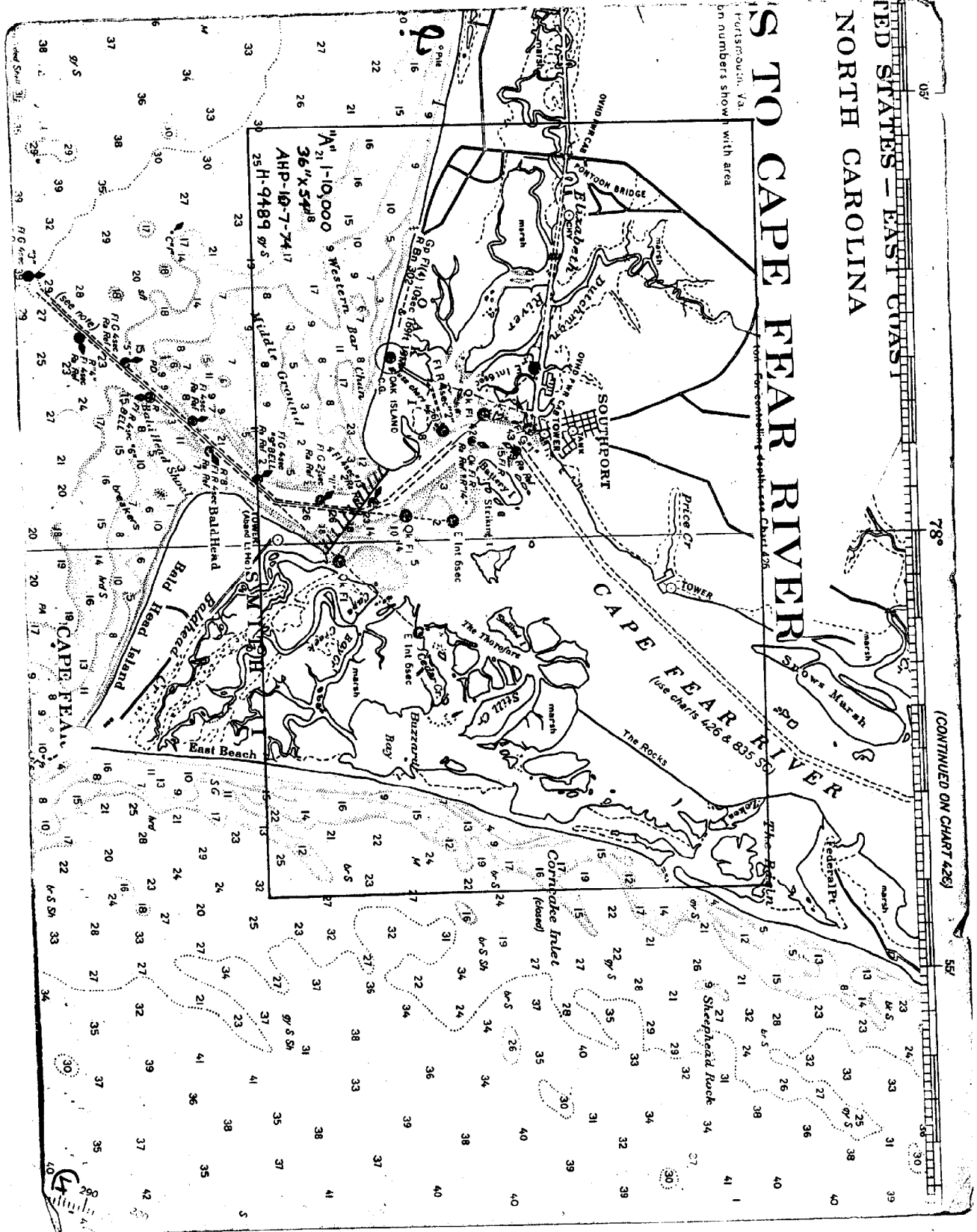
REMARKS:

Applied to stds 6/16/77
AS
1.

UNITED STATES - EAST COAST
NORTH CAROLINA

FROM PORTSMOUTH, VA. TO CAPE FEAR RIVER

Portsmouth, Va. with area
on numbers show



78°

(CONTINUED ON CHART 425)

557

30

To C322

This Q.C. survey H- 9489
is submitted for final indication
on the Standards and examination
for chart corrections and should
be returned to Vault. Area Chief,
please send chargeout slip to
Vault.

Chief, Marine Surveys Division

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9489
AHP-10-7-74, SCALE 1:10,000
OPR 437, Cape Fear River, North Carolina

A. Project

OPR-437 is a survey to provide hydrographic data needed to update existing charts and for the construction of a new small-craft chart. The survey was accomplished in accordance with Project Instructions OPR-437-AHP-74 and with Chapter 3 of the AMC Manual.

B. Area Surveyed

H-9489

The area encompassed by Sheet AHP-10-7-74 is an irregular section extending from a junction of previous work accomplished by AHP at the mouth of the Cape Fear River, northward to Zeke's Island. The westward limit of hydrography in the intracoastal waterway was $78^{\circ} 03' 20''$ w; the approximate limits of hydrography extend from $33^{\circ} 52' 30''$ northward to $33^{\circ} 56' 50''$, and are bounded on the east and west by the shoreline. Junction was made with contemporary survey H-9359, AHP-10-7-73, 1:10,000 scale, 1973-1974. Detailed prior surveys of the area are H-1128a, 1:10,000 scale 1872; H-1134, 1:10,000 scale, 1872; H1547, 1:10,000, 1883, H-4312, 1:10,000, 1923. All field work was accomplished during the period 6 November 1974 - 3 March 1975. A 1:10,000 scale channel overlay and a 1:2,500 scale wreck investigation overlay are presented for plotting clarity.

C. Sounding Vessel

H-9489

Launch 1277 was used exclusively to accomplish the survey work on AHP-10-7-74.

D. Sounding Equipment

A Raytheon Fathometer, Model Number DE-723D, Serial Number 1279 was used from Julian Days 310 through 323, 1974, and Raytheon fathometer model number DE723D, serial number 1904 was used thereafter in Launch 1277. All initial settings were adjusted to zero.

Frequent A to F scale checks were taken to insure correct stylus arm length. A TRA correction of +1.5 feet was determined by drawing the bar check tightly against the transducer and measuring the bar depth. All fathograms were scanned to mean out sea swell action where applicable. Refer to velocity and fathometer corrector report, OPR-437, Cape Fear River, North Carolina, which is in the appendix.

E. Smooth Sheet

Raw master tapes were logged and data plotted on the boatsheet by the Launch's on-board PDP-8/e Hydroplot System. Edited master and corrector tapes, velocity tape, and TC/TI Tape were logged by launch personnel and submitted for smooth plotting by Processing Division, Atlantic Marine Center.

F. Control

Control for Del Norte hydrography was established utilizing six separate networks of remote transponders, located at third-order triangulation stations. Calibration of the Del Norte system was accomplished using third-order triangulation stations as calibration points. Geographic positions of some of these triangulation stations were taken from U.S. Army Corps of Engineers Data; Refer to horizontal control report OPR-437, Cape Fear River, North Carolina 1974 for verification of these positions. The geographic positions used for all stations are listed in the enclosed Del Norte Note. Refer to daily raw data printouts for calibration data and see appendix for abstract of correctors and Del Norte Note.

G. Shoreline

Shoreline and topographic details were transferred from manuscripts TP-00678, TP-00681 and TP-00682. TP-00680 was not available, and the shoreline on the west side of the Cape Fear River, south of $33^{\circ} 55' 30''$, including Battery Island, was transferred from an unlabelled T-sheet compiled from 1969 photos. The western shoreline between $33^{\circ} 55' 30''$ and $33^{\circ} 56' 15''$ was transferred from a 1:10,000 scale blow up of C&GS Chart 426, 13th Edition, 20 April 1974. The MLW line was defined by hydrography in most areas.

H. Crosslines

Approximately 20.2 nautical miles, or 9.8% of the principal hydrography run on sheet AHP-10-7-74, were crosslines. The agreement with main scheme lines was very good, and most soundings agreed to the nearest foot. A few soundings differed by up to four feet; however, these cases occurred at the edges of or within the dredged channel, where large sand ridges were observed. See Section O, "Miscellaneous", for further details.

I. Junctions

Junction with H-9359, AHP-10-7-73, was good, and soundings generally agreed to the nearest foot, with no substantial offset in continuation of depth curves. Joins H-9501 (1974) to the North

J. Comparison with Prior Surveys

Comparisons with H-1128a, 1:10,000 scale, 1872; H-1134, 1:10000 scale, 1872, and H-1547, 1:10,000 scale, 1883, showed extensive major changes in most areas. It is recommended that these surveys be retained for historical purposes only.

Comparison with H-4312b 1:10,000 scale, 1923, showed many changes. The comparison indicated significant shifting of shoals near the mouth of Cape Fear River, and extensive changes in the shoreline and MLW line in the vicinity of Buzzard Bay (33° 53.5'n, 77° 58'w).

Pre-survey review items were investigated with the following results:

Item 1, sunken wreck, visually observed at ~~mid~~ ^(actually 1.4 ft. of tide) tide. Only metal parts remain, 2 ft. in diameter, 6 ft. long.

Charted Position	New Position (Fix #1916)
33° 54.06', 77° 59.62'	33° 53' 59.28", 77° 59' 43.84" 53 59.88"

It is recommended that the wreck symbol be retained and the position ~~as shown on the present survey~~ adjusted.

Changed to stranded WK at position indicated and deleted other wreck. CH 83550 711A ECH 426

✓ Item 2, Dangerous sunken wreck, charted at $33^{\circ} 54.85'$, $77^{\circ} 59.43'$. The area was visually observed at ~~minus tide~~ (-1.2 ft.) and no indication of remains was found. It is recommended that the wreck symbol be ~~deleted from future editions of the chart.~~ *Retained WK. retained on CH 835 SC TWA CH 426*

✓ Item 3, submerged wreck, is marked by a white day beacon with the words "Danger Submerged Wreck", Fix #1640. A lead line least depth of 9.7' (reduced to MLW) was obtained on the wreck, approximately 5 meters from the marker, 0° True. The area was later examined at minus tide and two metal I-beams were visually observed approximately 18 meters from the marker on a heading of 010° True. The highest of these beams is awash at MLW.

Eliminated CH 835 SC TWA & 426
 Lat: $33^{\circ} 54' 14.83'' N$, Long: $78^{\circ} 00' 58.77'' W$

✓ Item 4, submerged wreck (remains of "North Carolina"). 10 meter spacing lines were run to verify this item. A least depth of 14^2 feet was noted on the fathogram, reduced to MLW. *(pos. line 1316-1317) 815*

Charted Position:

$33^{\circ} 54.66'$, $78^{\circ} 00.90'$

New Position of Least Depth

$33^{\circ} 54' 38.9''$, $78^{\circ} 00' 58.8''$ *815*
 $51.65'$ $00.90'$

Additional work such as wire drag or diver verification is recommended to obtain the least depth. *Applied least depth via application of survey 835 SC TWA & 426*

✓ Item 5, two dangerous submerged wrecks. 10 meter spacing lines were run to verify these items. Least depths of 19^8 ft. and 18^5 ft. were noted on the fathogram, reduced to MLW.

Charted Position:

$33^{\circ} 54.75'$, $78^{\circ} 00.83'$

$33^{\circ} 54.85'$, $78^{\circ} 00.63'$

New Position of Least Depth

$33^{\circ} 54' 46.1''$, $78^{\circ} 00' 48.8''$ (19 ft.) *815*
 Line 2049-2050
 $33^{\circ} 54' 52.0''$, $78^{\circ} 00' 38.9''$ (18 ft.) *815*
 Line ~~1980-1981~~ *815*
 1980-1981

Other work such as wire drag or diver verification is recommended to obtain the least depth. *Applied least depth via application of survey 835 SC TWA & 426*

- ✓ Item 6, visible wreck charted in latitude $33^{\circ} 55.25'$, longitude $078^{\circ} 03.60'$. The charted position was verified by 3 point sextant fix and plotted on C&GS chart No. 426. (No manuscript was available). The wreck is 85' long, 14' wide. All that remains is the bottom of the hull which bares 5' at MLW. The hull remains are surrounded by pilings which bare 5' at MLW. This wreck is not dangerous to navigation on the inter^{ra}coastal waterway. It is recommended that the visible wreck symbol be retained on the chart for landmark purposes. (Not within limits of Survey) (Stranded Wreck Symbol plotted on Smooth Sheet at charted Position for information only) No corr's to 835 retained subm w/k symbol on 426
- ✓ Item 6a, visible wreck. This item is the lightship "Frying Pan", permanently moored ashore. ^{Position} Fix #1641 marks the stern, the most seaward point of the ship.

Charted Position

$33^{\circ} 54.94'$, $78^{\circ} 01.1'$

^{Position}
Fix #1641

$33^{\circ} 54' 57.0''$, $78^{\circ} 01' 09.0''$

Since this ship is an excellent landmark, it is recommended that the visible wreck symbol be retained on the chart. Concur

*Corr'd with position indicated
835 SC 81426 TWA*

- ✓ Item 7, ruins and piling. The vicinity of this item was examined extensively. Fix #1616 marks the south corner of a concrete platform, 7 meters X 7 meters, which bares ⁶ 8' at ^{MHW} MLW. Fix #1614 is the center of a 15 foot diameter area of concrete ruins, approximately 20 meters north of the platform. A pole sounding on the least depth (Fix #1614) reduces to ⁵ 0.5 ft. at MLW (submerged). Fix #1615 marks concrete ruins approximately 10 meters east of the platform. A pole sounding at this location reduces to ⁰ 2.0 ft. at MLW. (Rock awash and subm rock symbols used for these obstructions)

Charted Position

$33^{\circ} 55.3'$, $77^{\circ} 59.18'$

New Position (Fix 1616)

$33^{\circ} 55' 16.8''$, $77^{\circ} 59' 34.8''$

It is recommended that "piling" nomenclature be changed to "Platform" and the position adjusted.

*Added platform in vicinity of position
112 L-1249 177 (see letter)
CH 835 SC TWA
+ CH 426*

✓ Item 25, pile charted at $33^{\circ} 55.1'$, $78^{\circ} 00.75'$, and submerged pile charted at $33^{\circ} 55.3'$, $78^{\circ} 00.4'$ were searched for at minus tide and not found. Numerous piles were found in the general vicinity of the area (Fix #2440-2441, 2443-2444, 2447-2451). Further work such as wire drag is recommended to verify/disprove the existence of these piles. ✓

*Present piles adequate
Examined with 6355C TWT
426*

K. Comparison with the Chart

A comparison with C&GS Chart 426, 13th Edition, 20 April 1974 shows general agreement near the channel and in other deep water areas. There is extensive disagreement in shoal areas. Among the major discrepancies are the following items: ✓

The small bay charted as 10 ft. of water at $33^{\circ} 53' 40''$, $78^{\circ} 01' 15''$ was found to be dry at low water. This was verified by personal observation at MLW. ✓

The Channel into Oak Island Coast Guard Station, $33^{\circ} 53' 50''$, $78^{\circ} 01' 45''$, is charted as having a reported 7' depth. A least depth of ~~3~~ ⁴ was found in the channel with most of the channel being ~~five~~ ^{four} feet. ✓

The shoal charted at $33^{\circ} 53' 15''$, $77^{\circ} 59' 45''$ has changed considerably. ✓ The shoal now extends further offshore and has been cut by a ~~1~~ ² to 12' foot deep channel into Cape Creek. The channel into Bald Head Creek has shifted appreciably to the north.

The shoal charted at $33^{\circ} 54' 00''$, $78^{\circ} 00' 00''$ is now much more extensive, having moved northward and linking Battery Island and Striking Island. ✓

The 8' depth charted at $33^{\circ} 54' 30''$, $77^{\circ} 58' 15''$ in Still Creek is now a shoal with a sounding of -1'. Midchannel shoals appear elsewhere in this and other creeks leading into Buzzard Bay. ✓

Buzzard Bay, centered at $33^{\circ} 53' 30''$, $77^{\circ} 57' 45''$, has undergone extensive shoreline changes. The shoal area is also much larger than that charted. ✓

closed. A NEW INLET IS
Corncake Inlet is now open at $33^{\circ} 55' 06''$, $77^{\circ} 56' 40''$, with one or more possible narrow channels leading into the shallow bay east of the lower breakwater, $33^{\circ} 55' 30''$, $77^{\circ} 57' 30''$. The general vicinity of the inlet is quite shallow and at low tide is accessible by skiff only.

New Inlet, charted at $33^{\circ} 56' 00''$, $77^{\circ} 56' 15''$ is completely closed by the high water line. This was verified by personal observation. *The name is now applied as annotated above.*

The overhead power cable, charted as extending from Southport to the vicinity of Oak Island Lighthouse, no longer exists, although the power poles are still present.

The shoals charted at $33^{\circ} 55' 33''$, $77^{\circ} 58' 40''$ and $33^{\circ} 55' 40''$, $77^{\circ} 58' 00''$ have disappeared.

Numerous areas within the charted limits of the spoil areas at $33^{\circ} 55' 30''$, $77^{\circ} 59' 15''$ and $33^{\circ} 56' 15''$, $77^{\circ} 58' 15''$, are bare at MHW.

A 17 ft. sounding was found at $33^{\circ} 55' 03''$, $78^{\circ} 00' 16''$ which lies on the channel side of the 18-foot curve and in the vicinity of a charted 33 foot sounding.

L. Adequacy of Survey

This survey is complete and adequate to supersede prior surveys for charting.

M. Aids to Navigation

Comparison of the observed floating aids to navigation with C&GS Chart 426, 13th Edition, 20 April 1974, and Light List Volume I Atlantic Coast 1975 showed no discrepancies.

Refer to Horizontal Control Report OPR-437, Cape Fear River, North Carolina, 1974 for positions of the fixed aids to navigation contained within the limits of H-9489.

BJS

N. Statistics

<u>Vessel</u>	<u>Nautical Miles of Soundings</u>	<u>Sq. Nautical Miles</u>	<u>No. of Bottom Samples</u>	<u>No. of Positions</u>
Launch 1277	253.9	8.9	24	2451

O. Miscellaneous

The U.S. Army Corps of Engineers was dredging parts of Lower Swash, Upper Southport, Lower Southport, and Baldhead-Caswell Channels during the time of hydrography.

A private company is currently dredging the approaches to the newly constructed Pfizer Corporation Pier (^{Position} ~~Fix~~ #1410). ϕ 36°56.1' λ 79°59.3'

No soundings were taken in Dutchman Creek, extending northward from the intracoastal waterway, due to lack of shoreline manuscript and line of sight electronic control.

Large sand ridges were found to exist in and near the edges of the dredged channels. Crest-to-trough heights exceeded twelve feet at times, with crest-to-crest distances as short as twenty meters or less. The existence of these ridges was verified by U.S. Army Corps of Engineers divers. Fathograms were scanned to pick off the peaks of these ridges, with the result that crosslines sometimes appear to have depth discrepancies of four feet or more in the vicinity of these ridges.

Detached positions were obtained on pilings and range markers which bare at MHW, for the purpose of verification of field edit only. No detached positions were obtained for range markers at Smith Island Channel Range Rear Light.

All soundings taken on Day 029 (^{Positions} ~~Fix~~ #1893-1915) were smooth plotted using field reduced smooth tides based on readings of a tide staff at the Federal Point Basin small boat landing. Refer to the enclosed tide note. BJS

P. Recommendations

It is recommended that the delineation of charted spoil areas to the east of the dredged channel be adjusted to reflect the limits of foul and shoal areas as defined by hydrography.

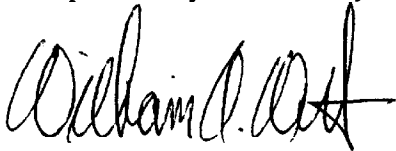
It is recommended that future hydrographic surveys of the Cape Fear River be accomplished at a 1:5,000 scale for more accurate shoal and shoreline delineation and to provide a larger work sheet for the hydrographer.

It is recommended that all critical sounding data be immediately applied to the existing chart and a high priority given to the production of the new 1:40,000 scale small craft chart. It is additionally recommended that, in the interest of safety, consideration be given for production of a 1:20,000 scale small craft chart instead of the proposed 1:40,000 scale in order to present a more detailed representation of bottom configuration for recreational use.

Q. References to Reports

1. Horizontal Control Report OPR-437, Cape Fear River 1974, 75
2. Field Edit Report, OPR-437, Cape Fear River 1974, 75.

Respectfully Submitted,



William A. Wert

Lt.(jg), NOAA

OIC, Launch 1277



Fred L. Kleinschmidt

Ens., NOAA

APPROVAL SHEET
SURVEY-H-9489 (AHP-10-7-74)

The Hydrographic Records transmitted with this report are complete and adequate.


F. T. Smith

Lt. Cdr., NOAA

Chief, AHP

A P P E N D I X

DEL NORTE NOTE

Del Norte electronic positioning equipment, which operates in a Range-^{N-9489 803} Range mode, was used to control all of the hydrography on sheet AHP-10-7-74. Six separate control networks were used on this sheet, two of which were used on both sides of their respective baselines. All shore stations were located at established third-order triangulation stations.

Calibration was established twice daily (whenever possible) by positioning the launch at known third-order triangulation stations. Del Norte ranges were compared to ranges calculated by PDP-8/e computer using the RK 407 program. Any eccentricity from the triangulation mark and the Del Norte antenna was accounted for.

The discussion of equipment performance is broken up into two parts, since all hydrography performed during CY 1975 utilized different equipment than that used during CY 1974.

The performance of equipment used during 1974 was excellent, and no equipment malfunctions were experienced. During this time, the observed difference between morning and evening calibrations had a mean of 1.1 meters and a maximum of 3 meters. The mean standard deviation over all calibrations was less than 1.5 meters for all stations. The DMU calibration was made once at the beginning of the project, and was never changed.

In late December, 1974, the DMU, parallel buffer, and four transponders, equipment currently being used, were recalled by AMC for shipboard use. The quality of the performance of the equipment used after this recall, was significantly lower than that of the original equipment, with numerous and frequent major and minor failures. On 10 January the new DMU, s/n 162, was replaced due to intermittent operation. This unit had been previously sent to AMC, EED, for repair of this same failure, which still existed when the unit was returned to the field (see Failogs #5130 and 5131). On 16 January transponder s/n 181 failed and was returned to AMC for repair of duplexer and low voltage power supply (See Failog #5132).

Unit s/n 189, which was sent to the field as a replacement for unit #181, failed within 90 minutes (see Failog #5133). Since being repaired, unit #189 exhibits rather large changes in calibration from day-to-day(10 meters or more at times). Another problem encountered is water seepage into sealed antennas. Despite these problems, the observed difference between morning and evening calibrations has not exceeded 2 meters for any station, although the mean standard deviation over all calibrations ranged from 1.1 meter, to greater than 4 meters. Resetting the calibration at the DMU has been necessary several times for the more unstable (long time) units.

ABSTRACT OF EQUIPMENT UTILIZATION

AHP-10-7-74

H-9489

I. Distance Measuring Unit (DMU)

Julian Days 310-346 (1974)	s/n 179
Julian Days 9-13 (1975)	s/n 162
Julian Days 20-62	s/n 159

II. Mobile Transponder: s/n 162 for entire sheet

III. Shore Station Sites

<u>Signal Number</u>	<u>Station Description</u>
1	Lookout Tower, 18 m High Lat. 33° 54' 59.657" Long. 78° 01' 12.008"
2	Lower Swash Channel Range Rear Light, 13m High Lat. 33° 56' 59.369" Long. 77° 57' 04.967"
3	Bald Head Shoal Channel Range Rear Light, 9m High Lat. 33° 53' 45.315" Long. 77° 58' 55.991"
14	Catwalk(Oak Is. Lighthouse), 45m High Lat. 33° 53' 33.614" Long. 78° 02' 06.739"
15	P.C.B.L.(Bug), 8m High Lat. 33° 56' 09.304" Long. 77° 59' 23.967"
16	Federal Point, 12m High Lat. 33° 57' 36.622" Long. 77° 56' 29.835"

ABSTRACT OF EQUIPMENT UTILITZTION
(Cont'd)

<u>Pattern I</u>		<u>Pattern II</u>		<u>Julian Days Used</u>
<u>Signal #</u>	<u>Unit S/N</u>	<u>Signal #</u>	<u>Unit S/N</u>	
1	249	2	181	310-311, 316, 323,326,331-337
1	188	2	181	9
1	188	2	189	36-43
1	189	2	181	59-60
1	249	14	251	318,322,324,331
2	181	3	252	315-316,324, 339-341, 345
2	181	3	189	62
1	249	3	252	319, 329
14	251	1	249	329
3	252	15	251	343, 344, 346
3	181	15	188	13
3	189	15	188	20-22, 29
15	188	3	189	22, 29
16	188	3	189	62

SIGNAL LIST
H-9489 (AHP-10-7-74)

Del Norte Sta. No.	Description	Latitude	Longitude
<u>1</u> 200	Cape Fear Pilot Tower, 1962-73	33°54'59.657"N	78°01'12.008"W 250
<u>2</u> 212	Lower Swash Rear Range	33°56' ⁵ 19.369"N	77°57'04.967"W 254
<u>3</u> 220	Bald Head Shoal Channel Range Rear Lt., 1962-73	33°53'45.315"N	77°58'55.991"W 250
<u>14</u> (230)	Catwalk, 1962-65	33°53'33.614"N	78°02'06. ³ 729"W 250
<u>15</u> 240	Bug	33°56'09.304"N	77°59'23.967"W 254
16	Federal Point, 1913-64 (Falls off sheet)	33°57'36.622"N	77°56'29.835"W
101	Three Cedars USE 1905-1935	33°53'39.041	77°59'14.977 139
102	Cape Fear River Bald Head Shoal Channel Range Front Lt. 1962-73	33°53'00.404	77°59'47.001 139

FATHOMETER AND VELOCITY
CORRECTION REPORT OPR-437
NOV 1974 - MARCH 1975

A. Equipment

A Raytheon Fathometer, model number DE 723D, serial number 1279 was used in Launch 1277 from Julian Days 310 thru 323. This fathometer had frequent problems with the take up motor and was replaced with a Raytheon Fathometer, model number DE 723D, serial number 1904 on Julian Day 324. Both fathometers often failed to sound (digital and analog) in depths under the transducer ranging from 2.4 feet or less and never sounded in depths less than 1.9 feet. This was discussed with Electronic Engineering Division at AMC and as a possible solution different receiver cards were substituted in the ECU (inverter) unit. This did not correct the problem and therefore numerous pole soundings were necessary in shoal water.

B. Velocity and Instrument Error Correctors

Depth corrections were obtained by averaging bar check values and excluding values which differed by more than 0.4 feet. Two graphs were constructed and velocity correctors were scaled in accordance with Table 2 of the Hydrographic Manual. The graphs and abstracts of the corrector values are included with this report. A TRA correction of +1.5 feet was pre-determined by drawing the bar check tightly against the transducer and measuring the bar depth. Frequent A to F scale checks were taken to check stylus arm length. All initial settings were adjusted to zero.

C. Settlement & Squat Correctors

Settlement and Squat Correctors were obtained as outlined in Section 5-108 of the Hydrographic Manual. The graph and Abstract of Corrector Values are included with this report.

D. Miscellaneous

Appreciable changes in depth corrections occurred and therefore two separate velocity tables were constructed. The influence of sea water temperature and salinity is less pronounced as one moves further inland from the mouth of the river and a corresponding decrease in temperature and salinity is

expected during the Fall and Winter. Since sound velocity decreases with corresponding decreases in temperature, salinity, and pressure, velocity correctors will decrease at any given depth as shown in the two velocity graphs.

Respectfully Submitted,

William A. Wert
Lt.(jg), NOAA
OIC, Launch 1277

BAR CHECK ABSTRACT

CAPE FEAR RIVER

DAY	5	10	15	20	25	30	35	40	45	50
FATH. #1279										
310	-.1	+1	+2	+4	+5	+6	+9	+10	+13	
315	-.1	0	+1	+2	+4	+5	+7	+8	+11	
319	-.2	+1	+1	+3	+6	+8				
322	-.2	0	0	+2	+4	+5	+6	+8		
FATH # 1904										
329	0	0	+1	+2	+3	+5	+6	+6		
340	-.1	0	0	+2	+4	+4				
AVERAGE	-.12	+0.03	+0.08	+0.25	+0.43	+0.55	+0.70	+0.80	+1.2	
345	-.2	-.2	-.3	-.3	-.3					
009	-.2	-.2	-.2	-.2	-.2	+1 R				
024	-.2	-.4	-.5	-.5	-.6	-.6	-.5	-.5		
038	-.2	-.2	-.3	-.3	-.3	-.1				
049	-.2	-.3	-.3	-.2	-.2	-.1	-.2	-.1		
AVERAGE	-.20	-.26	-.32	-.30	-.32	-.27	-.35	-.30		

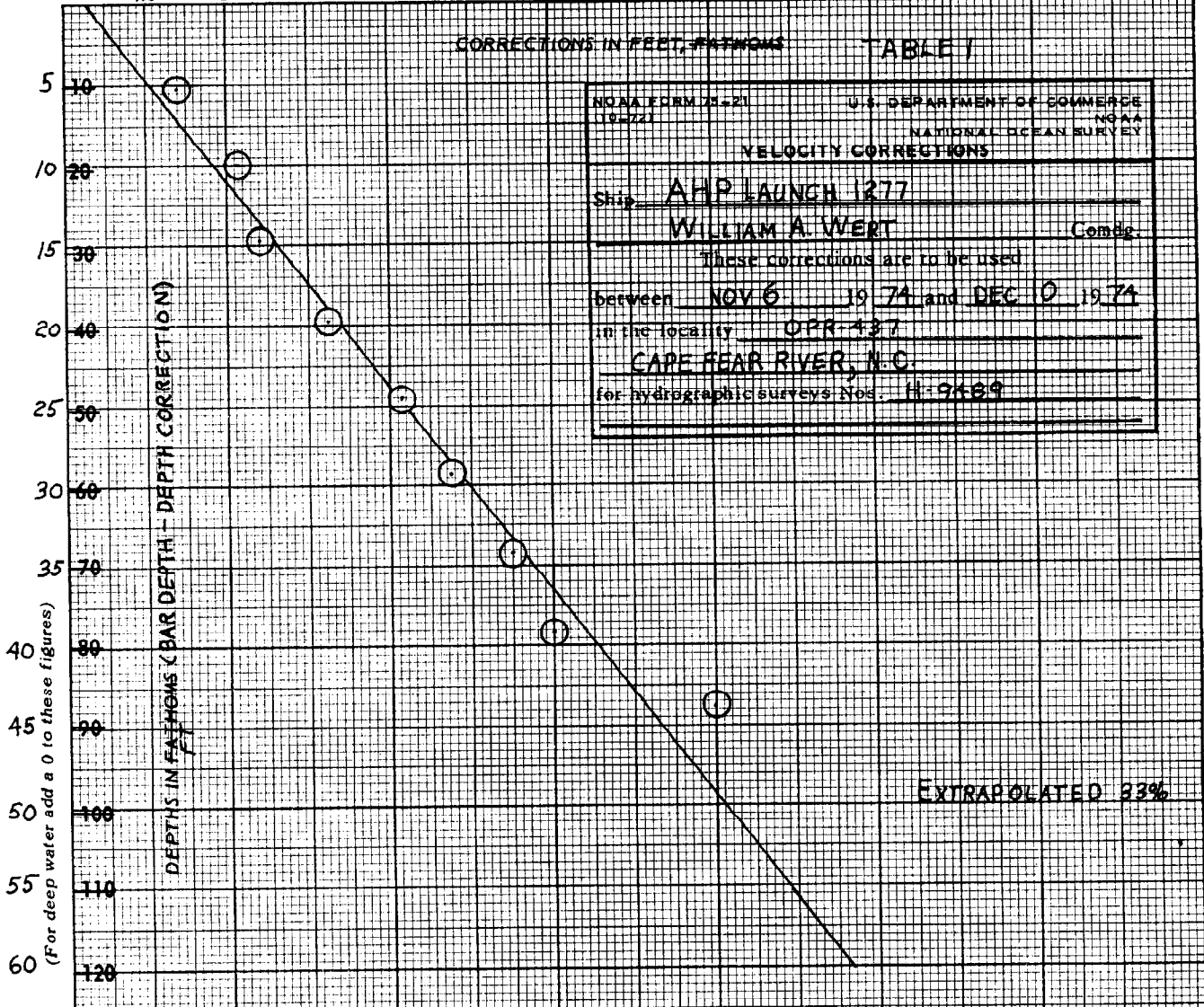
+2 .4 .6 .8 1.0 1.2 1.4 1.6
 -2 0 (Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS

TABLE I

NOAA FORM 75-21 (12-72)	U.S. DEPARTMENT OF COMMERCE NOAA NATIONAL OCEAN SURVEY
VELOCITY CORRECTIONS	
Ship <u>AHP LAUNCH 1277</u>	
<u>WILLIAM A. WERT</u>	
Comdr.	
These corrections are to be used	
between <u>NOV 6</u> 19 <u>74</u> and <u>DEC 0</u> 19 <u>74</u>	
in the locality <u>OPR-437</u>	
<u>CAPE REAR RIVER, N.C.</u>	
for hydrographic surveys Nos. <u>H-9489</u>	

DEPTHS IN FATHOMS (BAR DEPTH - DEPTH CORRECTION)
 (For deep water add a 0 to these figures)



Abstract of Velocity Corrections

Table 1

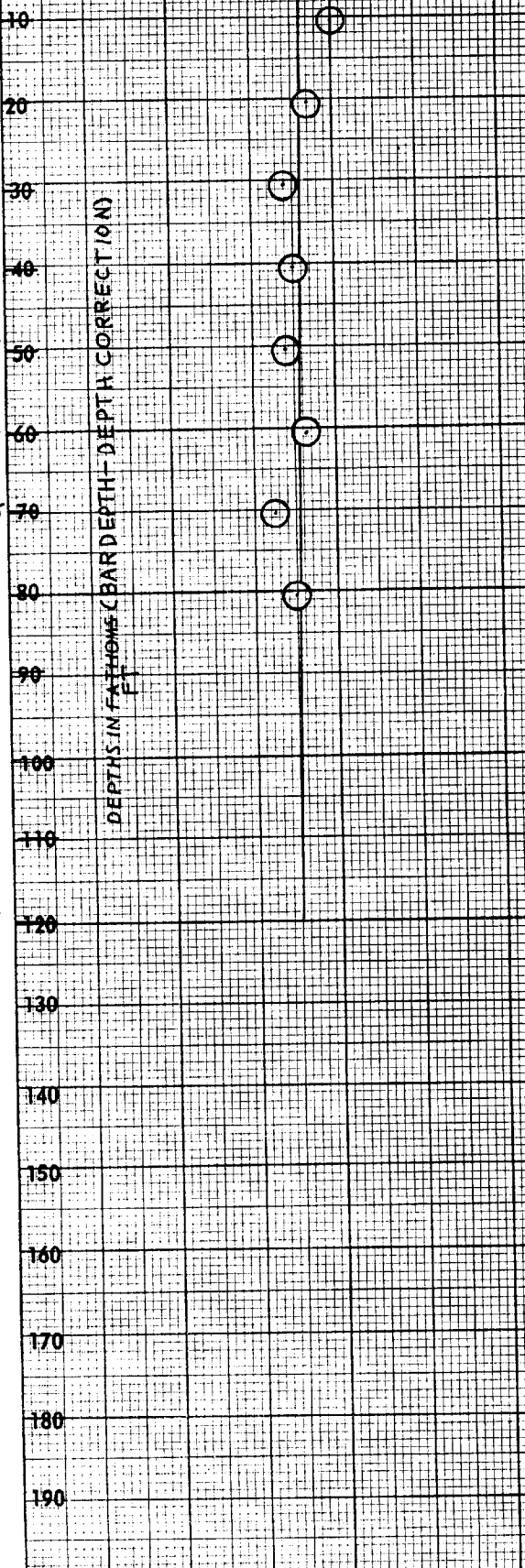
Depth (Ft)	Correction (Ft)
0.0-7.7	-0.2
7.8-14.0	0.0
14.1-20.5	+0.2
20.6-26.9	+0.4
27.0-33.3	+0.6
33.4-39.7	+0.8
39.8-46.1	+1.0
46.2-52.5	+1.2
52.6-59.0	+1.4

KE 20 X 20 TO THE INCH 46 1240
 MADE IN U.S.A.
 KEUFFEL & ESSER

.6 .4 -2 0 +2
 (Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN FEET, FATHOMS TABLE 2

5
10
15
20
25
30
35
40
45
50
55
60



NOAA FORM 25-21 (10-72) U.S. DEPARTMENT OF COMMERCE
 NOAA NATIONAL OCEAN SURVEY

VELOCITY CORRECTIONS

Ship AHPLAUNCH 277

WILLIAM ALWERT Comdg.

These corrections are to be used
 between DEC 11 19 74 and MAR 3 19 75
 in the locality OPR-437
CAPE FEAR RIVER, N.C.
 for hydrographic surveys Nos. H-9489

EXTRAPOLATED 37%

Abstract of Velocity Corrections
 Table #2

Depth (Ft)	Correction (Ft)
0.0-59.0	-0.2

42,

20 X 20 TO THE INCH 46 1240
 MADE IN U.S.A.
 KELUFFEL & ESSER

RPM

0

1000

2000

3000

SETTLEMENT & SQUAT

LAUNCH 1277

MAY 7, 1974

ABSTRACT OF SETTLEMENT & SQUAT

RPM	CORRECTION (FT)
0-1499	0.0
1500-2000	+0.2
2001-3000	+0.4

CORRECTION (FT)

.4

.3

.2

.1

43.

27

August 13, 1975

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Baldhead Is., Southport,
Deep Creek staff

Period: November 6, 1974-March 3, 1975

HYDROGRAPHIC SHEET: H-9489

OPR: 437

Locality: Southern Cape Fear River

Plane of reference (mean lower low water) 3.1 ft.- Baldhead I. Island
1.0 ft.- Southport
-0.3 ft.- Deep Creek

Height of Mean High Water above Plane of Reference is 4.4 ft.

Remarks: Recommended zoning:

- (1) South of $33^{\circ}53.6'N$ zone direct on Baldhead Island
- (2) From $33^{\circ}53.6'N$ to $33^{\circ}55.6'N$ and eastward to Muddy Slough zone direct on Southport
- (3) North of $33^{\circ}55.6'N$ use Southport applying +15 min. time correction and range ratio x0.95
- (4) In Cape Creek, Bay Creek, and Deep Creek zone direct on Deep Creek
- (5) In the sloughs east of Muddy Slough and in Buzzard Bay use Baldhead Island applying +20 min. time correction and range ratio x0.9 *Done*
- (6) In the area east of "The Rocks" use Baldhead Island applying +40 min. time correction and range ratio x0.8.

James R. Hubbard
48. *James R. Hubbard*
Tides Branch

GEOGRAPHIC NAMES

Name on Survey	A	B	C	D	E	F	G	H	K
	ON CHART NO.	ON PREVIOUS SURVEY NO.	ON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	GRAND McNALLY ATLAS	U.S. LIGHT LIST	

BALD HEAD CREEK										1
BATTERY ISLAND										2
BAY CREEK										3
BOWENVILLE CREEK										4
BURRISS CREEK										5
BUZZARD BAY										6
CAPE CREEK										7
CAPE FEAR RIVER										8
CEDAR CREEK										9
COWARD CREEK										10
DEEP CREEK										11
DEEP WATER POINT										12
DUTCHMAN CREEK										13
ELIZABETH RIVER										14
FORT CASWELL										15
INTRACOASTAL WATERWAY										16
MIDDLE CREEK										17
MOLASSES CREEK										18
MUDDY SLOUGH										19
NEW INLET										20
OAK ISLAND										21
SHELLBED CREEK										22
SHELLBED ISLAND										22
SOUTHPORT										23
STILL CREEK										23
STRIKING ISLAND										24
THE ROCKS										24
ZEKES ISLAND										25

APPROVED

Charles Hamilton

STAFF GEOGRAPHER-CS112

2 APRIL 1977

ATLANTIC MARINE CENTER
APPROVAL SHEET
FOR
AUTOMATED SURVEY H-9489

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has/~~has~~ not been made. A new final sounding printout has/~~has~~ not been made.

Date: 2-3-77

Signed: William L. Jones
Title: Chief, Verification Branch

- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic and AMC Manuals. Exceptions are listed in the verifier's report.

Date: 2-3-77

Signed: RA7
Title: Chief, Processing Division

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9489

AHP-10-7-74

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

RECORD DESCRIPTION	AMOUNT	-RECORD DESCRIPTION	AMOUNT			
SMOOTH SHEET with smooth PNO & excess overlay	1	BOAT SHEETS (2 parts)	1			
DESCRIPTIVE REPORT	1	OVERLAYS (preliminary)	23			
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
Accordion ENVELOPES	2		1-smooth & misc.			
CAHIERS	12-with printouts		1			
VOLUMES						
BOXES						

T-SHEET PRINTS (List) TP-00678, TP-00681, and T-12291 (2) - not received 3/7/77

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS			TOTALS
	PRE-VERIFICATION	VERIFICATION	REVIEW	
POSITIONS ON SHEET				2451
POSITIONS CHECKED		250		
POSITIONS REVISED		25		
DEPTH SOUNDINGS REVISED		500		
DEPTH SOUNDINGS ERRONEOUSLY SPACED		---		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		---		
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		80		
JUNCTIONS		8		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS				
SPECIAL ADJUSTMENTS				
ALL OTHER WORK		512		
TOTALS		600		
PRE-VERIFICATION BY	BEGINNING DATE		ENDING DATE	
W.H. Tyndall, F.L. Saunders, H.R. Smith	08/08/75		04/19/76	
VERIFICATION BY	BEGINNING DATE		ENDING DATE	
B.J. Stephenson	06/16/76		02/02/77	
REVIEW BY Quality Control By	BEGINNING DATE		ENDING DATE	
K. W. Wellman	3-8-77		4-1-77	

85 hrs. 4/21/77 R.D. Sander 2 hrs. 5/11/77
Carstens 25 hr 4/21/77 U.S. G.P.O. 1972-769-562/439 REG.#6 31

Reg. No. _____

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQ'D _____ INITIALS _____

REMARKS:

Reg. No. H-9489

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE 12-6-82 TIME REQ'D _____ INITIALS JJK

REMARKS:

H-9489

Information for Future Presurvey Reviews

This is an area of shifting shoals and changeable shoreline. Numerous piles serving as dredging ranges have been established by the Corps of Engineers throughout the area. The several charted wrecks and piles not disproved by the present survey (see Verifier's Report--section 7-D and the Quality Control Report--item 13) should be verified or disproved by wire drag during future work in the area.

<u>Position Index</u>		<u>Bottom Change Index</u>	<u>Use Index</u>	<u>Resurvey Cycle</u>
<u>Lat.</u>	<u>Long.</u>			
335	0781	4	2	25 years
335	0780	6	2	25 years

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9489

FIELD NO. AHP-10-7-74

North Carolina, Cape Fear River, ^{Fort Caswell to Zakes Island}
~~Lower Cape Fear River~~

SURVEYED: November 6, 1974 through March 3, 1975

SCALE: 1:10,000

PROJECT NO.: OPR-437

SOUNDINGS: Raytheon DE-723D
Depth Recorder
Sounding Pole

CONTROL: Del-Norte
(Range-Range)

Chief of Party F.T. Smith
Surveyed by W.A. Wert
..... K.L. Kleinschmidt
..... J.S. Bradford
..... D.M. Bryant
..... W.L. Sprye
Automated Plot by Calcomp Plotter #618 (AMC)
Verified and Inked by B.J. Stephenson

1. Introduction

No unusual problems were encountered. The Projection Parameter was revised during verification. The red changes in the Descriptive Report were made by the verifier. A list of detached positions was added to the Descriptive Report during verification.

2. Control and Shoreline

a. The control for this survey is adequately described in Section F and the Del-Norte Note (page 13) in the Descriptive Report.

b. The shoreline originates with final, reviewed Photogrammetric Manuscripts TP-00681 (1:10,000), T-12291 (1:20,000), and unreviewed, Class I Photogrammetric Manuscript TP-00678. TP-00680 was not available from Coastal Mapping because the area was not flown during the 1973 flights. The shoreline on the western half of the survey was transferred to the Smooth Sheet from T-12291 (1:20,000) by the overhead projector. The reliability of information on this manuscript is questionable because the photographs were flown for this manuscript in December 1969. (See Q.C. Report-items 1 through 5)

3. Hydrography

- a. Depths at crossings are in good agreement.
- b. The usual depth curves were adequately delineated. The three foot depth curve was added to define the bottom configuration more distinctly.
- c. The low water line was delineated in most areas.
- d. The development of the Presurvey Review Items and the investigation of least depths are considered adequate.

4. Condition of Survey

The Smooth Sheet and accompanying overlays, hydrographic records, and reports are adequate^{and} to conform to the requirements of the Provisional Hydrographic Manual, with the following exceptions:

- a. The line spacing did not provide soundings sufficient to permit an accurate portrayal of the bottom configuration in the creeks and their approaches; therefore, the depth curves could not be drawn accurately.
- b. The hydrographer should have done additional work in Price Creek (Ferry landing.)
- c. Fifty meter lines along axis of channel were omitted from the last one-fourth mile of dredged channel at north end of sheet.
- d. The hydrographer should have done additional work to better define the eastern edge of the channel around Battery Island.

5. Junctions

An adequate junction has been effected with the following surveys: (See Q.C. Report-item 12)

- H-9359 (1973) to the south
- H-9501 (1974) to the north

There are no other contemporary surveys that join this survey.

6. Comparison With Prior Surveys

H-1128a (1872) 1:10,000
H-1134 (1872) 1:10,000
H-1547 (1872) 1:10,000
H-4312b (1923) 1:10,000

These surveys, taken together, cover the common area of the the present survey. A comparison between the prior and present surveys reveals changes in both the shoreline and the bottom configuration. Present survey depths differ from the prior depths by varying amounts depending on their location.

The following are some of the most significant changes which have occurred:

1. The natural inlet previously charted at approximate latitude $33^{\circ} 56' 00''$ N, longitude $77^{\circ} 56' 15''$ W is now closed, and an inlet has opened at approximate latitude $33^{\circ} 55' 06''$ N, longitude $77^{\circ} 56' 40''$ W. The inlet is quite shallow and is only navigable by skiff, at low tide.
2. The shapes of the islands and shoreline have changed considerably in the survey area.
3. The shoal areas have changed throughout the survey. These changes are mainly attributed to the redistribution of bottom sediments during storms and current activity found in the area.

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

7. Comparison with Chart 11537 (formerly C&GS 426), 13th Edition, April 20, 1974

Aa. Hydrography (See Q.C. Report-item 13)

A comparison shows general agreement near the channels and in other deep areas. There is extensive disagreement in the shoal areas. The following are some of the changes which have occurred:

1. The small bay charted as ten feet of water at $33^{\circ} 53' 40''$ N, $78^{\circ} 01' 15''$ W was found to be dry at low water.

2. The channel into Oak Island Coast Guard Station at 33° 53' 50"N, 78° 01' 45"W has shoaled near light "8". (See Q.C. Report-item 14(B-1))
 3. The approaches to Bald Head and Cape Creeks have changed considerably.
 4. The shoal in the vicinity of Battery and Striking Islands is now more extensive, having moved northward and almost links these Islands together.
 5. The eight foot depth charted at 33° 54' 30"N, 77° 58' 15"W in Still Creek is now a shoal with minus soundings. Mid-channel shoals appear elsewhere in this and other creeks leading to Buzzard Bay.
 6. Buzzard Bay, centered at 33° 53' 30"N, 77° 57' 45"W has undergone extensive shoreline changes. The shoal area is also much larger than that charted.
 7. The overhead power cable, charted as extending from Southport to the vicinity of Oak Island, no longer exists, although the power poles are still present. *Notes at J. Daley 1/10/77*
 8. The shoals charted at 33° 55' 33"N, 77° 58' 40"W and 33° 55' 40"N, 77° 58' 00"W have disappeared.
 9. Numerous areas in the charted limits of the spoil areas at 33° 55' 30"N, 77° 59' 15"W, and 33° 56' 15"N, 77° 58' 15"W are bare at MHW. (Some of these islets are on the shoreline manuscript.)
 10. A 14 to 17 foot shoal was found in the vicinity of 33° 56' 38"N, 77° 58' 25"W which lies on the channel side of the 18 foot curve.
 11. There are two 30 foot soundings located on the right outside quarter of upper Southport Channel in the vicinity of Buoy "14".
- B. Controlling Depths (See Q.C. Report-item 14)
 C.B. Aids to Navigation

The aids to navigation on the present survey are in substantial agreement with their charted position and adequately mark the features intended. (See Q.C. Report-item 15)

Dø. Attention is directed to the following: (PSR Items)

- ✓ #1 Sunken wreck charted at latitude 33° 54.06'N, longitude 77° 59.62'W was visually observed on a ^{(low) minus} tide. It is recommended that the chart symbol be changed to a stranded wreck and position be revised to latitude 33° 53' 59.88"N, longitude 77° 59' 43.73"W. *concord with survey CH 835 SC TWA #426*
- ✓ #2 Dangerous sunken wreck, PA charted at latitude 33° 54.85'N, longitude 77° 59.43'W. The area was visually observed on a ^{(low) minus} tide, and no indication of remains was found. It is recommended that the wreck symbol be ~~deleted from the chart.~~ (Not disproved by present survey.) *concord 835 SC TWA #426*
retained on
- ✓ #3 Submerged wreck, charted at latitude 33° 54.33'N, longitude 78° 01.00'W. The submerged wreck is a barge, as reported in the Presurvey Review Item. The barge is marked by a white daybeacon with the words, "Danger, Submerged Wreck." The barge is lying in an east-northeast direction, north of the daybeacon. A least depth of ten feet was obtained on the western end, and two I-beams were observed on a minus tide. The wreck is extremely dangerous and should be retained on the chart. *concord 835 SC TWA #426*
- ✓ #4 Submerged wreck, charted at latitude 32° 54.66'N, longitude 78° 00.90'W. The area was developed and a least depth of 12 feet was observed on the fathogram. It is recommended that the wreck symbol be retained on the chart pending wire drag or investigation by divers. *concord 835 SC TWA #426*
- ✓ #5 Two dangerous submerged wrecks, charted at latitude 33° 54.75'N, longitude 78° 00.83'W and latitude 33° 54.85'N, longitude 78° 00.63'W. The areas were developed, and least depths of 18 feet and 15 feet were observed on the fathograms. The positions were as follows:
 - (18 feet) Position line 2049-2050 - latitude 33° 54' 46.12"N, longitude 78° 00' 48.31"W
 - (15 feet) Position line 1980-1981 - latitude 33° 54' 52.39"N, longitude 78° 00' 37.25"W

It is recommended that the wreck symbols be retained on the chart pending wire drag or investigation by divers. *concord 835 SC TWA #426*

✓ #6 Visible wreck, charted at latitude 33° 55.25'N, longitude 78° 03.60'W. The charted position was verified. The wreck is 85 feet long, 14 feet wide, and bares five feet at MLW. The hull is surrounded by pilings. The stranded wreck symbol should be used instead of the sunken wreck symbol. The hydrographer states that the wreck is not dangerous to navigation. It is not within the limits of hydrography of H-9489; however, the stranded wreck symbol was plotted for information only.

Deleted ED on 4/26/77 JLL
off limits 835
retain symbol on 426

✓ #6A Visible wreck, charted at latitude 33° 54.92'N, longitude 78° 01.1'W. This item is the old Lightship "Frying Pan Shoal", permanently moored ashore. The stranded wreck symbol should be ~~removed from the chart and replaced with landmark symbol at latitude 33° 54' 57.23"N, longitude 78° 01' 08.89"W.~~ retained on the chart.

deleted with survey
alt 835 SC
7/77
i 426

✓ #7 Ruins and piling, charted at latitude 33° 55.3'N, longitude 77° 59.8'W. The vicinity of this item was examined extensively by the hydrographer. The results are as follows:

✓ Position 1616 - Concrete platform located at latitude 33° 55' 15.7"N, longitude 77° 59' 47.56"W, bares six five feet at MHW.

Revised platform to agree with these coordinates 11/19/77 JLL
Added Platform via L-1249/77 JLL
alt 835 SC
i 426

✓ Position 1614 - Concrete ruins located at latitude 33° 55' 16.44"N, longitude 77° 59' 48.08"W. Shown as rock awash on Smooth Sheet, bares 0.5 feet at MLW.

✓ Position 1615 - Concrete ruins located at latitude 33° 55' 16.10"N, longitude 77° 59' 46.93"W. Shown as submerged rock on Smooth Sheet. Ruins covered two feet at MLW.

✓ #25 Pile, charted at latitude 33° 55.1'N, longitude 78° 00.75'W, and submerged piles, charted at latitude 33° 55.3'N, longitude 78° 00.4'W. These pilings were searched for during a minus tide with negative results. Numerous piles were located in the general vicinity - D.P.'s 2440-2441, 2443-2444, and 2447-2451. The hydrographer recommends further work such as wire drag to verify or disprove the existence of the piles. *Revise westerly-pile to submerged.*

changed westerly pile to submerged. 835 & 426 Retain 2 easterly piles as presently charted.

The present survey is adequate to supersede the charted hydrography within the common area. (Except as noted above and in the Q.C. Report.)

8. Compliance With Instructions

This survey adequately complies with the Project Instructions, except as follows:

The hydrography was not run in accordance with Section 4.4 of these instructions. (See remarks under "Condition of Survey".)

9. Additional Field Work

This is a good basic survey. Additional field work is not recommended.

H-9489

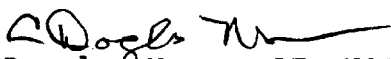
Examined and Approved:
Hydrographic Inspection Team
Date: 2/3/77



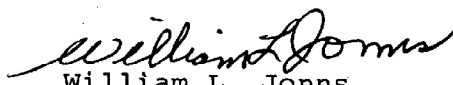
CDR Robert A. Trauschke, NOAA
Chief, Processing Division



CDR Jeffrey G. Carlen, NOAA
Chief, Coastal Mapping Division



Douglas Mason, LT, NOAA
Chief, EDP Branch

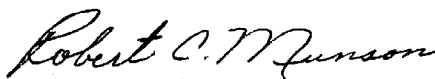


William L. Jonns
Chief, Verification Branch



Dorothy C. Calland
Verification Branch

Approved/Forwarded



Robert C. Munson
RADM, NOAA
Director, Atlantic Marine Center



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852

C352

April 1, 1977

TO: *A. J. Patrick*
A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*
Quality Evaluator

SUBJECT: Quality Control Report for H-9489 (1974-75), North Carolina,
Cape Fear River, Fort Caswell to Zekes Island

A quality control inspection of H-9489 has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, junctions, shoreline transfer, decisions and actions by the verifier, and cartographic presentation of data.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as follows:

1. Some shoreline was transferred to the present survey from TP-00679 (vicinity of latitude 33°56.40', longitude 77°56.20') during quality control inspection. This T-sheet is not listed in section 2 of the Verifier's Report.
2. The appropriate dates for the topographic manuscripts listed in section 2 of the Verifier's Report were not included [see provisional manual--section 6.6(7)]. They are as follows:

TP-00678)	1973-75
TP-00679)	
TP-00681	1972-73
T-12291(2)	1969-73 (see item 3 below)

3. Survey T-12291(2) 1969-73, rather than T-12291, should have been used for the shoreline. The shoreline and positions of some piles, dolphins, and piers on the verified smooth sheet (originating with T-12291) were at variance with T-12291(2). Shoreline information north of latitude 33°54.00', and between longitudes 78°02.00' and 78°04.00', on T-12291(2), is denoted as class III, not having been field edited.



42

The shoreline on the present smooth sheet, in the area common to T-12291(2), does not conform to the commonly accepted degree of accuracy of transfer and is shown for guidance only; the best available position being shown on T-12291(2). During quality evaluation, however, minor revisions were made on the present smooth sheet to rectify the delineation of questionable features.

4. The former high water line, comprising the peninsula in the vicinity of latitude $33^{\circ}54.68'$, longitude $78^{\circ}02.88'$ on T-12291(2) (within the area designated as class III--no field edit), appears to have undergone erosion in the intervening 4.5 years between the dates of photography and the present survey. Present depths of 0 to -1 foot in the area generally delineate the mean low water line. During quality control inspection, the mean high water line in this area was shown by a red dashed line.

5. Superfluous detail appears on the smooth sheet from TP-00681; e.g., inland ponds and dotted low water line inshore of the low water depth curve established by hydrography.

6. Tide correctors, required to reduce numerous elevations on piles and dredging markers, were not readily available to the quality evaluator and, due to the complexity of applying time and zone correctors to the hourly heights, no undue effort was expended to confirm the elevations of piles and markers shown on the verified smooth sheet. Such elevations, therefore, are to be used for guidance only.

7. Submerged wrecks were plotted in the following vicinities:

<u>Latitude</u>	<u>Longitude</u>
$33^{\circ}54.66'$	$78^{\circ}00.90'$
$33^{\circ}54.77'$	$78^{\circ}00.80'$
$33^{\circ}54.87'$	$78^{\circ}00.62'$

*contoured
with 83500
7208
6426*

The developments in the indicated areas were intended to verify the charted submerged wrecks. Inasmuch as the hydrographer did not actually claim that the wrecks were located, it is considered misleading to include the notation "Wk" on the smooth sheet. The wreck notes were deleted during quality control inspection.

8. Inasmuch as most of the charted items and the Presurvey Review items, enumerated respectively in sections 7-A and 7-C of the Verifier's Report, are adequately discussed in the Descriptive Report, it is considered redundant to include each item in the Verifier's Report. An appropriate notation could have been added to the various items in the Descriptive Report and the discussion in the Verifier's Report limited to those items not appropriately discussed in the Descriptive Report.

9. Lower Swash Channel Range Rear Light (located in latitude 33°56.99', longitude 77°57.08') also serves a dual function as Reaves Point Channel Range Rear Light. The latter function of this light, however, was not so indicated on the verified smooth sheet.

10. Depth curves were not always delineated in narrow creeks and were improperly delineated in a few areas of more open water on the verified smooth sheet.

11. An islet was omitted in the vicinity of latitude 33°54.45', longitude 77°57.67' from TP-00681.

12. To effect an adequate junction, it is necessary that the junctional smooth sheet and records be available to the verifier so that the junctional notes can be inked on both smooth sheets and the records can be reexamined as necessary to effect the agreement of soundings and reconciliation of depth curves in the junctional area (see provisional manual--sections 6.3.4.7 and 7.3.12.5 and the memorandum from the Office of Marine Surveys and Maps, dated August 6, 1976, entitled "Depth Contour Agreement in Overlap Areas"). When the verifier is unable to effect a completed junction, it is incorrect to include a direct statement in the Verifier's Report that an adequate junction has been effected.

Additional work necessary to complete the junctions described in section 5 of the Verifier's Report was accomplished during the quality control inspection of the present survey.

13. The Verifier's Report does not include specific comments regarding several charted features which are at variance with the present survey. Section 7-A of the Verifier's Report is supplemented by the following:

12. The two center piles of the four piles charted in the vicinity of latitude 33°53.72', longitude 78°00.29' originate with Corps of Engineers Bp-81995-96 (1958-60). They are neither verified nor disproved by the present survey and should be revised to submerged piles on the chart. *Already charted as submerged piles on chart 833 SC*

13. The charted positions of several piles are at variance with the present survey. They are as follows: *TRM # 426*

<u>Items</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Charted Displacement</u>
6 piles	33°55.95'	77°58.15'	150 meters to NE.
6 piles	33°56.00'	77°58.85'	90 meters to SW.
6 piles	33°56.30'	77°58.33'	170 meters to SW.
6 piles	33°56.60'	77°57.80'	80 meters to NW.
1 pile	33°54.63'	78°00.78'	100 meters to SW <i>concurrent with survey</i>

All piles concurrent with latest TP-00678 coverage chart 833 SC TP-00681 # 426

The above piles originate with Corps of Engineers Bp-81995-96 (1958-60). The charted positions of the above piles should be revised to agree with the present survey.

14. Section 7 of the Verifier's Report (Comparison with Chart . . .) lacks any reference to the results of a comparison between the present survey and the controlling depths of the charted channels [see provisional manual--section 6.6 (12b)].

Section 7 of the Verifier's Report is supplemented by the following:

B. Controlling Depths

The controlling depths of the channels within the limits of the present survey are in general agreement with those indicated on the chart, with the following exceptions:

1. The Oak Island Coast Guard Station channel, charted in the vicinity of latitude $33^{\circ}53.94'$, longitude $78^{\circ}01.75'$, has a charted controlling depth of 7 feet. The present survey shows a controlling depth of 3 feet for this channel with a 0.5-foot sounding intruding into the channel to within approximately 25 meters of channel light "8."

2. The channel in the vicinity of latitude $33^{\circ}56.00'$, longitude $77^{\circ}59.45'$ has a charted controlling depth of 9 feet. The present survey shows a controlling depth of less than 6 feet with a 2-foot sounding intruding into the channel approximately 30 meters off the northeast pile marking the channel entrance.

15. Section 7-C of the Verifier's Report is supplemented by the following:

Daybeacons #7 and #9, however, charted in latitude $33^{\circ}55.01'$, longitude $78^{\circ}02.35'$ and latitude $33^{\circ}55.10'$, longitude $78^{\circ}02.91'$ respectively, and the light charted in latitude $33^{\circ}55.12'$, longitude $78^{\circ}03.30'$ are not shown on the present survey and do not appear on T-12291(2).

16. The Sign PA charted in latitude $33^{\circ}55.20'$, longitude $78^{\circ}03.22'$ from CL-1572 (1973) was not investigated on the present survey and should be retained as charted.

*off limits
retained on 426 as chkd*

17. The limit of grass growing offshore was added from the topographic manuscripts.

cc:
C351

