

9456

Diag. Cht. No. 1001-3, 1243-2, 1244.

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 40-3-74

Office No. H-9456

LOCALITY

State FLORIDA

General Locality EAST COAST OF FLORIDA

Locality ST. AUGUSTINE

1974

CHIEF OF PARTY

F. T. Smith

LIBRARY & ARCHIVES

DATE 6/11/76

U.S. GOVERNMENT PRINTING OFFICE: 1974-763-098

9456

1001 NC

HYDROGRAPHIC TITLE SHEET

H-9456

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-40-3-74

State Florida

General locality East Coast of Florida

Locality St. Augustine

Scale 1:40,000 Date of survey 5/20/74 to 10/15/74

Instructions dated March 26, 1973 Project No. OPR 436-746-73

Vessel Atlantic Hydrographic Party Launches 1257, 1255 and 1261

Chief of party Lt. Cdr. Fidel T. Smith

Surveyed by Lt. Cdr. J. Rolland, Lt. D. Yeager, Lt.(ig) R. Floyd, Lt.(ig) R. Wells,
Ens. C. Cavin, Ens. Wm. Otto

Soundings taken by echo sounder, ~~and tide gauge~~ Raytheon DE 723 D fathometer

Graphic record scaled by Digitized

Graphic record checked by Launch Officers and Survey Technicians, (C. Meekins, AMC)

Retracted by N.A. Automated plot by CAL COMP-618 AMC

Verification by Charles Meekins, R.G. Roberson

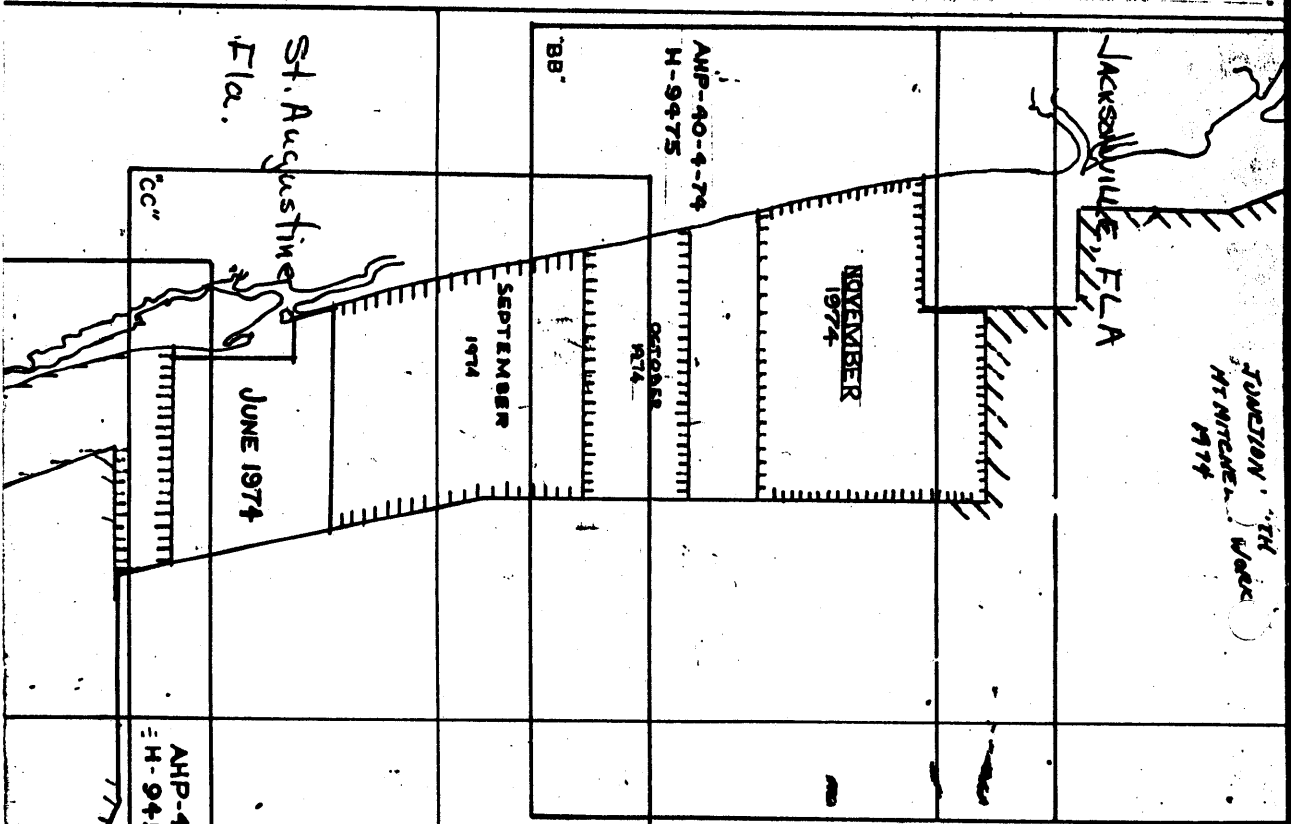
Soundings in ~~fathoms~~ feet at MLW ~~MEETX~~

REMARKS: Changes in red by R.G. Roberson, AMC

black by Charles Meekins, AMC

Checked against std 10/7/76

CM



PROGRESS SKETCH
 OPR-436 - AHP-74
 CHART IIII

1974 PROGRESS
 JUL AUG SEP OCT NOV DEC

1031	815	1042	448	859		
205	172	67	81	41		
713	1680	239	196	178		
74	80	88	40	73		
20	12	0	15	0		

LNM Sounding line
 " Misc. distance
 " Distance to and from
 Sq NM Sounding
 Bottom Samples

30° 00'

DESCRIPTIVE REPORT
FOR
HYDROGRAPHIC SURVEY H-9456
AHP-40-3-74

A. Project

This survey was accomplished under project instructions OPR 436-746-73, Coasts of Florida and Georgia, dated March 26, 1973. The following supplemental instructions were issued:

- Change #1: Supplement to Instructions, May 3, 1973
- Change #2: Supplement to Instructions, May 17, 1973

B. Area Surveyed

The area surveyed is just outside St. Augustine Inlet from Latitude 29° 50' to Latitude 30° 07'. It extends from the 12 foot contour on the inshore side to approximately 8 miles offshore on the western side. This area junctions with the following contemporary surveys:

H-9455 1:40,000 1974	Borders on southern end
H-9367 1:80,000 1973	Borders on offshore side
H-9373 1:80,000 1973	
H-9475 1:40,000	Survey in progress at time this report was written. Borders on northern end

The survey commenced on May 20, 1974. Field work was completed October 15, 1974.

C. Sounding Vessels

This survey was accomplished with Atlantic Hydrographic Party Launches 1257, 1255 and 1261. All soundings and fix numbers were plotted on the boatsheet in black, regardless of which launch on which they were obtained. Other survey records, however, were annotated with different identifying colors. Launch 1257 used black and Launches 1255 and 1261 used red. In addition, all records may be identified by vessel number. Fix numbers used by the launches are as follows:

Position 1 through 1163; Launch 1261
Position 5000 through 5882; Launch 1257
Position 2000 through 2809; Launch 1255

D. Sounding Equipment

All three launches were equipped with Raytheon Fathometers, Units 723-40 of Model DE-723, Raytheon Digital Depth Monitors, Units 723-41 of Model DE-723, and Raytheon Electronic Cabinet Units, Unit 723-42 of Model DE-723. Serial numbers for this equipment were as follows:

Launch 1257

Fathometer	SN 37024
Digital Depth Monitor	SN 37016
Electronic Cabinet Unit	SN 1910

Launch 1255

Fathometer	SN 2934
Digital Depth Monitor	SN 1045
Electronic Cabinet Unit	SN 2132

Launch 1261(Days 140-162)

Fathometer	SN 1279
Digital Depth Monitor	SN <u>N/A</u>
Electronic Cabinet Unit	SN 37013

Launch 1261(Days 165-178)

Fathometer	SN 37019
Digital Depth Monitor	SN <u>N/A</u>
Electronic Cabinet Unit	SN 37013

Launch 1261 switched fathometers on day 165 due to the deteriorating quality of the trace. As the survey progressed, digitizing problems were experienced but the source of the difficulty could not be determined during the project. Corrections to the erroneous depths were made on corrector tapes after scanning the fathograms.

Analog to digital corrections were applied while scanning depths on all three launches. The corrections were made daily by comparing the exact digitized depth with the exact analog depth for several soundings. Digitized values were assumed correct as they are not affected by initial adjustment, stylus adjustment, instrument error or phase error.

Velocity corrections on Launch 1257 were determined by two bar checks. They were both plotted (digital depth vs. correction), and a straight line drawn between the points with a very slight preference given to the values from the second bar check. This was done because the first bar check was taken on the first day the launch worked on the project and the second bar check was taken around the middle of the project. Correctors increased slightly and it was assumed that if they continued changing, they increased gradually.

Velocity corrections on Launch 1255 were determined from one bar check taken on day 261. Digital depth versus depth correction was plotted and a line drawn through the points. Velocity corrections were picked off the graph at 0.2 foot intervals.

Velocity corrections to soundings obtained by Launch 1261 were determined in the following manner: All digitized values obtained during bar checks were averaged and plotted. A line with a slope determined by the average TDC corrections was adjusted to fit the bar check plot. Finally, a small adjustment was made to the line below 40 feet to better fit the bar check data.

E. Smooth Sheet

The smooth sheet ~~will~~^{was} be plotted at Atlantic Marine Center, Processing Division, Norfolk, Virginia.

F. Control

Two systems of control were used on this survey. Launch 1261 used a Del Norte Range Range system Model 210 with a non-timesharing Distance Measuring Unit (DMU), Serial Number 159. It was powered by a Hastings Raydist Power Supply floated across storage batteries. This provided a fairly constant voltage. The individual remote and base Transponder Units are recorded in the Electronic Control Report with correctors, signals used, and fix numbers for each day. The Del Norte system was used from the southern limit of the sheet northward to Latitude $29^{\circ} 56.5'$.

Two sets of Del Norte stations were used to control this area of the survey. For operation between days 140 and 168, inclusive the stations were located as follows:

Left Station: Signal 569
Latitude $29^{\circ} 46' 21.33''$
Longitude $81^{\circ} 15' 19.24''$

Control Type = 101

Right Station: Signal 102
Latitude $29^{\circ} 53' 06.73''$
Longitude $81^{\circ} 17' 19.32''$

For operation between days 170 and 178, inclusive, the stations were located as follows:

Left Station: Signal 107
Latitude $29^{\circ} 54' 58.57''$
Longitude $81^{\circ} 19' 31.78''$

Control Type = 102

Right Station: Signal 700
Latitude $30^{\circ} 06' 51.54''$
Longitude $81^{\circ} 20' 42.11''$

The northern portion of the sheet (from Latitude $29^{\circ} 56.5'$ to the northern survey limit) was completed by Launches 1257 and 1255 using a Hastings - Raydist system in the range-range mode. Launch 1257 used a first party system, Navigator SN 59, Transmitter SN 37 operating at a frequency of 3306.400 KHz. Launch 1255 operated with a fourth party system, Navigator SN 58, Transmitter SN 45, at a frequency of 3306.520 KHz.

← One set of Raydist shore stations was used to control the northern portion of this survey. They were:

Left Station: Signal 585
Red Raydist Model AA60, SN 54
Latitude $29^{\circ} 50' 40.54''$
Longitude $81^{\circ} 15' 56.98''$

Control Type = 21 for Lch. 1255
Control Type = 22 for Lch. 1257

Right Station: Horse, 1974
Green Raydist Model AA60, SN 119
Latitude $30^{\circ} 06' 04.073''$
Longitude $81^{\circ} 26' 04.333''$

Calibration was accomplished by three point sextant fix. Check angles were taken if enough people were available. Other wise, at least one object was changed during each series of fixes. Corrections were determined by PDP 8 computer using RK 561 and AM 560. Printouts and original data are submitted with field records.

All but five electronic shore stations and calibration signals were either published triangulation stations or points located by third order traverse methods by Mr. Jim Shea of the Atlantic Marine Center, Operations Division. The five exceptions are as follows:

- Signal 569; Located with sextant and tape by personnel from Launch 1261.
- Signal 585; Located with T-2 and tape by personnel from Launch 1257.
- Signal 102; Obtained using symmetry and taped circumference of St. Augustine L.H. by personnel from Launches 1257 and 1261.
- Signal 106; Located with T-2 and Geodimeter by personnel from Launch 1257. & 107

See sounding volumes for original data on the above stations.

G. Shoreline *See Verifier's Report paragraph 2*

No photo control or manuscripts were provided to delineate the shoreline on this survey. In accordance with the project instructions, the 12 foot contour was developed as well as was safely possible. Sounding lines were run parallel to the shoreline to accomplish this in some areas, however.

H. Crosslines

Crosslines were run to the extent of 8.5% of the principal system of sounding lines. Agreement was very good, two feet or less in most cases, very often one foot or better. Apparent disagreement in a few cases can be attributed to a relatively rough bottom in the immediate vicinity of the disagreement. *Crosslines are in good agreement after the final correctors were applied.*

I. Junctions

Soundings agree very well with those from H-9455 which joins this survey on the south and H-9475 (in progress at the time this report was written) to the north. These two junction surveys were completed by AHP Launches 1257 and 1255 under the same project instructions as this survey.

see Quality Control Report

Agreement with H-9367 and H-9373, which border the survey on the east, is good.

J. Comparison with Prior Surveys

In the discussion which follows, all depths referred to on the boatsheet will have an approximate velocity correction applied. The boatsheet itself was plotted without velocity corrections.

Only one Pre-Survey Review Item falls on this sheet. Item 33, submerged wreckage at Latitude $29^{\circ} 51.9'$, Longitude $81^{\circ} 14.9'$, was developed at a line spacing of 100 meters run perpendicular to the regular system of lines. No evidence of this wreckage was found. It is recommended that this area be wire dragged to completely disprove its existence.

Position No's 894-923. DST no. 33 Deleted from records during preliminary verification.

Dashed-circled items which disagree by three feet or more with the soundings obtained during this survey are as follows:

1. The two charted 35 foot depths in the vicinity of $29^{\circ} 54.6'$ North, $81^{\circ} 14.6'$ West were not found. Thirty-five foot depths may be found about 1/2 mile west of the area. From there, the bottom drops off to seaward to a depth of 45 to 55 feet where the charted 35's are located. *Pos'n 836-837*
2. The two charted 45 foot depths in the vicinity of $29^{\circ} 54.9'$ North, $81^{\circ} 17.4'$ West were found but their positions have shifted slightly. *Pos'n 823-827, 848, 852-853*
3. Depths in the vicinity of $29^{\circ} 56.8'$ North, $81^{\circ} 13.9'$ West, have shoaled 2 to 5 feet. The charted depth in this area is 43 feet. This area was developed and the least depth found is ~~36~~³⁹ feet. *Pos'n 2658-2659*

K. Comparison with the Chart

As with "Comparison with Prior Surveys," all boatsheet depths referred to in the following paragraphs, have had approximate velocity corrections applied. The boatsheet itself was not plotted with velocity corrections.

Comparison was made with Chart 11208, 10th edition, January 27, 1973 and Chart 11205, 6th edition, August 4, 1973. Charted depths referred to as dashed-circled Pre-Survey Review Items are not repeated here.

Generally speaking, there are many soundings that have shifted and changed slightly. A very close inspection, which is not feasible to make in the field, should be made. Some of the more noticeable changes are listed below:

1. The 60 and 63 foot charted depths at $29^{\circ} 54.0' N$, $81^{\circ} 12.4' W$ and $29^{\circ} 54.0' N$, $81^{\circ} 11.5' W$ respectively are somewhat shoaler according to the present survey. *Posn 006-008*
2. The 56 foot depth charted at $29^{\circ} 56.8' N$, $81^{\circ} 15.5' W$ has shoaled a few feet. *Posn 5076*
3. The charted 58 and 59 at $29^{\circ} 58.8' N$, $81^{\circ} 14.7' W$ and $29^{\circ} 59.0' N$, $81^{\circ} 15.7' W$ respectively have shoaled a few feet while the 50 foot depth charted at $29^{\circ} 58.6' N$, $81^{\circ} 15.9' W$ has gotten deeper. *Posn 5258*
4. The area within 1/2 mile of a line from $29^{\circ} 59.7' N$, $81^{\circ} 12.5' W$ to $29^{\circ} 58.5' N$, $81^{\circ} 12.5' W$ has gotten a few feet shoaler.
5. The 48 and 49 foot depths in the vicinity of $30^{\circ} 00.3' N$, $81^{\circ} 10.0' W$ are shoaler than the chart indicates. *Posn 5411-5412*
6. There is a 38 foot depth at $30^{\circ} 01.3' N$, $81^{\circ} 10.7' W$ previously uncharted. *Posn 5597-5598*
7. The 67 foot charted depth at $30^{\circ} 01.7' N$, $81^{\circ} 11.8' W$ represents that area poorly. There is a relatively steep gradient at that location with depths varying from 54 to 63 feet. *Posn 5653*

L. Adequacy of Survey

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

M. Aids to Navigation

During the time this survey was conducted, there were seven buoys marking the channel to and through St. Augustine Inlet. Most of these buoys are subject to change as required by the shifting features in and around the channel. Consequently positions were obtained on only the first two buoys from seaward. They were as follows:

Black and White Lighted Buoy (ST.A)

Latitude $29^{\circ} 54' 01.15''$ *Posn 665*

Longitude $81^{\circ} 15.03.41''$

Lighted Buoy
Red ~~Star~~ "2"

Latitude $29^{\circ} 53' 59.46''$

Longitude $81^{\circ} 15' 50.71''$ *Posn 621*

The remaining buoys (from seaward) were black can "3", lighted black buoy "3A", lighted black buoy "5", red nun "6" and red nun "8".
Not located by this survey.

Two fishing areas are periodically marked by local sports fishing groups. The following were privately maintained buoys on "Nine Mile Reef" while the survey was conducted.

- DP #238 Plastic buoy marked "SC" with white flag
 Latitude 29° 52' 22.56" ✓
 Longitude 81° 08' 24.15" ✓
- DP #209 Plastic buoy marked "NC" with black flag
 Latitude 29° 52' 34.47" ✓
 Longitude 81° 08' 22.50" ✓
- DP #700 Plastic buoy marked "9NM" with white flag
 Latitude 29° 54' 24.46" ✓
 Longitude 81° 07' 38.42" ✓
- DP #701 Plastic buoy unmarked with red flag
 Latitude 29° 54' 56.91" ✓
 Longitude 81° 07' 28.07" ✓

The other area is called "Four Mile Reef" and was marked with one buoy.

- DP #998 Plastic buoy marked "SA" with flag
 Latitude 29° 55' 19.19" ✓
 Longitude 81° 12' 32.20" ✓

N. Statistics *Total position numbers ... 2856*

	<u>1257</u>	<u>1255</u>	<u>1261</u>	<u>Total</u>
Nautical Miles of Sounding Lines	548	424	498	1470
Nautical Miles of Crosslines	58	30	37	125
Nautical Miles of Developments	0	63	21	84
Nautical Miles of Miscellaneous Distance	23	107	98	228
Nautical Miles To and From	60	227	159	446
Bottom Samples	0	15	12	27

O. Miscellaneous

An error was made in determining the position of the Del Norte station on the St. Augustine Tank (signal 107) and the location of the center of the tank itself (signal 106).

The error was discovered after field work was completed but all pertinent data was corrected, including, parameter tapes, signal tape, calibrations (electronic correctors), and corrector tapes. The boatsheet was plotted with the erroneous data, but the resulting error in positions is negligible.

Launch 1261 had many mechanical and electrical problems. As a result much of the data was edited. A status sheet is provided with edited and rejected soundings.

On day 247, a lane was gained on pattern II on the Raydist Navigator aboard Launch 1257. A correction for this lane gain was not punched on the original Corrector Tape used to plot the boatsheet. As a result, the soundings obtained on Day 247 from 142817 GMT to the end of the day, have been misplotted on the boatsheet by 45 meters or less. See insert below. The corrector tape was repunched with the proper electronic correctors since that time, however.

Insert: This is most noticeable between position numbers 5425 and 5428 where adjacent soundings do not agree because of a steep bottom gradient.

Position numbers 1 through 15 inclusive have been duplicated. They were used on sounding lines run by Launch 1261 and again for bottom sample positions on Launch 1255. *Bottom Sample position numbers change during preliminary verification to 9001 thru 9015.*

P. Recommendations

None

Q. Reference to Reports

1. Electronic Control Report, OPR 436, AHP-40-3-74, H-9456
2. Report on Corrections to Echo Soundings, OPR 436, AHP-40-3-74, H-9456

APPROVAL SHEET
SURVEY H-9456(AHP-40-3-74)

The hydrographic records transmitted with this report are complete and adequate.

F. T. Smith

F. T. Smith
Lt. Cdr., NOAA
Chief, AHP

TC/TI TAPE FOR OPR 436, H 9456 ... VESNO 1257 ✓

155719 0 0002 0001 241 125700 009456

VELOCITY TABLE FOR OPR 436, H 9456 ... VESNO 1257 ✓

000051 0 0002 0001 000 125700 009456

000084 0 0004

000118 0 0006

000151 0 0008

000184 0 0010

000217 0 0012

000251 0 0014

000284 0 0016

000317 0 0018

000350 0 0020

000384 0 0022

000417 0 0024

000450 0 0026

000483 0 0028

000517 0 0030

000550 0 0032

000583 0 0034

000616 0 0036

000650 0 0038

000683 0 0040

999999 0 0040

TC/TI TAPE FOR OPR 436, H 9456 ... VESNO 1255 ✓

155113 1 0003 0002 242 001255 009456

190000 1 0003 0002 288 001255 009456

VELOCITY TABLE FOR OPR 436, H 9456 ... VESNO 1255 ✓

000090 0 0000 0002 000 001255 009456

000123 0 0002

000153 0 0004

000192 0 0006

000215 0 0008

000247 0 0010

000278 0 0012

000308 0 0014

000340 0 0016

000373 0 0018

000402 0 0020

000433 0 0022

000463 0 0024

000493 0 0026

000525 0 0028

000555 0 0030

000585 0 0032

000615 0 0034

000647 0 0036

999999 0 0036

VELOCITY CORRECTORS, LAUNCH 1261 ✓
AHP-40-3-74

000020 0 0000 0003 000 126100 040374
000078 0 0002
000115 0 0004
000153 0 0006
000190 0 0008
000228 0 0010
000265 0 0012
000304 0 0014
000346 0 0016
000390 0 0018
000434 0 0020
000476 0 0022
000518 0 0024
000560 0 0026
000602 0 0028
000644 0 0030
000686 0 0032
000728 0 0034
999999 0 0034

TC/TI TAPE ✓
AHP-40-3-74

140659 0 0000 0003 140 126100 040374
130105 0 0004 0003 149 126100 040374
134247 0 0002
162629 0 0004
164059 0 0002
164829 0 0004
135940 0 0000 0003 150 126100 040374
140315 0 0002
140903 0 0004
132316 0 0000 0003 158 126100 040374
135351 0 0006 0003 162 126100 040374
135957 0 0002
140145 0 0002
142542 0 0000
162454 0 0004 0003 178 126100 040374
163516 0 0002
165104 0 0006

ATLANTIC MARINE CENTER
ELECTRONIC CONTROL PARAMETERS

1. Project # OPR-436 2. Reg. # H-9456 3. Field # AHP-40-3-74
 4. Type of Control: ~~Del Norte~~ Raydist (Hi-Fix, Raydist, EPI, etc.)
 5. Frequency 3306.400 (for conversion of electronic lanes to meters)

6. Mode of Operation (check one):

Control Type 22

Range-Range

Range-Visual

Range One (R₁)
 Station I.D. Signal 585
 Range Two (R₂)
 Station I.D. Horse, 1974

Lat.	<u>29</u> °	<u>50</u> '	<u>40.54</u> "
Long.	<u>81</u> °	<u>15</u> '	<u>56.98</u> "
Lat.	<u>30</u> °	<u>06</u> '	<u>04.073</u> "
Long.	<u>81</u> °	<u>26</u> '	<u>04.833</u> "

Hyperbolic (3-station)

Hyper-Visual

Slave One
 Station I.D. _____
 Master
 Station I.D. _____
 Slave Two
 Station I.D. _____

Lat.	_____°	_____'	_____"
Long.	_____°	_____'	_____"
Lat.	_____°	_____'	_____"
Long.	_____°	_____'	_____"
Lat.	_____°	_____'	_____"
Long.	_____°	_____'	_____"

7. Location of Survey:

Range-Range

Imagine an observer is standing at R₁ Station and looking directly at R₂ (check one):

Survey area is to observer's Right A=0

Survey area is to observer's Left A=1

Hyperbolic

Looking from survey area toward Master Station:

Slave One must be to observer's Left;

Slave Two must be to observer's Right.

8. This form is submitted as an aid in preparing a boat sheet.

This form applies to all data on this survey.

This form applies to part of the data on this survey.

Vessel EDP #	From Time Day	To Time Day	Position Numbers (inclusive)
<u>1257</u>	<u>155719</u> <u>241</u>	<u>214928</u> <u>259</u>	<u>5000</u> to <u>5882</u>
_____	_____ _____	_____ _____	_____ to _____
_____	_____ _____	_____ _____	_____ to _____

9. Remarks: _____

ATLANTIC MARINE CENTER
ELECTRONIC CONTROL PARAMETERS

1. Project # OPR-436 2. Reg. # H-9456 3. Field # AHP-40-3-74
 4. Type of Control: Raydist (Hi-Fix, Raydist, EPI, etc.)
 5. Frequency 3306.520 (for conversion of electronic lanes to meters)
 6. Mode of Operation (check one): Control Type 21

Range-Range

Range-Visual

Range One (R₁)
 Station I.D. Signal 585
 Range Two (R₂)
 Station I.D. Horse, 1974

Lat.	<u>29</u> °	<u>50</u> '	<u>40.54</u> "
Long.	<u>81</u> °	<u>15</u> '	<u>56.98</u> "
Lat.	<u>30</u> °	<u>06</u> '	<u>04.073</u> "
Long.	<u>81</u> °	<u>26</u> '	<u>04.333</u> "

Hyperbolic (3-station)

Hyper-Visual

Slave One
 Station I.D. _____
 Master
 Station I.D. _____
 Slave Two
 Station I.D. _____

Lat.	_____ °	_____ '	_____ "
Long.	_____ °	_____ '	_____ "
Lat.	_____ °	_____ '	_____ "
Long.	_____ °	_____ '	_____ "
Lat.	_____ °	_____ '	_____ "
Long.	_____ °	_____ '	_____ "

7. Location of Survey:

Range-Range

Imagine an observer is standing at R₁ Station and looking directly at R₂ (check one):

Survey area is to observer's Right A=0

Survey area is to observer's Left A=1

Hyperbolic

Looking from survey area toward Master Station:

Slave One must be to observer's Left;

Slave Two must be to observer's Right.

8. This form is submitted as an aid in preparing a boat sheet.
 This form applies to all data on this survey.
 This form applies to part of the data on this survey.

Vessel EDP #	From Time Day	To Time Day	Position Numbers (inclusive)
<u>1255</u>	<u>155113</u> <u>242</u>	<u>180509</u> <u>288</u>	<u>2000</u> to <u>2809</u>
_____	_____ _____	_____ _____	_____ to _____
_____	_____ _____	_____ _____	_____ to _____

9. Remarks: _____

ATLANTIC MARINE CENTER
ELECTRONIC CONTROL PARAMETERS

1. Project # OPR-436 2. Reg. # H-9456 3. Field # AHP-40-3-74
 4. Type of Control: Del Norte (Hi-Fix, Raydist, EPI, etc.)
 5. Frequency 1498.35 (for conversion of electronic lanes to meters)
 6. Mode of Operation (check one): Control Type 101

Range-Range

Range-Visual

Range One (R₁)
 Station I.D. Signal 569
 Range Two (R₂)
 Station I.D. Signal 102

Lat.	<u>29</u> °	<u>46</u> '	<u>21.33</u> "
Long.	<u>81</u> °	<u>15</u> '	<u>19.24</u> "
Lat.	<u>29</u> °	<u>53</u> '	<u>06.73</u> "
Long.	<u>81</u> °	<u>17</u> '	<u>19.32</u> "

Hyperbolic (3-station)

Hyper-Visual

Slave One
 Station I.D. _____
 Master
 Station I.D. _____
 Slave Two
 Station I.D. _____

Lat.	°	'	"
Long.	°	'	"
Lat.	°	'	"
Long.	°	'	"
Lat.	°	'	"
Long.	°	'	"

7. Location of Survey:

Range-Range

Imagine an observer is standing at R₁ Station and looking directly at R₂ (check one):

Survey area is to observer's Right A=0

Survey area is to observer's Left A=1

Hyperbolic

Looking from survey area toward Master Station:

Slave One must be to observer's Left;

Slave Two must be to observer's Right.

8. This form is submitted as an aid in preparing a boat sheet.

This form applies to all data on this survey.

This form applies to part of the data on this survey.

Vessel EDP #	From Time	Day	To Time	Day	Position Numbers (inclusive)
<u>1261</u>	<u>140659</u>	<u>140</u>	<u>193011</u>	<u>168</u>	<u>0001</u> to <u>0989</u>
_____	_____	_____	_____	_____	to _____
_____	_____	_____	_____	_____	to _____

9. Remarks: _____

ATLANTIC MARINE CENTER
ELECTRONIC CONTROL PARAMETERS

1. Project # OPR-436 2. Reg. # H-9456 3. Field # AHP-40-3-74
 4. Type of Control: Del Norte (Hi-Fix, Raydist, EPI, etc.)
 5. Frequency 1498.35 (for conversion of electronic lanes to meters)
 6. Mode of Operation (check one): Control Type 102

Range-Range

Range-Visual

Range One (R₁)
 Station I.D. Signal 107
 Range Two (R₂)
 Station I.D. Signal 700

Lat.	<u>29</u> °	<u>54</u> '	<u>58.57</u> "
Long.	<u>81</u> °	<u>19</u> '	<u>31.78</u> "
Lat.	<u>30</u> °	<u>06</u> '	<u>51.54</u> "
Long.	<u>81</u> °	<u>20</u> '	<u>42.11</u> "

Hyperbolic (3-station)

Hyper-Visual

Slave One
 Station I.D. _____
 Master
 Station I.D. _____
 Slave Two
 Station I.D. _____

Lat.	_____ °	_____ '	_____ "
Long.	_____ °	_____ '	_____ "
Lat.	_____ °	_____ '	_____ "
Long.	_____ °	_____ '	_____ "
Lat.	_____ °	_____ '	_____ "
Long.	_____ °	_____ '	_____ "

7. Location of Survey:

Range-Range

Imagine an observer is standing at R₁ Station and looking directly at R₂ (check one):

Survey area is to observer's Right A=0

Survey area is to observer's Left A=1

Hyperbolic

Looking from survey area toward Master Station:

Slave One must be to observer's Left;

Slave Two must be to observer's Right.

8. This form is submitted as an aid in preparing a boat sheet.

This form applies to all data on this survey.

This form applies to part of the data on this survey.

Vessel EDP #	From Time	Day	To Time	Day	Position Numbers (inclusive)
<u>1261</u>	<u>132228</u>	<u>170</u>	<u>191718</u>	<u>178</u>	<u>0990</u> to <u>1117</u>
_____	_____	_____	_____	_____	to _____
_____	_____	_____	_____	_____	to _____

9. Remarks: _____

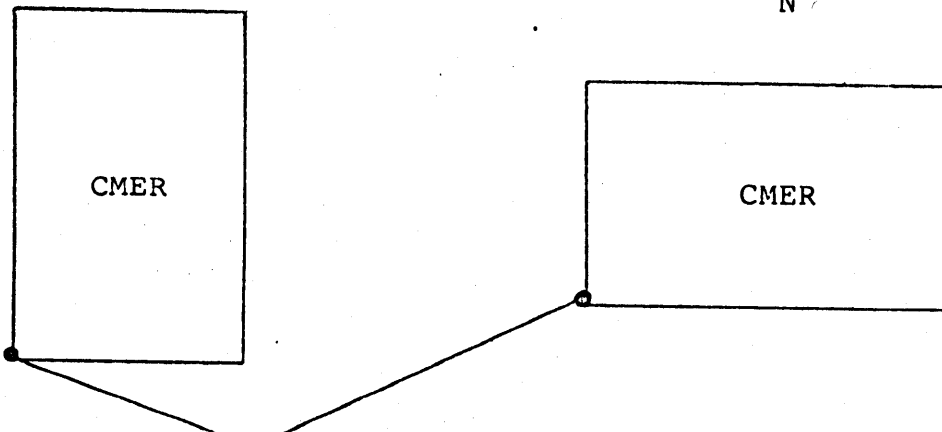
1/31/74

ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

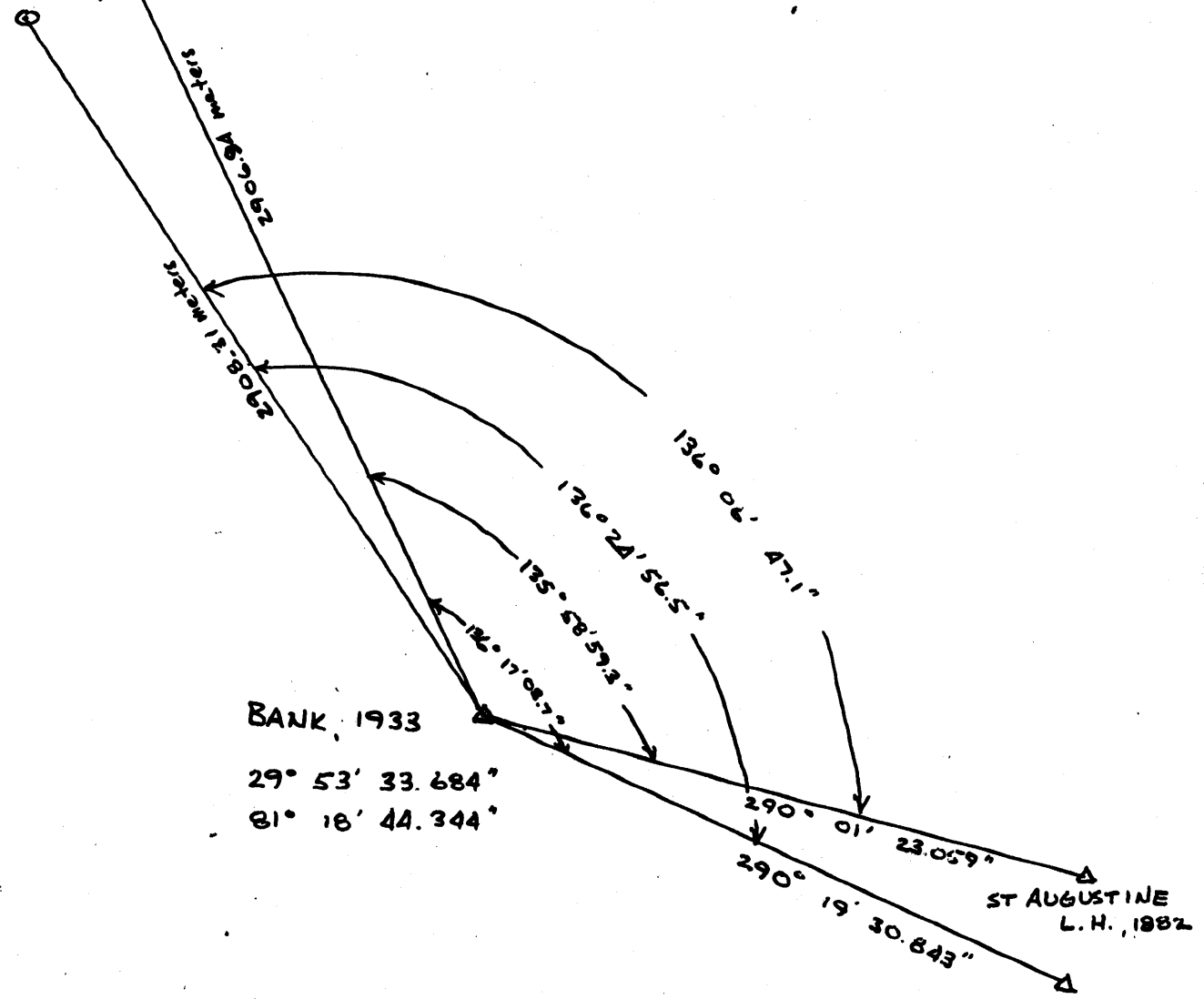
POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

- 1. Project No. 436
- 2. Reg. No. H-9456
- 3. Field No. AHP-40-3-74
- 4. Requested By Verification Branch (WHG)
- 5. Ship or Office AMC
- 6. Date Required Sounding overlay
- 7. Polyconic Modified Transverse Mercator
- 8. Central Meridian of Projection 81 ° 14 ' 00 "
- 9. Survey Scale: 1: 40,000
- 10. Size of Sheet (check one):
 36 x 54 36 x 60 Other Specify 36 x 36
- 11. Sheet Orientation (check one):
 NYX = 1 NYX = 0
 N



- 12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)
 Latitude 29 ° 48 ' 30 "
 Longitude 81 ° 24 ' 00 "
- 13. G.P.'s of triangulation and/or signals attached
- 14. Material Desired: Tracing Paper Mylar
 Smooth Sheet Other Specify _____
- 15. Remarks: _____

ST. AUGUSTINE
TANK (ECC FOR DEL NORTE)
(CENTER)



BANK, 1933
29° 53' 33.684"
81° 18' 44.344"

NAVAL RESERVE TANK
1933

290 19 30.843	290 01 23.059	290 19 30.843	290 01 23.059
136 24 56.5	136 06 47.1	136 17 08.7	135 58 59.3
<hr/>	<hr/>	<hr/>	<hr/>
153 54 34.343	153 54 36.859	154 02 22.143	154 02 23.769

153° 54' 35.1"
Avg. azimuth Bank to Tank (Center)

154° 02' 23.0"
Avg. azimuth Bank to Tank (Ecc)

SIGNAL LIST ✓

OPR 436

AHP 40-3-74

H 9456

100	29	53	0468	081	17	1452	✓ Naval Reserve Water Tk., 1933 (A Vol 1, pg 23)
101 ✓	29	53	0672	081	17	1945	✓ St. Augustine L.H., 1882 (A Vol 1, pg 20)
102 ✓	29	53	0673	081	17	1932	✓ St. Augustine Light Del Norte Station (Traverse)
104	29	53	3358	081	18	4446	St. Augustine 1 st Nat. Bank Dome, 1933 (A Vol 1, pg 21)
106	29	54	5851	081	19	3203	St. Augustine Water Tank (Traverse)
<u>107</u>	29	54	5857	081	19	3178	St. Augustine Water Tank Del Norte Sta. (Traverse)
108	29	55	4601	081	19	5635	St. Augustine FEC RR Shops Water Tk, 1933 (A Vol 1, pg 2)
112	29	57	3398	081	18	2441	Center of Cupola on "Lighthouse" Beach Cottage (Traverse)
116	29	59	5803	081	19	0273	Flag Pole (Traverse)
122	30	02	1250	081	19	3693	Seaward Peak of A Frame Cottage (Traverse)
126	30	04	1639	081	20	0377	Orange Tripod (Traverse)
130	30	05	4664	081	20	2587	Orange Tripod (Traverse)
131	30	06	0407	081	26	0433	Horse Raydist (Traverse)
138	30	09	4207	081	21	2240	Orange Tripod (Traverse)
568	29	46	2114	081	15	1918	Crescent Beach Water Tank (Traverse)
569	29	46	2133	081	15	1924	Crescent Beach Water Tk Del Norte Sta. (Traverse)
585	29	50	4054	081	15	5698	General White Raydist (Traverse)
592	29	54	5675	081	17	2527	Inlet Hi Fix Orange Banner (Traverse)
700	30	06	5154	081	20	4211	E 12 Del Norte Station (Traverse)

Tide Note

Predicted tides from Atlantic Beach, Latitude $30^{\circ} 20'$, Longitude $81^{\circ} 24'$ were applied to depths obtained by Launches 1257 and 1255. Depths obtained by Launch 1261 had predicted tides from St. Augustine Inlet applied to them. Actual tides from Atlantic Beach should be applied to all depths in the survey. No zoning is required.

2/28/75

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): Jacksonville Beach

Period: May 20 - Oct. 15, 1974

HYDROGRAPHIC SHEET: H-9456

OPR: 436

Locality: Northern Coast of Florida

Plane of reference (mean ~~1955~~ low water): 6.1 ft.

Height of Mean High Water above Plane of Reference is 5.1 ft.

Remarks: Zone direct.

for James R. Hubbard
Chief, Tides Branch

GEOGRAPHIC NAMES

H-9456

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
ANASTASIA ISLAND												1
ATLANTIC OCEAN												2
CONCH ISLAND												3
ST. AUGUSTINE BEACH												4
ST. AUGUSTINE INLET												5
SOUTH PONTE VEDRA BEACH												6
USINA BEACH												7
VILANO BEACH												8
												9
												10
												11
												12
												13
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												23
												24
												25

APPROVED
 Chas. E. Harrington
 STAFF GEOGRAPHER - CSIXZ
 3 Sept. 1976

ATLANTIC MARINE CENTER
APPROVAL SHEET
FOR
AUTOMATED SURVEY H-9456

- 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: April 28, 1976

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: 29 April 1976

Signed: Charles H. Hottel

Title: Chief, Processing Division

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9456

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & PNO, excess sndg.		1	BOAT SHEETS		1	
DESCRIPTIVE REPORT		1	OVERLAYS 2- Prelim. with junct. strip		1	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
Accordion ENVELOPES	2					1
CAHIERS	2 with Printouts		2			
VOLUMES	2					
BOXES			1			

T-SHEET PRINTS (List)
TP-00661, TP-00662, and TP-00663

SPECIAL REPORTS (List)
Report on Corrections to Echo Soundings

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				2856
POSITIONS CHECKED	250	10		
POSITIONS REVISED	0	0		
DEPTH SOUNDINGS REVISED	261	0		
DEPTH SOUNDINGS ERRONEOUSLY SPACED	0	0		
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED	0	0		
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS	0	16		
JUNCTIONS	3	1		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS	25	4		
SPECIAL ADJUSTMENTS	0	0		
ALL OTHER WORK	167	43		
TOTALS	195	64	29	

PRE-VERIFICATION BY W.H. Guy and M.B. Hickson	BEGINNING DATE 01/08/75	ENDING DATE 05/28/75
VERIFICATION BY C.M. Meekins and R.G. Roberson	BEGINNING DATE 06/12/75	ENDING DATE 04/29/76
REVIEW BY Hydrographic Inspection Team AMC	BEGINNING DATE April 29, 1976	ENDING DATE May 6, 1976

Reg. No. 9456

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-9456

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 5/15/81 TIME REQ'D. _____ INITIALS kek

REMARKS:

H-9456

Information for Future Presurvey Reviews

Ongoing changes in the bottom configuration can be expected because of the susceptibility of the bottom materials in this area to shifting by storms and ocean and tidal currents.

A wire-drag investigation is required to disprove the existence of the submerged wreckage charted in latitude 29°51.9', longitude 81°14.9'.

<u>Position</u>	<u>Index</u>	<u>Bottom Change</u>	<u>Use</u>	<u>Resurvey</u>
<u>Lat.</u>	<u>Long.</u>	<u>Index</u>	<u>Index</u>	<u>Cycle</u>
295	0812	4	2	25 years
300	0812	3	2	50 years
295	0811	3	2	50 years
300	0811	2	2	50 years

HYDROGRAPHIC INSPECTION TEAM

ATLANTIC MARINE CENTER

HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO.: H-9456

FIELD NO.: AHP-40-3-74

GENERAL LOCALITY and SPECIFIC LOCATION:

Florida, East Coast, St. Augustine

SURVEYED: May 20, 1974 through October 15, 1974

PROJECT NO.: OPR-436

SCALE: 1:40,000

SOUNDINGS BY: Raytheon Fathometer
Model DE-723D
S/n 1279 S/n 37019
S/n 2934 S/n 37024

CONTROL: Haystings RAYDIST
Range-Range Mode
Del Norte Technology
Ranging System

Chief of Party LCDR F.T. Smith
Surveyed by LCDR J.O. Rolland
..... LT D.W. Yeager
..... LTJG R. Floyd
..... LTJG R. Wells
..... ENS C. Cavin
..... ENS W. Otto
Automated Plot by Calcomp Plotter #618 (AMC)
Verified and Inked by Charles Meekins

1. Description of the Area

The area surveyed is located on the East coast of Florida in the immediate vicinity of St. Augustine. The survey area extends Northward from latitude 29° 50' to a Northern limit of latitude 30° 07' and from an inshore limit of the 12 foot curve eastward to a line extending from latitude 29° 50', longitude 81° 07' to latitude 30° 07', longitude 81° 09'.

The bottom slopes rather rapidly from the 12 foot curve to an area of 50 foot depths, then shoals somewhat in the central portion of the survey; and deepens on the seaward portion of the survey.

The general bottom composition of the survey area is fine gray sand and broken shell.

2. Control and Shoreline Type-Source-Origin

Shoreline was taken from manuscripts TP-00661, TP-00662, and TP-00663. Dates of photography, field edit, final compilation, and final review were done as listed, respectively:

<u>TP-00661</u>	<u>TP-00662</u>	<u>TP-00663</u>
October 1973- April 1974	Oct.-Nov. 1973- April 1974	October- November 1973
January 1975	January 1975	January 1975
January 1975	January 1975	January 1975
September 1975	September 1975	September 1975

These sheets were reduced to 1:40,000 scale and applied to this survey.

Control stations for this survey were located by personnel for Operations Division of the Atlantic Marine Center and field personnel. Hydrography was controlled by Hastings RAYDIST system in the Range-Range mode and Del Norte system. Launch 1261 used the Del Norte system. Four separate signal locations were used for the Del Norte units. They are as follows:

Signal 569
Latitude 29° 49' 21.33"
Longitude 81° 15' 19.24"

Signal 102
Latitude 29° 53' 06.73"
Longitude 81° 17' 19.32"

Signal 107
Latitude 29° 54' 58.57"
Longitude 81° 19' 31.78"

Signal 700
Latitude 30° 06' 51.54"
Longitude 81° 21' 42.11"

Launches 1255 and 1257 used the RAYDIST system. Launch 1257 used the first party system and a frequency of 3306.400 KHz. Launch 1255 used the fourth party system and a frequency of 3306.520 KHz. The stations were located at the following geographic positions:

Signal 585
Latitude 29° 50' 40.54"
Longitude 81° 15' 56.98"

Horse 1974
Latitude 30° 06' 04.073"
Longitude 81° 26' 04.333"

The final position overlay was plotted using the mean RAYDIST frequency of 3306.460 KHz.

3. Hydrography

A. Crossings: Crosslines run to confirm the accuracy of the regular hydrography were in very good agreement, and comprised approximately 8.5% of the hydrography run.

B. Depth Curves: The standard depth curves are drawn; in areas of some developments a supplemental, 36-foot curve was drawn along with a 39 foot (brown) curve ^{and other misc. brown curves} to accentuate shoal areas.

C. Low-water Line: The low-water line was delineated by photogrammetrist and applied to smooth sheet from TP-00661 - TP-00663.

D. Developments: Developments run on this survey were adequate to delineate shoal areas. A Pre-survey Review Item was developed using 100 meter line spacing. No evidence of the submerged wreck was found. It is recommended that the area be wire dragged for conclusive proof of no wreckage. At latitude $29^{\circ} 51.9'$, longitude $81^{\circ} 14.9'$, it is recommended that this item be retained as charted. PSR Item 33

4. Condition of the Survey

The sounding records, automated plotting and the Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual, supplemented by the Atlantic Marine Center Manual.

5. Junctions

Junctions were effected with H-9455 (1974), H-9475 (1974), H-9367 (1973), and H-9373 (1973). H-9373 had one line that could not be reconciled, and field records were not available. See Quality Control Report

6. Comparisons

A. Prior Surveys:

H-3964 (1924) 1:60,000 - The 60 foot curve has shifted slightly to the east in the northeast corner of the survey area. In the north central portion of the survey (latitude $30^{\circ} 09'$, longitude $81^{\circ} 12'$ to $81^{\circ} 16'$) the shoal areas have remained much the same, shifting only slightly. The small deep at approximately latitude $30^{\circ} 02'$, longitude $81^{\circ} 12'$ has shoaled on its northern edge. The deep at approximately latitude $30^{\circ} 00'$, longitude $81^{\circ} 16'$ has shoaled to less than 60 feet and is no longer visible. The 38 foot sounding at approximately latitude $30^{\circ} 00'$, longitude $81^{\circ} 14.8'$ area has shoaled. The shoal extends north and east. The 60 foot curve between latitude $29^{\circ} 56'$ to $29^{\circ} 58'$, longitude $81^{\circ} 08'$ to $81^{\circ} 10'$ is more irregular on the present survey than on H-3964 (1924), possibly due to the closer line spacing. The 60 foot soundings in the southeast corner of the survey remains almost unchanged.

H-4435 (1924) 1:20,000 - This survey is an inshore survey in the vicinity of St. Augustine, Florida. A number of major changes are apparent; the most noticable is the new location of St. Augustine Inlet. An accurate comparison cannot be made along some portions (inshore) of this survey. Several edges carried forward inside the 12-ft. depth curve.

H-4373 (1924) 1:20,000 see quality control Report paragraph 4

Present survey is adequate to supersede the prior surveys within the common area, except for the edges carried forward from H-4435 (1924) and H-4373 (1924)

B. Published Charts:

Chart #11485 (formerly C&GS 843-SC), 13th edition, August 2, 1975 - Comparison with this chart shows good agreement except along the shore where erosion is a probable cause of constant change in bottom configuration.

Chart #11488 (formerly C&GS 1243), 11th edition, November 23, 1974 - In comparing with this chart, shows minimal changes. Deeps may vary one to two feet over the area covered by this chart.

Chart #11486 (formerly C&GS 1244), 6th edition, August 4, 1973 - Comparison shows a slight amount of shoaling in the areas around the 60 foot curves. Overall agreement is good with a depth variance of one to three feet.

Except for the submerged wreckage charted in latitude 29°51.9' longitude 81°14.9' the present survey is adequate to supersede the charted hydrography within the common area.

Aids to Navigation

The aids to navigation located on this survey serve their intended purpose.

7. Compliance With Instructions

This survey does comply with the Project Instructions with the following exception: The 12 foot curve was not completely defined in some areas where the survey is bounded by the shoreline, as per Project Instructions. See Paragraph G of the Descriptive Report.

8. Additional Field Work

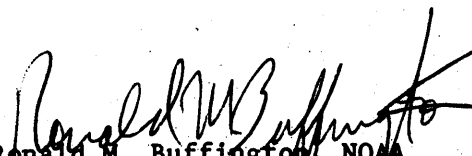
This is a good basic survey. Additional field work is not recommended.


9. Hydrographic Inspection Team Comments

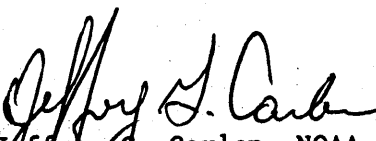
Hydrographic Inspection Team comments are included within this report and Verification deficiencies found, if any, have been corrected on the Smooth Sheet.

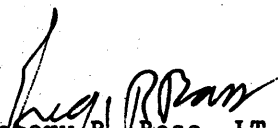
Approval Sheet for Survey H-9456

Examined and Approved:
Hydrographic Inspection Team
Date: 29 April 1976


CAPT Ronald M. Buffington, NOAA
Chief, Operations Division

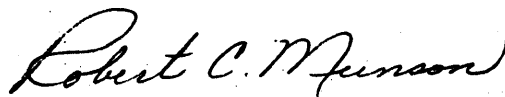

C. Dale North, Jr., LCDR, NOAA
Chief, Processing Division


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


Gregory R. Bass, LT, NOAA
Chief, EDP Branch


William L. Jonns
Chief, 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

July 15, 1976

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

THRU: Chief, Quality Control Branch

FROM: D. J. Romesburg *D. J. Romesburg*
Quality Evaluator

SUBJECT: Quality Control Report, H-9456 (1974), East Coast of Florida,
St. Augustine, Florida

A quality control inspection of H-9456 (1974) 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 navigational hazards, junctions, shoreline transfer, decisions and actions taken by the verifier, and cartographic presentation of data.

The following deficiencies are noted:

1. An adequate junction was effected with H-9373 (1973) on the northeast except for several unresolved depth differences that precluded agreement between the 60-foot depth curves in the vicinity of latitude $30^{\circ}06'$, longitude $81^{\circ}09.5'$. The 60-foot depth curve should be charted from the present survey in this area.
2. A confusing note has been deleted from the smooth sheet which indicated that the 40- and 45-foot depth curves were the only supplemental curves depicted on the survey. These curves were two of many miscellaneous supplemental curves added to the survey by the verifier to better delineate the bottom configuration.
3. Prior survey H-4373 (1924) 1:20,000 was omitted from Section 6A, Comparison with Prior Surveys, in the verifier's report. This prior survey covers the present survey north of latitude $29^{\circ}58'$ from the high water line seaward to depths of approximately 45 feet. Sounding agreement between the two surveys is within 1-3 feet with minor changes noted in the shoreline. Except for several soundings carried forward inside the 12-foot depth curve, the present survey is adequate to supersede the prior survey within the common area.



4. Sounding lines were not run nearer shore than 200 to 300 meters. Where agreement was good, inshore soundings from prior surveys H-4373 (1924) and H-4435 (1924) were transferred to the present survey.

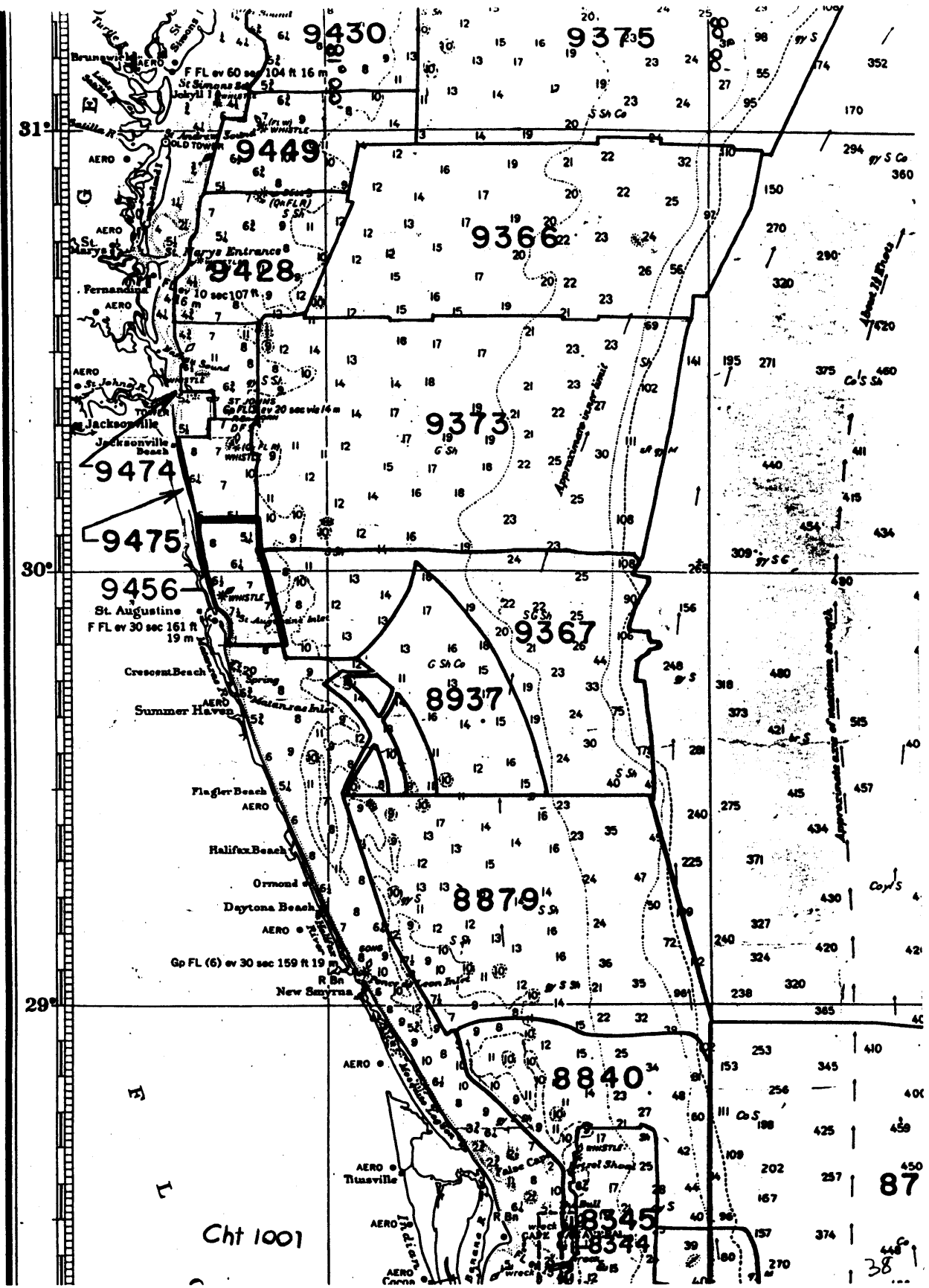
5. No statements were made in the verifier's report to indicate that the present survey was adequate to supersede the prior surveys or charted hydrography. An additional comparison with prior surveys and charts was made during quality control inspection to confirm this fact. Refer to section 6.6 of the Provisional Manual. A comparison with the chart revealed that present depths on newly revealed features are as much as five feet shoaler than charted general depths.

6. The 47 charted in latitude $30^{\circ}05.35'$, longitude $81^{\circ}09.7'$ from the boat sheet of H-9373 falls in present depths of 57 feet. The sounding was revised to 54 during the smooth plotting of H-9373. The 47 should be disregarded.

7. Recommended landmarks not shown on the topographic manuscripts were not entered on the smooth sheet as specified in section 7.3.11.1 of the Provisional Manual.

Except as noted above, the survey is considered to be complete and adequate to conform to the standards of the National Ocean Survey.

CC:
C351



31°

30°

29°

Cht 1001

L

87

38

