

9606

Diag. Cht. No. 1246

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-10-1-76
Office No..... H-9606

LOCALITY

State Florida
General Locality Banana and Indian Rivers
Locality Melbourne to Lotus

19 76-78

CHIEF OF PARTY
William R. Daniels

LIBRARY & ARCHIVES

DATE June 12, 1979

9606

APLA-
11412
11412-5
6

HYDROGRAPHIC TITLE SHEET

H-9606

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-10-1-76

State Florida See Other Title Sheet

General locality ~~East Coast of Florida~~ BANANA AND INDIAN RIVERS

Locality ~~Banana and Indian Rivers~~ MELBOURNE to Lotus

Scale 1:10000 Date of survey Jan. 6-19, 1978
11 Mar to 22 Jul 1976

Instructions dated 1 October 1975 Project No. OPR-499-AHP-76

Vessel Launch 1277 & 13 Foot Skiff

Chief of party William R. Daniels

Surveyed by W.A. Wert, J.H. Bennett, W.L. Sprye, E.W. Fanning, J.M. Robinett

Soundings taken by * echo sounder, hand lead, pole All * DE 7230 (Raytheon)

Graphic record scaled by WAW, JHB, WLS, EWF, JMR

Graphic record checked by WAW, JHB, WLS, EWF, JMR, RAL

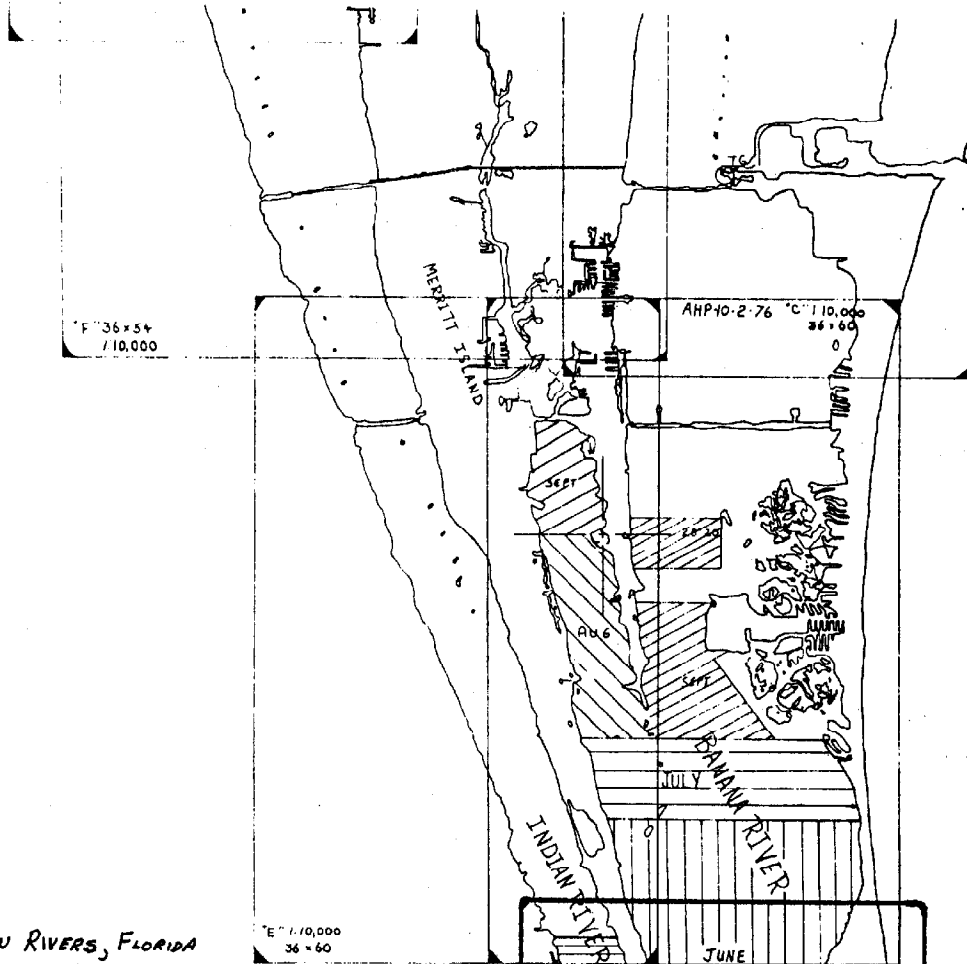
Protracted by _____ Automated plot by SYNETICS 1201 (AMC)
GAL Comp 618

Verification by Processing Division, Atlantic Marine Center J. Scott Bradford

Soundings in ~~athoms~~ feet at LOW Water Datum April 13, 1979
MLW MLHW

REMARKS: _____

Applied to state.
10-4-79 WST



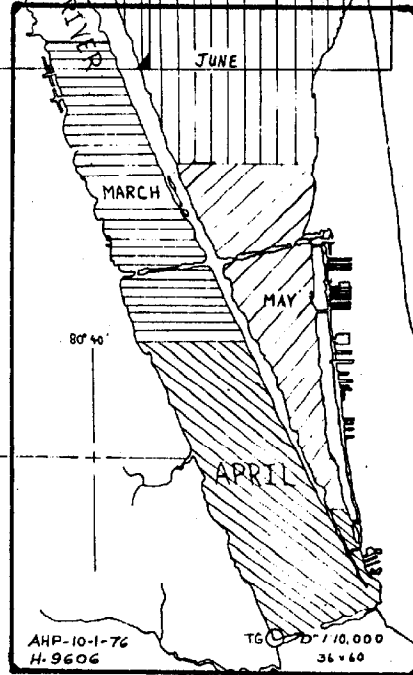
BOAT SHEET LAYOUT

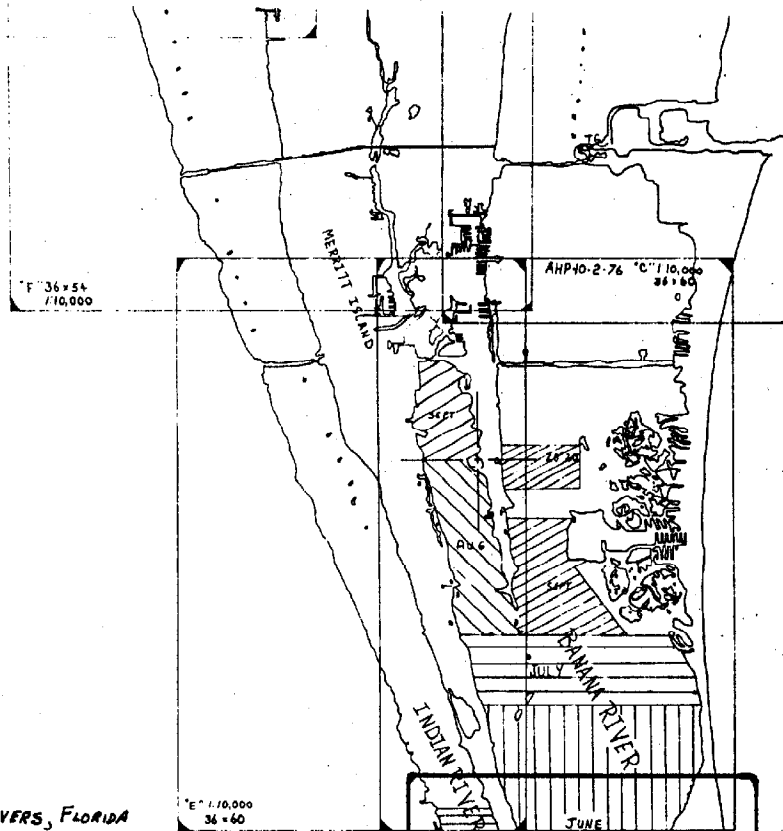
62-499 BANANA & INDIAN RIVERS, FLORIDA

LEGEND

FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN
3.6	5.2	7.3	5.9	2.9	1.9	2.5					
335	325	187	576	168	209	129					
1179	441	439	653	711	1035	1233					
91.3	138.9	77.3	159.3	81.9	44.5	65.0					
11	18	8	12	11	11	10					
11	13	14	14	5	9	9					
3	0	0	0	0	0	0					
15	0	0	0	0	0	0					

- SQ NM SOUNDING
- LN M Miscellaneous Distance
- LN M Distance To and From
- LN M Sounding Line
- Bottom Samples
- Control Stations
- Tide Gages
- Bench Marks





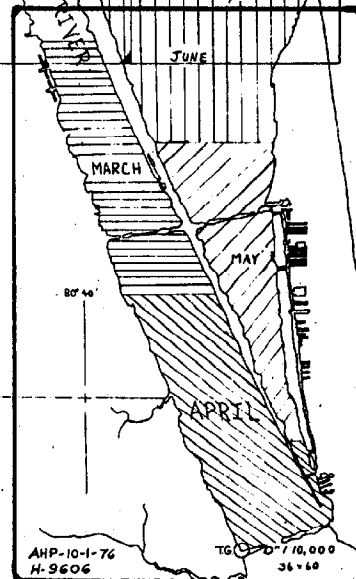
BOAT SHEET LAYOUT

9-499 BANANA & INDIAN RIVERS, FLORIDA

LEGEND

FEB.	MAR.	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.
	3.6	5.2	7.3	5.9	2.9	1.9	2.5				
	33.5	32.5	187	576	168	209	129				
	1179	441	439	653	711	1039	1233				
	91.3	1389	773	1593	819	445	650				
	11	18	8	12	11	11	10				
	11	13	14	14	5	9	9				
3	0	0	0	0	0	0	0				
15	0	0	0	0	0	0	0				

- 50 NM SOUNDING
- LN M Miscellaneous Distance
- LN M Distance To and From
- LN M Sounding Line
- Bottom Samples
- Control Stations 20' 10'
- Tide Gages
- Bench Marks



DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SURVEY H-9606 (AHP-10-1-76)

SCALE: 1:10,000

1976

VESSEL: ATLANTIC HYDROGRAPHIC PARTY

CHIEF OF PARTY W.R.D.

A. PROJECT

OPR-499 is a basic hydrographic survey to provide data for a proposed 1:40,000 scale chart of the Banana River and to update the existing 1:40,000 scale small craft charts of the Indian River. The survey was accomplished in accordance with Project Instructions OPR-499-AHP-76, Banana and Indian Rivers, Florida, dated 1 October 1975, change Number 1 OPR-499-AHP-76 dated 16 January 1976, the revised Hydrographic Manual and Chapter 3 of the Atlantic Marine Center Manual.

B. AREA SURVEYED

The area encompassed by sheet AHP-10-1-76 is an irregular section of the Indian River extending northward from the Eau Gallie Causeway and the southern limit of the Banana River northward approximately 7.2 nautical miles and bounded on the east and west by shoreline. The approximate limits of hydrography are bounded by 28°08'00"N, 80°37'30"W; 28°08'30"N, 80°36'00"W; 28°15'00"N, 80°37'00"W; and 28°15'00"N, 80°40'30"W. All field work was accomplished during the period 11 March 1976 to 22 July 1976.

C. SOUNDING VESSEL

Launch 1277 was used to accomplish the majority of hydrographic survey work on AHP-10-1-76. A 13-foot skiff was used to accomplish the shallow water DP soundings, leadline and pole soundings in the finger canals and investigation of some pre-survey review items using an improvised pipe drag. EDP number 1277 was used for both Launch and Skiff. All hydro accomplished by the skiff is clearly indicated on all printouts and sounding records.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

A Raytheon Fathometer, model number DE723D, serial number 1904, was used in Launch 1277. Pole soundings were necessary in shoal water. Leadline soundings were necessary in portions of the finger canals sounded by the

skiff. The bar check depth values were checked with a steel tape measure prior to the start of hydrography. All depth values agreed exactly. Depth corrections were obtained by averaging bar check values. One graph was constructed and velocity correctors were scaled in accordance with table 3 of the revised Hydrographic Manual. No appreciable changes in depth corrections occurred between the first and last days of hydrography; therefore, one velocity table was constructed. The graphs, corrector value abstracts, and bar check abstract are included with this report. Settlement and squat correctors were obtained as outlined in section 4.9.4.2 of the revised Hydrographic Manual. The graph and settlement and squat corrector abstract are included with this report. Daily TRA correctors were determined as outlined in section 4.9.4.1 of the revised Hydrographic Manual. Daily TRA corrections were changed to reflect gain/loss of fuel load. Frequent A to F scale checks were taken to insure correct stylus arm length. All initial settings were adjusted to zero. All fathograms were scanned and peaks and deeps inserted with an emphasis on field plotting clarity.

E. HYDROGRAPHIC SHEETS

Field sheets were constructed, raw master tapes were logged and data plotted on the field sheets by the launch's onboard PDP8/e Hydroplot system. Edited master and corrector tapes, velocity tape, signal tape, and TC/TI tape were logged by launch personnel and submitted for smooth plotting by Processing Division, Atlantic Marine Center. Three main scheme field sheets and two channel overlays are presented for plotting clarity.

F. CONTROL STATIONS

Control stations Stew 1940, Blossom 1976, Day Beacon "92" 1976, Mango 1976, Air 1940, Light "95" 1976, Pineda RM-1-1972 1976, O'Hara 1940, Causeway 1976, Shell 1976, Chris 1940, Pistol 1976, Light "100" 1976, Jessup 2 1976, S. Piling 1976, N. Piling 1976, Pier Corner 1976, Day Beacon "1" 1976, Marina 1976, Flying Leap 1976, Yacht 1976, Piling 1976, Concrete 1976, Bridge 1976, Bridge 2 1976, Rent 1976, Mud 1976, Fire 1976, Pier 1976, Bird 1976, Grassy 1976, Day Beacon "2" 1976, Nice 1976, Is 1976, In 1976, Rocky Pt. 1976, Day Beacon "4" 1976, Beach 1976, Shallow 1976, Truck 1976, Overpass 1976, Day Beacon "6" 1976, Pelican 1976, Hill 1976, Trail 1976, Ditch 1976, Day Beacon "9" 1976, Bolt 1976, Patrick 1976 were established or verified by Photo Party 61, Coastal Mapping Division, Atlantic Marine Center. Refer to Horizontal Control Report OPR-499, Banana and Indian Rivers, Florida for surveying methods, geodetic abstracts and computations. Control stations Blossom (ecc) 1976, Mango (ecc) 1976, O'Hara (ecc) 1976, Chris (ecc) 1976, Bridge (ecc) 1976, Is (ecc) 1976, In (ecc) 1976 were established by party personnel using a steel tape measure, sextant, and program RK407. Printouts of RK407 are included with this report. Control station Root 1976 was established by party personnel using a three-point sextant fix with a check angle and program RK300. Visual control stations Day Beacon "94"

1976, Day Beacon "99" 1976, Day Beacon "101" 1976, Day Beacon "102" 1976, Day Beacon "5" 1976, Day Beacon "5A" 1976, Day Beacon "7" 1976, Day Beacon "7A" 1976, Day Beacon "6A" 1976, and Day Beacon "6B" 1976, were established by party personnel using Del-Norte Range-Range intersection rates and converted to geodetic positions using program RK300. Visual control stations South Patrick North Tank, and South Patrick South Tank were transferred to the field sheets from ortho photo maps TP-00140 and TP-00142. X and Y coordinates were scaled off the field sheets with a plastic millimeter scale and converted to geodetic positions using program RK300. The printouts from program RK300 are included with this report. Patrick AFB North water Tank 1953 and Patrick AFB water Tank 1957 are published triangulation stations used for visual control.

G. HYDROGRAPHIC POSITION CONTROL

Del Norte positioning equipment, which operates in a Range-Range mode, three point sextant fixes, and see boat sheet methods were used to control the hydrography on sheet AHP-10-1-76. Fifty-three control networks and thirty-six visual control stations were used on this sheet. All shore stations were located at or eccentric to established third-order triangulation, intersection, traverse, Range-Range intersection, or photogrammetric stations. Whenever possible, calibration was established twice daily by positioning the launch at known third order traverse or intersection stations. Del Norte ranges were compared to range calculated by PDP8/e computer using program RK407. Refer to daily raw data printouts for calibration data, and see appendix for abstract of correctors. A maximum difference of 8 meters between morning and evening calibrations was observed, with mean daily changes ranging between 3.50 and 0.66 meters. The mean standard deviations of calibrations throughout the project ranged between 2.36 and 1.12 meters. Calibration distances varied between 4731 and 144 meters. A Del Norte distance correction graph shows a maximum correction of 3.5 meters for calibration distances between 234 and 5000 meters; however, launch personnel observed fluctuating corrections of up to 8 meters predominately for calibration distances between 2500 and 4700 meters indicating the possibility of spikes in the distance correction graph, local RF interference from Patrick Air Force Base and/or the eastern test range, or varying weather conditions affecting accuracy. In general the performance of the Del Norte equipment was very good and time and course interpolation of erroneous positions was minimal. The following is a summary of equipment utilization during the project. Refer to the enclosed signal list for shore station names and locations:

Shore Stations

<u>Signal #</u>	<u>S/N</u>	<u>Julian Days Used</u>
2	188	71, 72
6	216	71, 72, 89
11	216	78, 79, 86, 98
12	181	78, 79, 89, 98

Shore Stations (cont'd)

<u>Signal #</u>	<u>S/N</u>	<u>Julian Days Used</u>
16	216	85, 89
19	181	85
12	216	86
2	181	86
6	181	86
11	181	89
26	216	91, 93, 96, 98
25	181	91, 93, 96, 98
22	181	99, 107
20	216	99
34	216	103, 104, 105, 114
30	181	103, 104, 105, 106, 107, 114
40	181	106
36	216	106
25	216	106, 107
38	181	117
42	216	117
54	216	118
53	181	118
56	216	118
58	181	118
62	181	126
60	216	126, 174
65	181	126
64	216	126, 174
70	181	126, 127
73	216	126, 127
76	181	127, 131
75	216	127, 131
78	181	131
82	216	133, 176
80	181	133
86	216	133, 134, 147
84	181	133, 134
82	181	147
92	216	148, 149
93	181	148, 149
100	216	154, 155, 159, 161
102	181	154, 155, 159
94	216	159, 160, 161
96	181	159, 160
96	180	161
102	180	161
58	216	174
53	180	174
58	180	174
70	180	174
80	216	175, 176

Shore Stations (cont'd)

<u>Signal #</u>	<u>S/N</u>	<u>Julian Days Used</u>
73	180	175, 176
86	180	176
102	216	177
92	180	177
94	180	177, 204
96	216	177, 204

<u>Mobile Transponder</u>	<u>S/N</u>	<u>Julian Days Used</u>
	159	71 - 204

<u>Distance Measuring Unit</u>	<u>S/N</u>	<u>Julian Days Used</u>
	182	71 - 204

Shore transponder S/N 188 failed on Julian Day 78. See Failog #5141. Shore transponder S/N 181 was replaced by shore transponder S/N 180 on Julian Day 161 because of erratic rates. No attempt was made by party personnel to check out or repair S/N 181. A printed circuit card #200-03B1 was installed in the distance measuring unit on JD204 to eliminate calibration distance corrections. Refer to Descriptive Report OPR-499 Banana and Indian Rivers, Florida, H-9633, AHP-10-2-76 for results. For machine plotting and format clarity purposes, see boatsheet fixes were initially hand plotted on mylar field sheets, X and Y coordinates were then scaled off the field sheets using a plastic millimeter scale, converted to Range-Range mode using program RK300 and the calculated ranges edited onto the master tapes. All soundings between these calculated fixes were interpolated by time and course. Detached position visual fixes were converted to Range-Range mode using program RK300 and the calculated ranges edited onto the master tapes.

H. SHORELINE

Shore and topographic details were transferred from ortho photo maps TP-00139 thru TP-00143. Shoreline details were verified by field edit in 1971. Minor changes to the shoreline and new construction are sketched in red ink on the field sheets with appropriate notes. The MLW line was not delineated by hydrography due to the very small periodic tidal range (less than 0.2 feet); however, the 3-foot curve was defined in most areas and the 6-foot curve was defined in all areas except the adjacent canals.

I. CROSSLINES

Approximately 27.9 nautical miles or 11.2% of the main scheme hydrography run on sheet AHP-10-1-76 were crosslines. The agreement with main scheme lines was excellent and all soundings agreed to the nearest foot.

J. JUNCTIONS

No contemporary junctions were made.

K. COMPARISON WITH PRIOR SURVEYS

Comparison with prior Survey H-1380, 1876-77, 1:20,000 scale shows general agreement within 2 feet, except in the contemporary dredged channel north of Latitude 28°10'00" in the Banana River. Contemporary shoreline shows little change in the Indian River except for causeway and bridge construction whereas extensive shoreline changes have occurred in the Banana River most notable on the eastern shore. Pre-survey review items were investigated with the following results:

No source Pile charted in Latitude 28°14.1'08" ✓
Longitude 80°40.0' ✓
Recommend retention on chart at Latitude 28°14'04.55",
~~Longitude 80°40'00.27"~~ as charted.
Detached position #192 10" wood pile bares 2 feet. ✓

L-362/75 Sign charted in Latitude 28°10.8', Longitude 80°38.8' ✓
~~Recommend retention on chart at Latitude 28°10'48.59",~~
~~Longitude 80°38'46.66". Chart as shown on present survey~~
Detached position #1112. Two signs. ✓

"Diamond 99 Marina Entrance" attached to three piles positioned in triangular shape. ✓

PSI
#17. Submerged Wreck, ED Charted in Latitude 28°10.3',
Longitude 80°37.35'.
charted from T-2811 (1947-49)
CL-1600 of 1971 &
CL-1392 of 1975
This area was investigated by the launch using Range-Range control. No indication of the submerged wreck was found. This area was later investigated by the skiff using an improvised pipe drag. No indication of the submerged wreck was found. Recommend deletion from the chart. ✓

PSI
#14. Submerged Pile - Charted in Latitude 28°08.78', ✓
pos. # 1885 Longitude 80°37.36'. ✓
Originates with
CL 1050 (1971), charted
from C.L. 1575 (1972)
A marker buoy was positioned by the launch using Range-Range control at the charted position. This area was investigated by the

skiff using an improvised pipe drag and the submerged pile subsequently found. The submerged pile was diver verified to be a *Chart subm pile* 15" wood pile extending approximately 4 feet *as shown* from the bottom at a 45° angle. A least *on present* depth of 16 feet was verified by sounding pole. *survey.* The position was determined with the launch by placing a marker buoy directly above the submerged pile and averaging recorded Range-Range control rates. ~~Recommend retention on the chart at Latitude 28°08'46.63", Longitude 80°37'21.76".~~ *concur*

TP-00143 Piling

- Charted Latitude 28°08.35', Longitude 80°36.10'. Recommend "piling" nomenclature be changed to "rock Jetty" at Latitude 28°08.35', Longitude 80°36.10'. Detached position #1889 is 3 meters off of east end of rock jetty. Jetty is 10 meters wide measured by launch personnel using a steel tape measure. Control station "Marina" marks a bend in the jetty which extends to shore. The rock jetty is sketched in red ink on the field sheet. *Chart Jetty as shown on present survey* *concur*

PSI
#15. OBSTR. REP., 1973
ctd from C.L. 926 (1973)

- Charted in Latitude 28°08.59', Longitude 80°36.11'. Detached position #1919 is a privately maintained mooring buoy. This area was investigated by the skiff using an improvised pipe drag. No obstruction was found. Personnel of Eau Gallie Yacht Club reported the metal mooring buoy was for Regatta use only and knew of no obstruction in the area. Recommend "obstruction" nomenclature be changed to "privately maintained mooring buoy" at Latitude 28°08'34.24", Longitude 80°36'06.80". *concur*

PSI
#16. Visible Wreck, PA
at earlier date - now charted as a dangerous subm. wreck, PA. Chtd from C.L. 1575 (1972) & C.L. 997 (1973)

- Charted in Latitude 28°09.03', Longitude 80°36.35'. ~~Recommend retention on chart at Latitude 28°09'00.87", Longitude 80°36'21.26".~~ Detached position #1951 is a visible wreck approximately 40 feet long, 12 feet wide, steel hull, bares 9.8 feet, down by the stern in approximately 5 feet of water. Fair condition. *Chart visible wreck as shown on present survey* *concur*

PSI
#18. Visible Wreck
ctd from T-13102 (1967)

- Charted in Latitude 28°11.06', Longitude 80°36.90'. This area was visually examined by the launch using Range-Range control with no indication of the wreck. Detached position #2234 (located nearby) is a metal and concrete obstruction 7 meters long, 3 meters wide awash in 2 feet of water. Recommend "visible wreck" nomenclature

be changed to "obstruction" and position adjusted to Latitude 28°11'06.02", Longitude 80°36'55.45". *Chart obstr as shown on present survey.*

L-123/59 Piling
*ch'd as dashed lines
(rows of piling)*

11 piles within a 5m x 10m area.

- Charted in Latitude 28°11.7', Longitude 80°37.8'. Detached position #2339 is the northern most *Chart /* pile of eleven piles extending 10 meters south. *piling* All piles bare ⁽³⁾2.5 feet ^{at L.W.} and are approximately *as shown* 5 meters apart. *on present* Recommend "piling" nomenclature *Survey.* be changed to "numerous piles" at Latitude 28°11'48.71", Longitude 80°37'46.94".

PSI

#19. 2-FT REP., 1969
ch'd from C.L. 558 (1969)

*3 ft depths
85 meters N.W.
of ch'd 2 ft shoal.
Chart depths as
shown on the present
survey.*

- Charted in Latitude 28°12.77', Longitude 80°37.81'. 10 meter spacing lines in a 200 meter square were run by the launch using Range-Range control centered at the charted position. No indication of the 2-foot shoal was found. Conversation with Mr. Albert J. Pappas (Cocoa Beach Power Squadron), who verified the 2-foot shoal in 1973, indicated the shoal was in range with the pilings of the center span of the Pineda Causeway Bridge. All ranges were run with the launch with no indication of the 2-foot shoal. An additional 200-meter square, 10 meter spacing lines were run by the launch using Range-Range control centered at Latitude 28°12.82', Longitude 80°~~12.92'~~ based on chart letter #558 submitted by Edward Hedman on 1 February 1969. No indication of the 2-foot shoal was found. Additional investigation with Mr. Albert J. Pappas aboard Launch 1277 showed no indication of the 2-foot shoal. Recommend deletion from the chart. ✓ *concur*

PSI

#7. 5-1/2 FT REP., 1971
ch'd from L.N.M. #7 of 1971

*3 ft shoal sdg. found
110 meters N.W. of this on
the present survey
4 ft depths 40 meters
S.W. of this on present
survey*

- Charted in the vicinity of Latitude 28°14.30', Longitude 80°37.52'. 50 meter spacing lines *Chart* were run by the launch using Range-Range control *depths* in the vicinity of the 5-1/2 feet reported *as* shoaling. This area was adequately delineated *shown* by sounding lines and reduced depths of 5 feet *on the* were verified centered at Latitude 28°14.30' Longitude 80°37.52'. *present* ✓ *concur*

PSI

#2. Submerged Piles
*Charted from BP-39926
(1945 C.O.E. condition survey)*

- Charted in Latitude 28°14.18', Longitude 80°37.78'. A marker buoy was positioned by the launch using Range-Range control at the charted position. A 100 meter radius circle area was investigated by the skiff using an improvised pipe drag. No submerged piles were found at the charted position. Recommend deletion from the chart. ✓ *concur*

L. COMPARISON WITH THE CHART

Comparison with NOAA Chart 11485, ^{WRONG EDITION} 12th Edition, 17 August 1974, shows general agreement within 3 feet. Contemporary survey soundings show two 9-foot holes at Latitude 28°14.85', Longitude 80°40.55', and Latitude 28°14.68', Longitude 80°40.47', a 10-foot hole at Latitude 28°14.27', Longitude 80°40.30', a 31-foot hole at Latitude 28°12.47', Longitude 80°39.41', a 41-foot hole at Latitude 28°12.24', Longitude 80°38.58', and a 42-foot hole at Latitude 28°12.02', Longitude 80°39.25', whereas charted soundings show 3 feet, 2 feet, 3 feet, 6 feet, 10 feet, and 6 feet respectively. Contemporary survey soundings show the spoil area in the Indian River to extend approximately 400 meters north of the charted northern spoil area limits to approximately 100 meters south of the charted southern spoil area limit on NOAA Chart 11472, ^{WRONG EDITION} 13th Edition, 31 August 1974, and the spoil area to be continuous whereas the chart shows three separate spoil areas. Comparison with NOAA Chart 11472, 13th Edition, 31 August 1974, shows general agreement within 2 feet. Contemporary survey soundings show a 10-foot tongue extending from the Banana River into the Indian River approximately 100 meters south of the southern tip of Merritt Island whereas charted soundings show a continuous 6-foot curve extending from the south tip of Merritt Island to the Eau Gallie Causeway. Comparison with NOAA Chart 11476, 9th Edition, 13 December 1975, shows general agreement within 2 feet. Contemporary survey soundings show 18-foot depths at Latitude 28°08.02', Longitude 80°36.15', whereas the charted sounding is 10 feet. Contemporary survey soundings show a 9-foot hole at Latitude 28°11.10', Longitude 80°36.95', ~~a 11 foot hole at Latitude 28°11.07', Longitude 80°36.99'~~, three holes ranging from 20 to 23 feet centered around Latitude 28°12.56', Longitude 80°37.35', a 20-foot hole at Latitude 28°12.70', Longitude 80°37.95', a 17-foot hole at Latitude 28°13.18', Longitude 80°37.15', a 14-foot hole at Latitude 28°12.78', Longitude 80°37.20' and a 15-foot hole at Latitude 28°13.64', Longitude 80°37.07' whereas charted soundings show 2 feet, 2 feet, 3 feet, 2-5 feet, 2 feet, 4 feet, and 4 feet respectively. Contemporary survey soundings show 9-foot depths at Latitude 28°14.44', Longitude 80°37.20' whereas the charted sounding shows 2 feet. Launch personnel verified the following: ^{concur}

The Anchorage-Eau Gallie Supplies:

Marina:
(NOAA Chart 11472)
Gas Pump
Diesel oil pump
Bait and tackle
Hardware
Water-ice
Chart sales

Services:

Winter Storage -
wet and dry
Toilets and showers
Lift portable 20 ton
Repairs for hull-
electronic-motor
Berths and Electricity

Indian Harbor Pines
Marina:
(NOAA Chart 11472)

Supplies:
Gas pump
Diesel oil pump
Bait and tackle
Groceries and Hardware
Water-ice-bottled gas
Chart sales

Services:
Winter storage
wet and dry
Toilets and showers
Meals and lodging
Lift portable 60 ton
Repairs for hull-
electronic-motor
Surfaced ramp
Berths and electricity

Diamond "99" Marina:
(NOAA Chart 11472)
Dockmaster reported
Marina will be dredged
to 8 feet.

Supplies:
Gas pump
Diesel oil pump
Bait and tackle
Hardware
Water and ice

Services:
Winter storage - wet
Toilets and showers
Berths and electricity

M. ADEQUACY OF SURVEY

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

N. AIDS TO NAVIGATION

Comparison of the floating aids to navigation with the Light List, Volume II, 1976, NOAA Chart 11472, 13th Edition, 31 August 1974, NOAA Chart 11485, 12th Edition, 17 August 1974 and NOAA Chart 11476, 9th Edition, 13 December 1975, showed the following discrepancies: No floating aids to navigation were observed within the limits of AHP-10-1-76 whereas NOAA Charts 11472 and 11485 show numerous floating aids to navigation.

Comparison of the field aids to navigation with the Light List Volume II, 1976, NOAA Chart 11472, 13th Edition, 31 August 1974, NOAA Chart 11485, 12th Edition, 17 August 1974, and NOAA Chart 11484, 9th Edition, 13 December 1975, showed the following discrepancies: Observed fixed aids Day Beacon "91", Day Beacon "92", Day Beacon "94", Day Beacon "99", Day Beacon "101", and Day Beacon "102", whereas NOAA Charts do not show these fixed aids. Day Beacon "98" not observed whereas the Light List shows Day Beacon "98". Day Beacon "101" contained on NOAA Chart 11472 whereas the Light List shows Day Beacon "101" contained on NOAA Chart 11485. Diamond "99" Marina Day Beacons "1", "3", and "5" observed to be SB whereas Light List shows these Day Beacons to be S6. Samsons Park North Channel Day Beacon "3" observed whereas Light List does not show this Day Beacon. Samsons Park North Channel Day Beacons "1" and "2" observed in 9 feet whereas Light List shows 6 feet. Day Beacon "5" observed SB on Dolphin whereas Light List shows Daymark on Dolphin.

The position of Day Beacon "99" on the present survey is supported by the position shown on H-9860 (1977-80) 8/24/82 TPS

Day Beacon "5A" observed in 3 feet whereas Light List shows 9 feet. ✓
 Day Beacon "6B" observed in 6⁵ feet whereas Light List shows 12 feet. *Dbn "2" is how a subm pile*
 Nesbit Island Channel Day Beacon "2" not observed whereas Light List shows this Day Beacon. Day Beacon "12" (private maintained) observed whereas the Light List and chart do not show this Day Beacon. Day Beacon "7" observed to be SB, but changed to SG late summer 1976; Light List shows SB. The fixed aids to navigation that mark the Indian River Intracoastal Waterway are adequate for safe navigation. The fixed aids to navigation that mark the Banana River Channel, in the opinion of this hydrographer, are inadequate for safe navigation. The existing fixed aids should be relocated at uniform distance outward from the center of the narrow channel. Day Beacon "8" should be relocated approximately 110 meters northwest of the present position. Additional Day Beacons could be established at Latitudes and Longitudes 28°10.33', 80°36.95'; 28°10.95', 80°37.26'; 28°11.22', 80°37.30'; 28°11.63', 80°37.56'; 28°12.47', 80°37.69'; 28°13.23', 80°37.72'; 28°13.97', 80°37.71'; 28°14.62', 80°37.30'; 28°14.77', 80°37.20'; and 28°14.83, 80°37.18'. ✓ Diamond "99" Marina Channel Day Beacons and entrance sign are adequate and are maintained by Diamond "99" Marina. Samsons Park North Channel and South Channel Day Beacons established 1974, are adequate and are maintained by the city of Satellite Beach, Florida. Nesbit Island Channel Day Beacons are adequate, however, contemporary survey soundings show 3 feet at the entrance to the canal. These markers are maintained by South Patrick Residence Association. ✓

See Q.C. Report for add'l comments on DBs

O. STATISTICS

<u>Vessel</u>	<u>LNMS</u>	<u>SQ NM</u>	<u>NO. OF BOTTOM SAMPLES</u>	<u>NO. OF POSITIONS</u>
1277	385.4	12.9	46	3474
Skiff	22.3	1.2	1	386

P. MISCELLANEOUS

Velocity corrections have not been applied to soundings on the field sheet due to the large number of pole soundings and the inability to use TC/TI tapes on the offline plot RK211. Predicted tides were not applied due to a periodic tidal range of less than 0.2 feet, however, launch personnel observed non-periodic water level changes of up to 1.5 feet within the project area.

Launch personnel observed shrinkage of up to 1/8 inch of the paper field sheets after continuous machine plotting which accounts for the apparent shoreline discrepancies. This hydrographer attended general membership meetings with the Cocoa Beach Power Squadron, the Banana River Power Squadron, Patrick Air Force Base Yacht Club, East Coast Cruising Association, and the Sebastian Inlet Sport Fishing Association. The following was commonly suggested by members of the various boating groups concerning present chart format and coverage of the Banana and Indian Rivers: Soundings and fixed aids to navigation in the Indian

River should be shown on NOAA Charts 11476 and 11484; the Banana River should be incorporated into one single chart instead of the present four charts; and NOAA Chart 11485 should include more of the Banana River.

Q. RECOMMENDATIONS

Because of consumer enthusiasm and desire for a larger scale chart of the Banana River this hydrographer recommends that this project be given the highest priority for verification and the earliest possible edition date for chart production.

R. AUTOMATED DATA PROCESSING

<u>Program Title</u>	<u>Program Number</u>	<u>Version Date</u>
On-Line R/R R.T.S.	RK111	1/30/76
Grid-Signal Plot	RK201	4/18/75
Off-Line R/R Non R.T.S.	RK211	1/15/76
Utility	RK300	2/5/76
Corrector Abstract	PM360	3/21/74
Mercator Conversion	AM401	4/1/73
Geodetic Direct/Inverse	RK407	10/23/75
Elinore	AM602	5/21/75

S. REFERENCES TO REPORTS

1. Horizontal Control Report OPR-499, Banana and Indian Rivers, Florida, 1976.
2. Descriptive Report OPR-499, Banana and Indian Rivers, Florida, H-9633, AHP-10-2-76.

Respectfully submitted,

Per/ Babut Lewis
William A. Wert
LT., NOAA
OIC, Launch 1277

H-9606
AHP-10-1-76
Lch 1277

Velocity table #1

000020 1 0004 0001 000 127700 009606
000073 1 0002
000125 0 0000
000181 0 0002
000239 0 0004
000297 0 0006
000356 0 0008
000415 0 0010
000474 0 0012
999999 0 0012

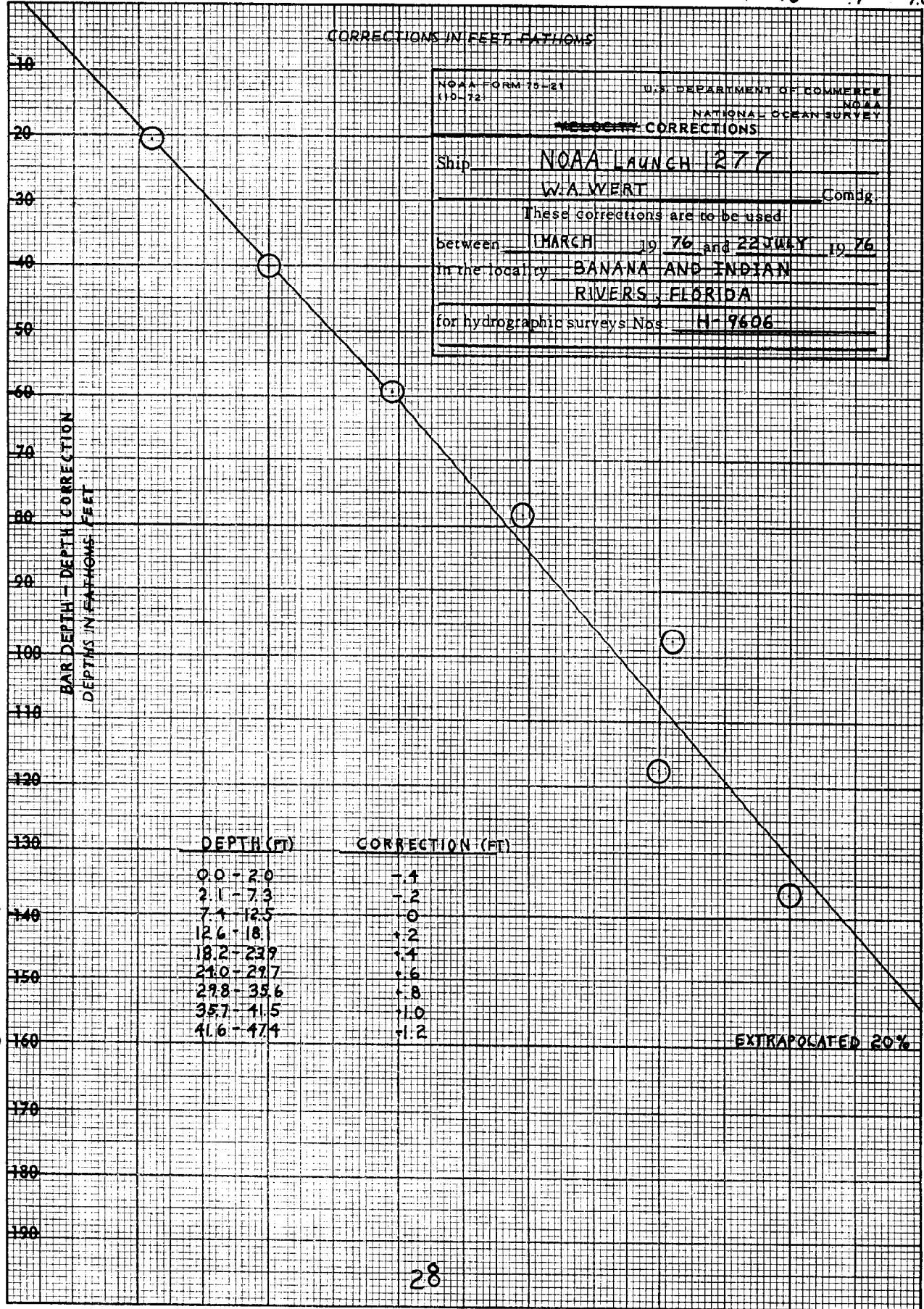
- .4 - .3 - .2 (Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.) .8 .9 1.0

CORRECTIONS IN FEET, FATHOMS

NOAA FORM 75-21 (10-72) U.S. DEPARTMENT OF COMMERCE
 NATIONAL OCEAN SURVEY
VELOCITY CORRECTIONS
 Ship NOAA LAUNCH 277
 W.A. WERT Comdg.
 These corrections are to be used
 between MARCH 19 76 and 22 JULY 19 76
 in the locality BANANA AND INDIAN
RIVERS, FLORIDA
 for hydrographic surveys Nos. H-9606

BAR DEPTH - DEPTH CORRECTION
 DEPTHS IN FATHOMS FEET

20
 10
 5
 30
 25
 35
 40
 45
 50



EXTRAPOLATED 20%

KEUFFEL & ESSER CO.

SETTLEMENT & SQUAT

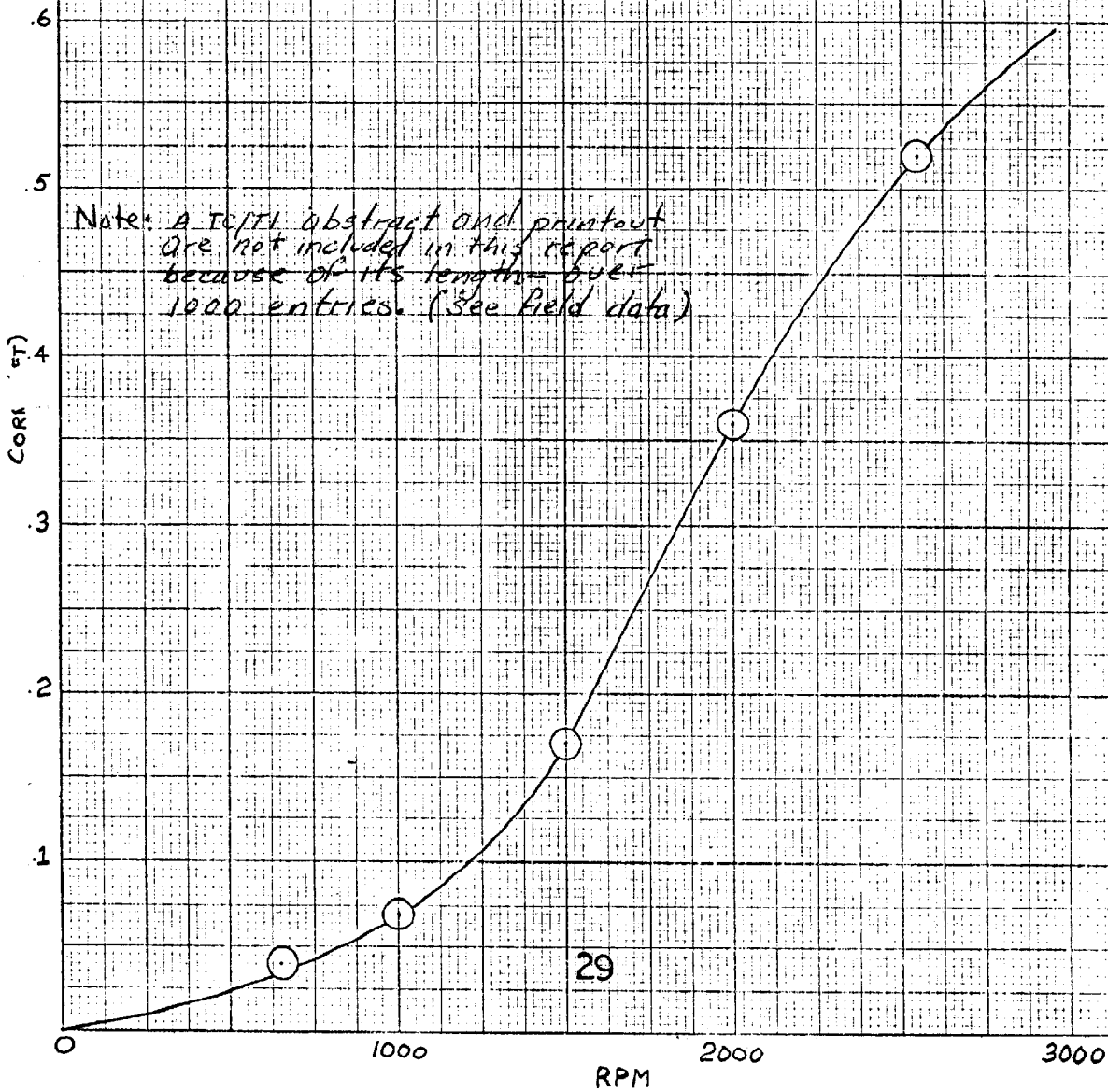
LAUNCH 1277

7 MAY 76

ABSTRACT

RPM	CORRECTION (FT)
0-1200	0.0
1201-1825	+0.2
1826-2475	+0.4
2476-2550	+0.6

Note: A TITL abstract and printout are not included in this report because of its length - over 1000 entries. (See field data)



SIGNAL LIST

AHP-10-1-76

H-9666

002	0	28	15	05073	080	40	42708	250	0000	000000	STEW, 1940 (Triang.) ✓
006	7	28	15	14052	080	39	57550	254	0000	000000	BLOSSOM (ECC), 1976 * ✓
008	0	28	14	21675	080	40	03324139	243	0000	000000	DBN "92" TR-I ON PILE, 1976 * ✓
011	4	28	13	56042	080	39	16679	254	0000	000000	MANGO (ECC), 1976 * ✓
012	5	28	13	48191	080	40	15178	250	0000	000000	AIR, 1940 (Triang.) ✓
014	0	28	13	02785	080	39	17942139	243	0000	000000	LIGHT "95" FL 4 SEC * ✓
016	0	28	12	41833	080	39	47190250	254	0000	000000	PINEDA RMI, 1972, 1976 * ✓
019	7	28	12	57536	080	38	40985	254	0000	000000	OHARA (ECC), 1976 * ✓
020	2	28	12	24970	080	38	25886	254	0000	000000	CAUSEWAY, 1976 * ✓
022	5	28	12	15351	080	39	36255	254	0000	000000	SHELL, 1976 * ✓
025	5	28	11	16003	080	39	12235	254	0000	000000	CHRIS (ECC), 1940 * ✓
026	2	28	11	17285	080	37	47952	254	0000	000000	PISTOL, 1976 * ✓
028	0	28	10	16572	080	38	06782139	243	0000	000000	LIGHT "100" FL R 4 SEC * ✓
030	5	28	09	03730	080	38	06960	254	0000	000000	JESSUP 2, 1976 * ✓
032	4	28	08	54237	080	36	30290	243	0000	000000	S. PILING, 1976 * ✓
034	4	28	08	54586	080	36	30498	254	0000	000000	N. PILING, 1976 * ✓
036	0	28	07	55884	080	37	28639	254	0000	000000	PIER CORNER, 1976 * ✓
038	1	28	08	29715	080	36	13741139	254	0000	000000	DBN "1" SB ON DOLPHIN * ✓
040	4	28	08	19575	080	36	07810250	254	0000	000000	MARINA, 1976 * ✓
042	4	28	08	30134	080	36	01695	254	0000	000000	FLYING LEAP ✓
044	4	28	08	38024	080	36	06680250	243	0000	000000	YACHT, 1976 * ✓
048	0	28	08	34308	080	36	14661254	243	0000	000000	PILING, 1976 * ✓
050	4	28	08	43773	080	36	14825	243	0000	000000	CONCRETE, 1976 * ✓
053	4	28	08	57426	080	36	19058	254	0000	000000	BRIDGE (ECC), 1976 * ✓
054	0	28	08	54812	080	36	26379	254	0000	000000	BRIDGE 2, 1976 * ✓
056	3	28	09	06259	080	36	32805	254	0000	000000	RENT, 1976 * ✓
058	4	28	09	08738	080	36	24291	254	0000	000000	MUD, 1976 * ✓
060	4	28	09	20119	080	36	29921	254	0000	000000	FIRE, 1976 * ✓
062	3	28	09	19452	080	36	39557	254	0000	000000	PIER, 1976 * ✓
064	3	28	09	27575	080	36	43191	254	0000	000000	BIRD, 1976 * ✓
065	4	28	09	27136	080	36	32248	252	0000	000000	ROOT - Hydro ✓
066	4	28	09	36104	080	36	34800254	243	0000	000000	GRASSY, 1976 * ✓
068	2	28	09	48860	080	36	42621254	243	0000	000000	DBN "2" TR ON PILE * ✓

* Third Order Station Located by Photo Party 61.

SIGNAL LIST CON'T

070	3	28	10	00321	080	37	01128	254	0000	000000	NICE, 1976 *
073	4	28	10	07822	080	36	46072	254	0000	000000	IS (ECC), 1976 *
075	4	28	10	29079	080	36	48410	254	0000	000000	IN (ECC), 1976 *
076	3	28	10	20326	080	37	08202	254	0000	000000	ROCKY PT., 1976 *
078	2	28	10	37801	080	37	05209 ²⁵⁰	254	0000	000000	DBN "4", 1976 *
080	4	28	11	13128	080	36	52416	254	0000	000000	BEACH, 1976 *
082	3	28	11	25857	080	37	42405	254	0000	000000	SHALLOW, 1976 *
084	2	28	12	40371	080	37	12066	254	0000	000000	TRUCK TR ON PILE, 1976
086	3	28	12	29297	080	38	06070	254	0000	000000	OVERPASS, 1976 *
090	2	28	11	53603	080	37	38841 ¹³⁹	243	0000	000000	DBN "6" TR ON PILE, 1976*
092	6	28	12	43692	080	37	13567	254	0000	000000	PELICAN, 1976*
093	3	28	12	31459	080	38	07564	254	0000	000000	HILL, 1976*
094	7	28	16	00099	080	39	44359	254	0000	000000	TRAIL, 1976*
096	5	28	16	12528	080	36	30017	254	0000	000000	DITCH, 1976*
098	6	28	14	17720	080	37	34926 ¹³⁹	243	0000	000000	DBN "9" SB ON PILE, 1976*
100	3	28	14	12681	080	39	06953	254	0000	000000	BOLT, 1976*
102	4	28	14	47748	080	37	00006	254	0000	000000	PATRICK, 1976*
402	1	28	13	43714	080	39	41000	252	0000	000000	DBN "94" TR-I ON PILE - Hydro
404	1	28	10	49327	080	38	17919	252	0000	000000	DBN "99" SB-I ON PILE - Hydro
406	1	28	09	43752	080	37	50630	252	0000	000000	DBN "101" SB-I ON PILE- Hydro
408	1	28	09	06904	080	37	37666	252	0000	000000	DBN "102" TR-I ON PILE- Hydro
410	1	28	11	02165	080	37	18685	252	0000	000000	DBN "5" SB ON DOLPHIN - Hydro
412	1	28	11	29018	080	37	32187	252	0000	000000	DBN "5A" SB ON PILE - Hydro
414	1	28	12	00218	080	37	42443	252	0000	000000	DBN "7" SG ON DOLPHIN - Hydro
416	1	28	12	15197	080	37	43914	252	0000	000000	DBN "7A" SB ON PILE - Hydro
418	1	28	13	01014	080	37	40930	252	0000	000000	DBN "6A" TR ON PILE - Hydro
420	1	28	13	41677	080	37	39715	252	0000	000000	DBN "6B" TR ON PILE - Hydro
600	6	28	11	34318	080	35	59637	254	0000	000000	S. Patrick N. Tank Photo
602	6	28	13	31480	080	36	07078	139	0000	000000	Pat.AFB Water Tank 1957-Triang
604	6	28	15	18212	080	36	27896	139	0000	000000	Pat.AFB N.Water Tk 1953-Triang
606	6	28	11	12775	080	35	46666	254	0000	000000	S. Patrick S. Tank Photo

*Third Order Station Located by Photo Party 61.

APPROVAL SHEET

Survey H-9606 AHP-10-1-76

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

No direct supervision was given by me during field work and the field sheet was examined only during routine field inspection of the hydro party.

This survey is complete and adequate with no additional field work recommended.



W. R. Daniels
LCDR., NOAA
Chief, Hydrographic Surveys Branch

HYDROGRAPHIC TITLE SHEET

H-9606 (Resurvey)

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-10-1-76

State Florida

General locality ~~East Coast of Florida~~ BANANA AND INDIAN RIVERS

Locality Banana and Indian Rivers MELBOURNE TO LOTUS

Scale 1:10,000 Date of survey Jan. 6-19, 1978

Instructions dated 1 October 1975 Project No. OPR-499-AHP-76

Vessel HFP2 - Launch 12777

Chief of party William R. Daniels

Surveyed by K. Andreen

Soundings taken by echo sounder, ~~SAC~~ lead, pole _____

Graphic record scaled by KA, KG, WS, JW, RD

Graphic record checked by K. Andreen & J. Wilder

Protracted by PDP8E Automated plot by field sheet PDP8E
CALCOMP 618

Verification by AMC Verification Branch

Soundings in fathoms feet at LOW WATER Datum
~~MEW~~ ~~XXXX~~

REMARKS: KA -K. Andreen

KG -K. Goodman

WS -W. Sprye

JW -J. Wilder

RD -R. Davies

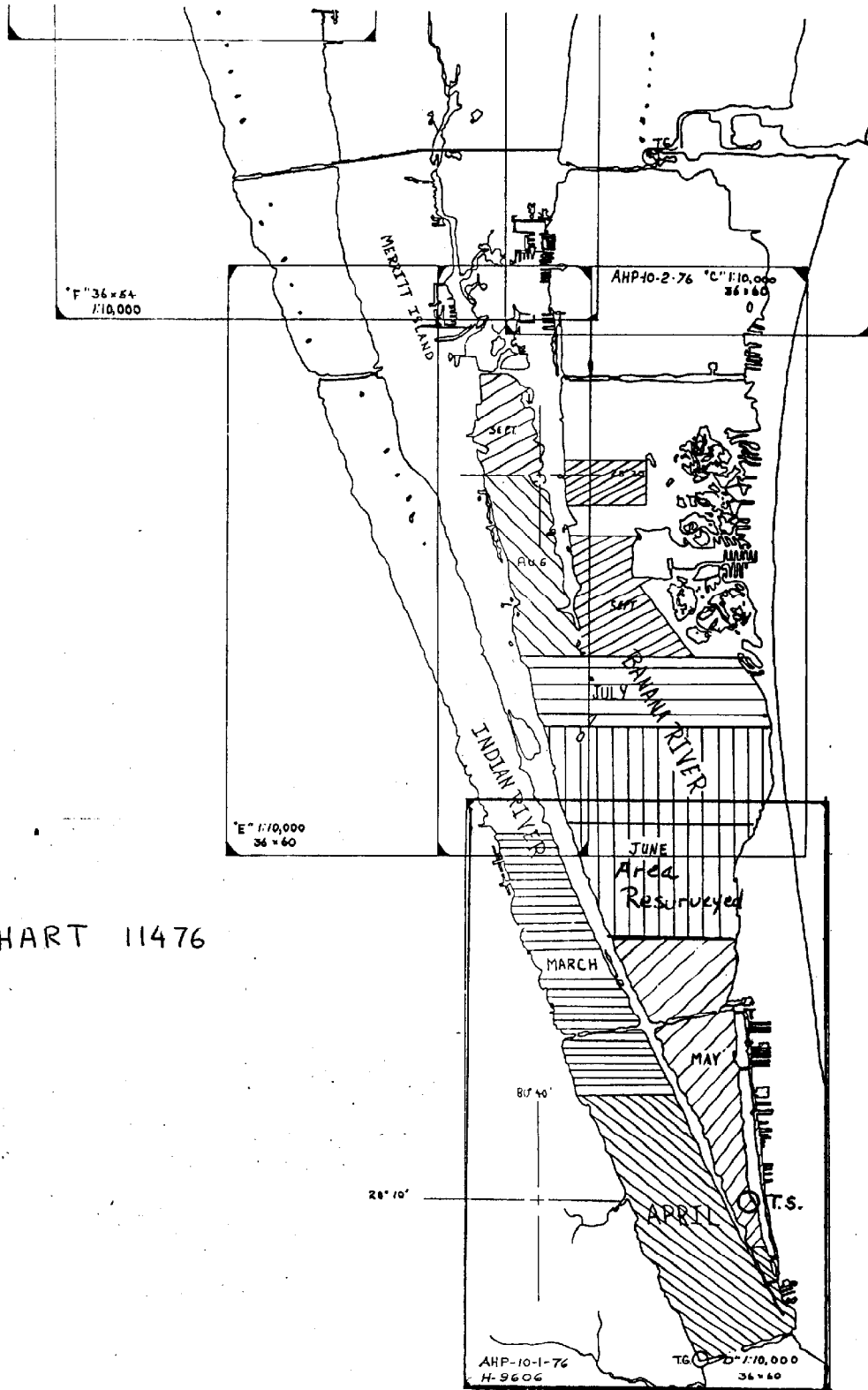


CHART 11476

SUPPLEMENT TO:
DESCRIPTIVE REPORT
To Accompany
HYDROGRAPHIC SURVEY H-9606 (AHP-10-1-76)

Scale: 1:10,000
Lt. Cdr. William R. Daniels
Lt. Kathryn Andreen, OIC, HFP-2

NOAA Launch 1277
Chief of Party

A. PROJECT

No Change.

B. AREA SURVEYED

There were no changes to this section of the Descriptive Report; however, due to a tide gage failure, the area bounded by the shoreline along Patrick Air Force Base on the east, and approximately the three-foot curve on the west side of the Banana River, from 28°13'45"N to 28°15'03", was resurveyed during January 6-19, 1978. Another section was also resurveyed at this time, which extends northward from the SR404 causeway to 28°12'42", along with a channel line at 28°13.'00"N, 080°38'30".

C. SOUNDING VESSEL

No change.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

There are no changes to this section. For the resurveyed data, a Raytheon fathometer, Model Number DE 723 D, S/N 2924 was used on Launch 1277. Pole soundings were necessary in shoal waters.

The only problem encountered during the time of resurvey work was with the digitizer, S/N 2773, which would only digitize depths approximately 40-50% of the time. Where depths were not digitized, values were determined from the analog trace.

Settlement and squat was determined as outlined in Section 4.9.4.2 of the Revised Hydrographic Manual. The revised graphs and corrector abstracts are included with this report in the separates following the text.

The bar check chains were checked with a steel tape measure prior to the start of hydrography. All depth values agreed exactly. Depth corrections were obtained by averaging bar check values. The graph, corrector value abstract, and bar check abstract are included with this report.

E. HYDROGRAPHIC SHEETS

No change.

F. CONTROL STATIONS

No change.

G. HYDROGRAPHIC POSITION CONTROL

Three control networks were used for the area that was resurveyed using the same stations and station numbers that were originally used on this survey. The calibration points were also the same as mentioned in the Descriptive Report. Refer to the Sounding Volume for Launch 1277 for all calibration data. The Electronic Corrector Abstract for the resurveyed data is included in this report.

A maximum difference of 10 meters between morning and evening calibrations was observed, with mean daily changes ranging between -4.0 and +1.0. Calibration distances ranged from 1327 meters to 4731 meters. The mean standard deviations of calibrations for the resurveyed area ranged from 1.03 to 2.12 meters.

The following is a summary of equipment utilization for the resurveyed data. Refer to the enclosed signal list for shore station names and locations:

<u>Shore Stations</u> <u>Signal #</u>	<u>Del Norte</u> <u>S/N</u>	<u>Julian Days</u> <u>Used</u>
92	667	006, 012
92	247	018
93	174	006, 012
93	252	018
94	667	019
96	174	019
100	667	018
102	174	018

Master Unit - S/N 162,
DMU - S/N 189,

JD 006, 012, 018, 019.
JD 006, 012, 018, 019.

There were no other changes to this section of the Descriptive Report.

H. SHORELINE

No change.

I. CROSSLINES

For the area that was resurveyed, approximately 5.5 nautical miles or 7.8% of mainscheme were crosslines. The agreement with main scheme was excellent and all soundings agreed to the nearest foot.

There were no other changes to this section.

J. JUNCTIONS

No change.

K. COMPARISON WITH PRIOR SURVEYS

No change.

L. COMPARISON WITH THE CHART

No change.

M. ADEQUANCY OF SURVEY

No change.

N. AIDS TO NAVIGATION

No change.

O. STATISTICS

<u>Vessel</u>	<u>LNM</u>	<u>SQNM</u>	<u>No. of bottom samples</u>	<u># Positions</u>
1277	57.3	2.4	0	454

P. MISCELLANEOUS

A new position for the D.P. #3180, was not obtained; however, a new height of 8 inches above water level at a time of

lat. 28° 15.06', long. 80° 59.15'
old height (4) - new height (1)

155830 #, JD 019 for the pipe was obtained. There were no other changes for this position. It should also be noted that the D.P. soundings south of the SR404 causeway were not resurveyed due to their location and extreme shallow depths. Also, bottoms samples were not resurveyed.

*pos #3180 is not logged -
Plotted pos from boat
sheet & elevation from D.R. during Q.C.I.*

There are no other changes to this section.

Q. RECOMMENDATIONS

No change.

R. AUTOMATED DATA PROCESSING

No change.

S. REFERENCE TO REPORTS

1. Horizontal Control Report, OPR-499, Banana and Indian River, Florida, 1976.
2. Descriptive Report OPR-499, Banana and Indian Rivers, Florida, H-9633, AHP-10-2-76.
3. Descriptive Report OPR-499, Banana and Indian Rivers, Florida, H-9606, AHP-10-1-76.

Respectfully submitted,

Robert Lewis

For / Kathy Andreen
Lt. NOAA
OIC, Launch 1277

FIELD TIDE NOTE

Predicted tide correctors were not applied to the sounding data on the field sheet due to a periodic tidal range of less than 0.2 foot.

A tide staff was installed within the sheet limits and read at 15 minute intervals during periods of hydrography, beginning 30 minutes before and continuing 30 minutes after actual times of hydrography.

An ADR gage was installed at Cape Canaveral (Port Locks) and remained in operation during hydrography.

<u>Gage</u>	<u>Location</u>	<u>Period</u>
Cape Canaveral	28 ^o 24.5'	4 Nov 1977
Port Locks Gage #872-1609	80 ^o 38.3'	thru end of Survey
Carters Cut	28 ^o 09.5'	15 Nov 1977
Tide Staff	80 ^o 36.7'	thru 6 Feb 1978



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Hydrographic Surveys Branch
439 W. York St.
Norfolk, Virginia 23510

April 6, 1978

CAM11/RAL

TO: Chief, Tides Branch, C331
FROM: *Robert Lewis*
LCDR Thomas W. Richards
Chief, Hydrographic Surveys Branch
SUBJECT: Request for Tide Data

Please provide smooth tide correctors to AMC Processing Division (CAM3) for Survey H-9606 (AHP-10-1-76).

A tide staff at Carters Cut, Banana River was read during periods of hydrography, also the ADR gage at Cape Canaveral was operational during this time.

See enclosed chartlet for area resurveyed.

<u>Julian Day 1978</u>	<u>Hydro Begins (GMT)</u>	<u>Hydro Ends (GMT)</u>
006	1737	1934
012	1450	2024
018	1648	2122
019	1413	1618



VELOCITY TABLE

NOAA LAUNCH 1277

H-9606

AHP-10-1-76

000051 1 0002 0002 000 127700 009606

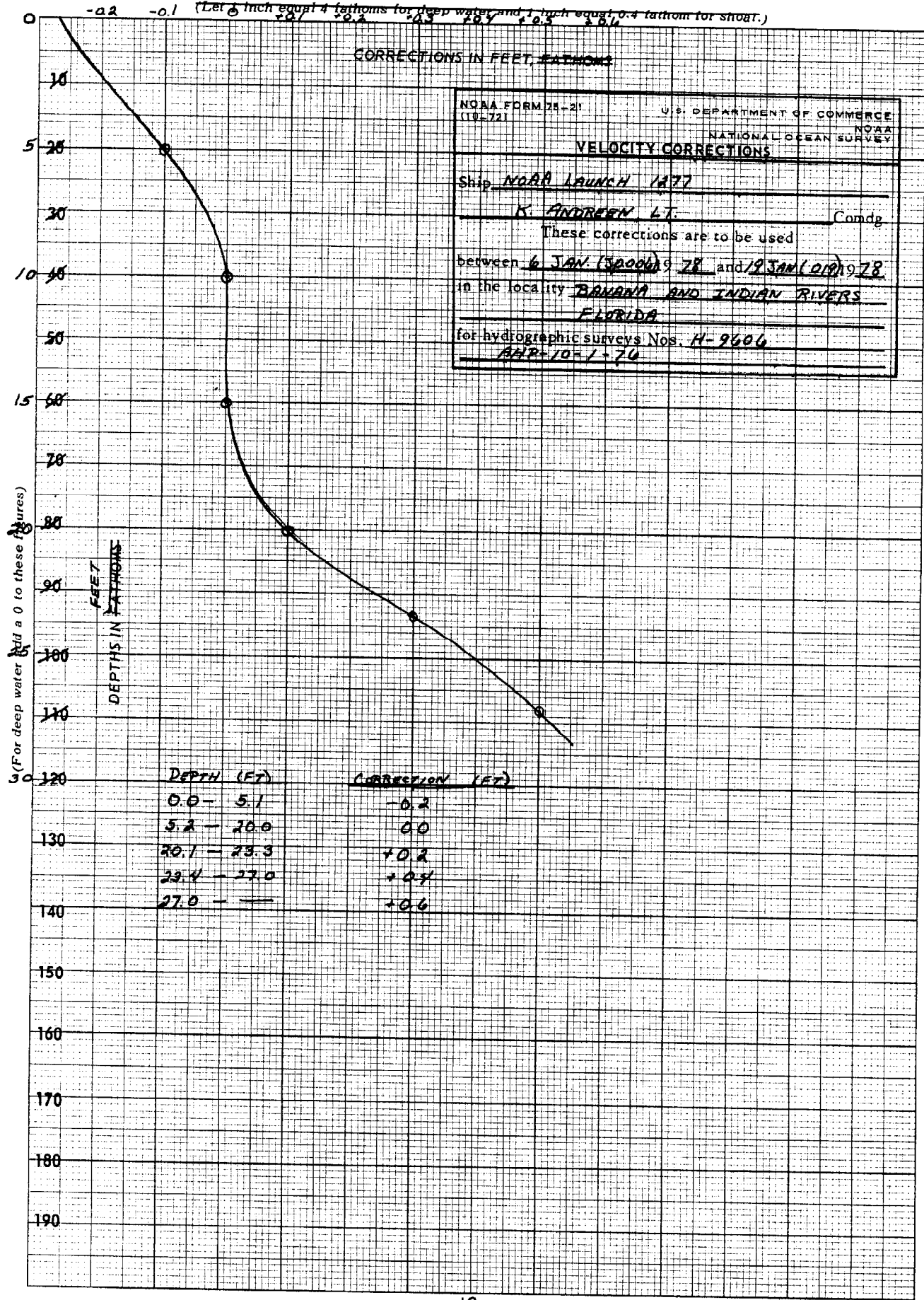
000200 0 0000

000233 0 0002

000270 0 0004

999999 0 0006

46 1240



SIGNAL LIST

AHP-10-1-76, H-9606 (RESURVEY)

BANANA AND INDIAN, RIVERS

092	6	28	12	43692	080	37	13567	254	0000	000000	PELICAN, 1976*
093	3	28	12	31459	080	38	07564	254	0000	000000	HILL, 1976*
094	7	28	16	00099	080	39	44359	254	0000	000000	TRAIL, 1976*
096	5	28	16	12528	080	36	30017	254	0000	000000	DITCH, 1976*
098	6	28	14	17720	080	37	34926	243	0000	000000	DBN "9" SB ON PILE, 1976*
100	3	28	14	12681	080	39	06953	254	0000	000000	BOLT, 1976*
102	4	28	14	47748	080	37	00006	254	0000	000000	PATRICK, 1976*

*Third Order Station Located by Photo Party 61

FIELD TIDE NOTE

Predicted tide correctors were not applied to the sounding data due to a periodic tidal range of less than 0.2 foot. It should be noted that launch personnel observed non-periodic water level changes of up to 1.5 feet within the project area.

Three ADR tide gages were installed within the project area and remained in operation during this survey.

<u>Site & Number</u>	<u>Location</u>	<u>Period</u>
Cape Canaveral (Port Locks) Gage No. 872-1609	Lat. 28°-24.5' Long. 80°-38.3'	9 March 1976 - End of Survey
Titusville No. 872-1456	Lat. 28°-37.2' Long. 80°-48.0'	8 March 1976 - End of Survey
Eau-Gallie No. 872-1808	Lat. 28°-08.0' Long. 80°-37.5'	9 March 1976 - End of Survey

January 28, 1977

CAM11/RAL

TO: Chief, Tides Branch, C331

FROM: William R. Daniels
Chief, Hydrographic Surveys Branch, CAM 11

SUBJECT: Request for Tidal Data

Please furnish smooth tide correctors to AMC, Processing Division, CAM 3 for Survey H-9606 (AHP-10-1-76), Project OPR-499.

There were three ADR tide gages installed in the project area, one within the limits of this survey.

The following times of hydrography include 2 hours before and after actual times of hydro:

<u>Julian Day (1976)</u>	<u>Hydro Begins (GMT)</u>	<u>Hydro Ends (GMT)</u>
071	1600	2300
072	1300	2200
078	1500	2300
079	1300	2200
085	1400	2100
086	1600	2300
088	1300	2300
091	1400	2300
093	1300	2300
096	1400	2000
098	1200	2300
099	1300	2000
103	1300	2300
104	1800	2300
105	1200	2300
106	1200	2300
107	1400	2000
110	1500	2200
111	1400	2100
113	1200	2100
114	1700	2200
117	1600	2200
118	1200	2000
119	1200	1700
126	1300	2200
127	1000	2200
131	1400	2200

APPROVAL SHEET

Survey H-9606 AHP-10-1-76

(RESURVEY)

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

No direct supervision was given by me during field work.

The area of the resurvey is complete and adequate with no additional field work recommended.

Robert Lewis
for/ W.R. Daniels
LCDR., NOAA
Chief, Hydrographic Surveys Branch

133	1200	2200
134	1400	2200
135	1600	2200
139	1100	1700
140	1100	1700
147	1400	2200
148	1200	2200
149	1300	2000
154	1600	2300
155	1400	2100
159	1100	2200
160	1300	2200
161	1600	2300
163	1300	1800
168	1400	1900
170	1100	2000
174	1300	2200
176	1200	2100
177	1200	2200
196	1100	2000
197	1100	1900
198	1300	1900
201	1000	1700
202	1000	1800
204	1500	2100

cc: CAM 3

U.S. DEPARTMENT OF COMMERCE
May 1, 1978 NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for:

Tide Station Used (NOAA Form 77-12): 872-1609 Port Canaveral Locks

Period: January 6-19, 1978

HYDROGRAPHIC SHEET: H-9606

OPR: 499

Locality: Banana River, Florida

low water datum*

Plane of reference (~~mean low water~~): 2.46

Height of Mean High Water above Plane of Reference is

Remarks: * Low water datum is 0.5 ft. below mean water level.

Zone direct.

Note: This is a resurvey of H-9606 affected by a tide gage malfunction in 1976.

Don W. Spillman
85 Chief, Tides Branch

6/2/77

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

Tide Station Used (NOAA Form 77-12): Eau Gallie

Period: March 11 - July 22, 1976

HYDROGRAPHIC SHEET: H-9606

OPR: 499

Locality: Banana and Indian Rivers, Florida

Plane of reference (^{low water datum*}~~mean low water~~): 2.73 ft. - Eau Gallie

Height of Mean High Water above Plane of Reference is

Remarks: *low water datum is one half foot below mean water level

Zone direct.

Don Spellman
Chief, Tides Branch

GEOGRAPHIC NAMES

H-9606

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	ON CHART NO. 11472	ON PREVIOUS SURVEY NO. 11485	CON U.S. QUADRANGLE MAPS	FROM LOCAL INFORMATION	ON LOCAL MAPS	P.O. GUIDE OR MAP	RAND McNALLY ATLAS	U.S. LIGHT LIST			
Banana River ✓	X	✓								✓	1
Carters Cut ✓		✓	X TP00143							✓	2
Eau Gallie Causeway ✓	X	✓								✓	3
Indian River ✓	X	✓								✓	4
Lotus ✓	X	✓								✓	5
Mangrove Point ✓	X	✓								✓	6
Melbourne ✓	X	✓								✓	7
Merritt Island ✓	X	✓								✓	8
Palm Shores ✓		✓								✓	9
Patrick Air Force Base ✓	X	✓								✓	10
Pineda Causeway ✓	X	✓								✓	11
Plover Point ✓	X	✓								✓	12
Satellite Beach (Ppl) ✓	X	✓								✓	13
South Patrick ✓	X	✓								✓	14
Tropic ✓	X	✓								✓	15
INDIAN HARBOR BEACH (Ppl) ✓ Pineda ✓		✓								✓	16
Sherwood Park ✓		✓								✓	17
Horse Creek ✓		✓								✓	18
INTRACOASTAL WATERWAY ✓										✓	19
Nesbit Island ✓		✓								✓	20
Samsons Park ✓ (city of Satellite Beach park land undeveloped)										✓	21
THE ANCHORAGE-EAU GALLIE MARINA ✓										✓	22
INDIAN HARBOR PINES MARINA ✓										✓	23
Eau GALLIE YACHT CLUB ✓		✓								✓	24
DIAMOND 99 MARINA ✓		✓								✓	25

Approved:

Chas. E. Harrington

Chief Geographer
27 July 1979

C373

APPROVAL SHEET
FOR
SURVEY H- 9606

- 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.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the Verifier's Report.

Date: May 17, 1979

Signed:



Title: Chief, Verification Branch

HYDROGRAPHIC SURVEY STATISTICS

H-9606

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS		9 parts to B/s	
DESCRIPTIVE REPORT		1	SMOOTH OVERLAYS: POS. ARC, EXCESS		2	
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	3-with printouts					
VOLUMES	3					
BOXES			1-Smooth			

T-SHEET PRINTS (List) TP-00141-43

SPECIAL REPORTS (List) * also contains misc data & tides

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			3860
POSITIONS CHECKED	57		
POSITIONS REVISED		17	
SOUNDINGS REVISED		198	
SOUNDINGS ERRONEOUSLY SPACED		9	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	13		
VERIFICATION OF CONTROL	12		
VERIFICATION OF POSITIONS		64	
VERIFICATION OF SOUNDINGS		150	
COMPILATION OF SMOOTH SHEET		15	
APPLICATION OF TOPOGRAPHY		18	
APPLICATION OF PHOTOBATHYMETRY		0	
JUNCTIONS		8	
COMPARISON WITH PRIOR SURVEYS & CHARTS		20	
VERIFIER'S REPORT		17	
OTHER		34	
TOTALS	25	326	351

Pre-Verification by R. G. Cram	Beginning Date 2/22/77	Ending Date 2/23/77
Verification by D. V. Mason, K. R. Ainsley, J. S. Bradford	Beginning Date 4/12/77	Ending Date 4/13/79
Verification Check by R. G. Roberson	Time (Hours) 5	Date 4/15/79
Marine Center Inspection by Atlantic Marine Center	Time (Hours) 30	Date 5/12/79
Quality Control Inspection by F.P.SAULSBURY	Time (Hours) 117	Date 7/24/79
Requirements Evaluation by D J Hill	Time (Hours) 4	Date 9/11/79

G. R. Meyer 16 hrs 8/23/79

Reg. No. H-9606

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-9606

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 _____ TIME REQ'D _____ INITIALS _____

REMARKS:

ATLANTIC MARINE CENTER

VERIFIER'S REPORT

REGISTRY NO. H-9606

FIELD NO. AHP-10-1-76

Florida, Banana and Indian Rivers, Melbourne to Lotus

SURVEYED: 11 March through 22 July 1976
6 January through 19 January 1978

SCALE: 1:10,000

PROJECT NO.: OPR-499

SOUNDING: Raytheon DE-723
Pole Soundings
Lead Line

CONTROL: Del Norte
(Range-Range)
Sextant-fixes
(Visual), &
See-Boatsheet

Chief of PartyW. R. Daniels
Surveyed By.W. A. Wert
	K. Andreen
	J. Bennett
	J. Wilder
	W. Sprye
	E. Fanning
	J. Robinett
Automated Plot By.XYNETICS 1201 Plotter (AMC)
Verified and Inked By.J. S. Bradford
	April 13, 1979

1. INTRODUCTION

a. The sounding datum in this area is called ^{*"Low Water Datum"*} ~~"Indian River Florida Low Water."~~ Tidal conditions are such that Mean Low Water is not definable. Elevations of features seaward of the shoreline such as piles, rocks, etc., are referenced to low water, and descriptions appended are shown in slanted lettering. Most features one foot or more above low water are exposed during high water conditions which may occur in this area due to meteorological conditions. The high water line shown on this survey is for the most part a mean water level line, and the Coastal Zone Maps used in this area should be consulted to determine the various lines.

b. The red changes in the Descriptive Report were made by the verifier. *& the C.C. Inspectors*

2. CONTROL AND SHORELINE

a. The source of control is adequately described in Section F and G of the Descriptive Report. The cartographic codes for Stations 008, 014, 028, 040, 090 and 098 were changed

in the control file from 243 to 139. The above stations were located using third order methods by Photo Party 61. They are fixed aids to navigation and recoverable; they are considered adequate to meet the requirements for Cartographic Code 139.

A very unorthodox method of processing the inshore hydrography was used by the field. The inshore hydrography was run using sextant fixes, then converted to electronic (range-range) and plotted. It was also noted that a few visual fixes contain one or more hydrographic (blue) signals. Blue signals were located using Del-Norte ranges; this is not an acceptable method. Considering the area being relatively flat and approximately 1' - 2' feet deep the hydrography using this unorthodox method has been retained.

Station 65 "Root, 1976" was located by sextant cuts and is classified as a hydrographic signal. The use of hydrographic signals for electronic control is a poor practice.

b. The shoreline application was made from Coastal Zone Maps TP-00139 through TP-00143 of 1969, 70 and 71. A substantial disagreement was noted in the shoreline between TP-00140 and TP-00141. This misalignment was transferred to the smooth sheet as portrayed on the Coastal Zone Maps mentioned above. The dashed lines delineating shallow areas were transferred from the Coastal Zone Maps to the smooth sheet, where hydrography was sparse. The red dashed shoreline changes shown on H-9606 are transferred from the field sheets. Two overhead power lines were noted on TP-00142. Power poles for this overhead cable were not located by field, nor were they adequately shown on TP-00142.

See Q.C. Report for comments on S.L. disagreement TP-00140 & TP-00141

3. HYDROGRAPHY

a. The agreement at crossings is adequate.

b. The standard depth curves are adequately delineated with the inclusion of the supplemental three-foot curve. The zero curve was not delineated. *because of the small water level range*

c. The development of the bottom configuration and investigation of least depths is considered adequate.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports comply with the requirements of the Hydrographic Manual, with the following minor exceptions:

a. Numerous features covered in Section K of the Descriptive Report, Comparison with Prior Surveys, would have been better suited under section L, Comparison with the Chart.

b. The majority of the investigations of features and presurvey review items were not transferred to the sounding volume; consequently, this data remains in the raw printouts.

5. JUNCTIONS

A junction was effective with the following survey:

H-9633 (1977) to the north. *Not registered in office 6/14/79*

No other contemporary surveys join H-9606.

6. COMPARISON WITH PRIOR SURVEYS

H-1380 (1876-77) 1:20,000

This prior survey is the most recent in this area that provides complete coverage.

The comparison with this prior survey is adequately discussed under Section K of the Descriptive Report. In general, the changes noted are attributable to extensive cultural changes.

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

7. COMPARISON WITH CHART #11485 (13th Edition, August 2, 1975) #11472 (14th Edition, August 23, 1975) #11476 (9th Edition, December 13, 1975)

a. Hydrography

Under Section L, Comparison with the Chart, in the Descriptive Report, the hydrographer used the wrong editions of Charts #11472 and 11485. The current edition of the chart should have been used for comparison by the hydrographer at the time of the survey; although the majority of the charted hydrographic data is identical, aids to navigation and dredging of canals were not updated on this edition of the chart that the hydrographer used.

Numerous deep holes have been dredged on either side of Eau Gallie Causeway (possibly for fill for the causeway) that are not indicated on the chart.

Two newly dredged canals charted at ^①Lat. 28°10.75', Long. 80°-36.70' and ^②Lat. 28°11.20', Long. 80°36.73' show "6 feet rep. (1972)." Present survey shows least depths ^{in dredged portions} of these canals to be five feet.

- ① Approach from the main channel has a controlling depth of 4 ft.
- ② Controlling depth in marked channel is 3 ft.

Chart #11476 and Coastal Zone Maps TP-00142 show four private markers at the entrance to Patrick Air Force Base Yacht Club, Lat. 28°12.78', Long. 80°37.50'. The hydrographer located two of the private markers, but the disposition of the other two is unknown. *See Q.C. Report*

Seven presurvey review items fall within the limits of H-9606. These items are adequately covered in Section K, Comparison with Prior Survey of the Descriptive Report.

Numerous short finger piers and groins are shown on the charts in the survey area. Disagreement between presently charted piers and groins should be resolved in nautical charting as to source and ~~adequacy~~ to supplement piers and groins shown on the present survey. *See Q.C. Report*

Stakes charted at Lat. 28°13', Long. 80°38.3' were investigated by the hydrographer and found to be private markers. *6 inch diam piles, chart as shown on the present survey.* It is recommended the spoil areas be retained as charted.

With the exceptions noted above, the present survey is considered adequate to supersede the charted hydrography within the common area.

b. Aids to Navigation

Descriptions of the aids to navigation covered in the Descriptive Report are quite verbose, but adequate. Again, the hydrographer used the wrong edition of the chart for comparison; therefore, day beacons "91", "92", "94", "99", "101" and "102" were charted at the time of the survey. It is recommended that a junctional light or day beacon would be beneficial at Lat. 28°10.45'N, Long. 80°37.05'W. *Do not consider an aid at this location would be beneficial.*

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the Project Instructions.


9. ADDITIONAL FIELD WORK

This is a good, basic survey; no additional field work is recommended.

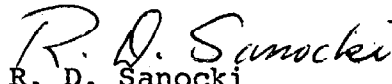
Inspection Report
H-9606

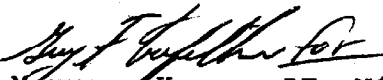
Any verification errors regarding procedures and presentation of survey data detected during inspection by the Hydrographic Inspection Team have been corrected before submission for administrative approval. HIT comments regarding quality of field work, compliance with instructions, and adequacy of the survey have been incorporated within the Verifier's Report.


Examined and Approved:
Hydrographic Inspection Team
Date: May 11, 1979


Robert A. Trauschke, CDR, NOAA
Chief, Processing Division

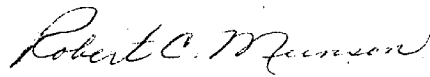
ABSENT
Carl W. Fisher, CDR, NOAA
Chief, Operations Division


R. D. Sanocki
Technical Assistant
Processing Division


Maureen Kenny, LT, NOAA
Chief, Electronic Data
Processing Branch


Billy J. Stephenson
Team Leader
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

OA/C352:FPS

July 24, 1979

TO: *R.H. Carstens*
R. H. Carstens
Acting Chief, Hydrographic Surveys Division

THRU: Chief, Quality Control Branch

FROM: F. P. Saulsbury *F. P. Saulsbury*
Quality Evaluator

SUBJECT: Quality Control Report for H-9606 (1976-78), Florida, Banana
and Indian Rivers, Melbourne to Lotus

A quality control inspection of H-9606 was accomplished to monitor the survey for obvious deficiencies with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, shoreline transfer, smooth plotting, decisions and actions taken by the verifier, and the cartographic presentation of data. In general, it was found to conform to the National Ocean Survey's standards and requirements except as stated in the Verifier's Report, the HIT Report, and as follows:

1. Minor revisions and additions to survey items, made on the smooth sheet during quality control inspection, are identified on the one-half scale copy of the survey to be furnished the verifier.
 2. The many revisions to items transferred to the smooth sheet from the contemporary topographic manuscripts during verification indicate a need to exercise more diligence and attention to detail than was exercised on this survey. Some of these inadequacies were incorrect positions of piers, omitted pier endings, bench marks shown as piers, a private marker overlooked, and omitted shoreline.
- Two charted landmarks were transferred to the smooth sheet from contemporary topographic surveys during quality control inspection.
3. The color of several daybeacons was revised from black to green during quality control inspection.
 4. The pipe, uncovering 1 foot at LWD, in latitude 28°15.06', longitude 80°39.13' was not logged in the printout. Its position was plotted



on the smooth sheet from its boat sheet location and its elevation was added from information in the Descriptive Report during quality control inspection.

5. The two submerged piles located in latitude $28^{\circ}11.85'$, longitude $80^{\circ}37.34'$ and latitude $28^{\circ}08.77'$, longitude $80^{\circ}37.36'$ were incorrectly depicted on the smooth sheet by slanted numbers 5 and 6, respectively. The pile symbol and notes "covered 5 feet at LWD" and "covered 6 feet at LWD" were shown at these locations by the evaluator in accordance with accepted NOS practices.

6. In the vicinity of latitude $28^{\circ}15.00'$, longitude $80^{\circ}39.50'$ a shoreline conflict of 30 meters east/west displacement exists where the shoreline on TP-00140 (1969-71) joins the shoreline on TP-00141 (1969-71). The difference was averaged and an arbitrary shoreline correction was made during quality control inspection. The dashed red line shown on the smooth sheet symbolizes an uncertain shoreline delineation.

7. Several piers, charted from T-8881 (1947-49) and T-8882 (1947-49), not shown on contemporary topographic surveys and not located or mentioned by the hydrographer were brought forward to the smooth sheet as ruins during quality control inspection.

Charted piers originating from miscellaneous sources and not shown on the present survey are referred to the compiler for disposition.

8. Controlling depths of the following dredged channels should be charted as shown on the present survey:

a. Samsons Park North Channel charted in the vicinity of latitude $28^{\circ}11.2'$, longitude $80^{\circ}37.00'$ with a 1972 reported depth of 6 feet.

b. Samsons Park South Channel charted in the vicinity of latitude $28^{\circ}10.78'$, longitude $80^{\circ}37.00'$ with a 1972 reported depth of 6 feet.

Canal depths should be charted as shown on the present survey.

9. Aids to Navigation:

a. Two of the four privately maintained channel markers charted from TP-00142 (1969-71) in the vicinity of latitude $28^{\circ}12.77'$, longitude $80^{\circ}37.25'$ were located by detached positions on the present survey. The two offshore markers were not mentioned by the hydrographer, are considered to no longer exist as markers, and have been office determined to be submerged piles. The northeast marker of the four features was located on the present survey 15 meters southeast of its charted

location. The new location is considered accurate and adequately marks the entrance channel south of the 3-foot shoal in this area. Chart the submerged piles and markers as shown on the present survey.

b. The front range black daybeacon located in latitude $28^{\circ}12.66'$, longitude $80^{\circ}37.12'$ on the present survey does not appear on the chart or in the 1976-78 Light List. The existence of an accompanying rear range daybeacon in this area is not mentioned by the hydrographer. Daybeacon "12" charted in latitude $28^{\circ}12.64'$, longitude $80^{\circ}37.14'$ located on the present survey is not listed in the aforementioned Light Lists. A determination pertaining to the existence of these aids is deferred to the chart compiler. The present survey reveals that possible dredging has occurred at the entrance channel in this area.

c. Nesbit Island Channel daybeacon "2" charted in latitude $28^{\circ}11.85'$, longitude $80^{\circ}37.34'$ was located on the present survey as a submerged pile broken off three-tenths of a foot off bottom and covered 5 feet at LWD. Nesbit Island Channel daybeacon "10" was not located nor mentioned by the hydrographer on the present survey. It may be that a submerged pile occupies the assumed former location of the daybeacon in latitude $28^{\circ}11.84'$, longitude $80^{\circ}37.03'$.

d. The positions and condition of daybeacons and private channel markers shown on TP-00142 (1969-71) are considered obsolete. The positions and numbers of these aids are considered accurately shown on the present survey.

The positions of Diamond 99 Marine Basin Channel daybeacons "1" through "8" shown on TP-00141 (1969-71) are considered superseded by those shown on the present survey.

e. Daybeacon "98" charted in latitude $28^{\circ}11.30'$, longitude $80^{\circ}38.58'$ was not mentioned by the hydrographer and is not shown on the smooth sheet.

f. Generally the positions of the aids charted on Small-craft Charts 11472 and 11485 are in conflict with the positions of these aids located on the present survey. A combination of paper distortion and projection error on the charts may be the cause for this conflict.

10. The dates of the survey were not included in the title block on the smooth sheet.

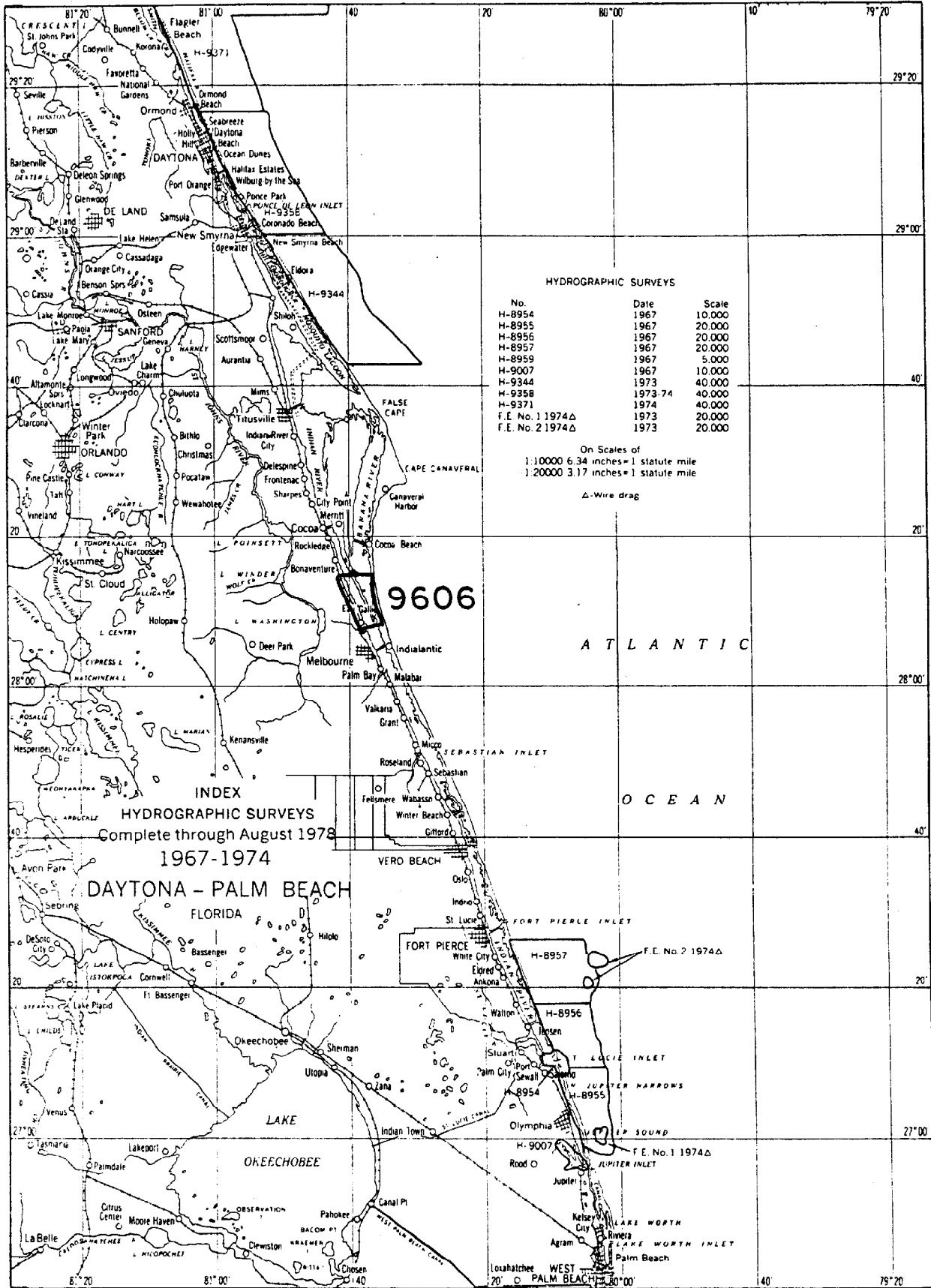
11. Though elevations are referenced to the LWD and usually indicated by an underscored slanting number in parenthesis, features of a topographic nature (above a high water plane) should be annotated in vertical lettering. An approximate value for the difference between LWD and the high water plane is 1 foot.

cc:
OA/C35
OA/C351

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration

National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 77 D



HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-8954	1967	10,000
H-8955	1967	20,000
H-8956	1967	20,000
H-8957	1967	20,000
H-8959	1967	5,000
H-9007	1967	10,000
H-9344	1973	40,000
H-9358	1973-74	40,000
H-9371	1974	40,000
F.E. No. 1 1974Δ	1973	20,000
F.E. No. 2 1974Δ	1973	20,000

On Scales of
1:10000 6.34 inches = 1 statute mile
1:20000 3.17 inches = 1 statute mile

Δ - Wire drag

INDEX
HYDROGRAPHIC SURVEYS
Complete through August 1978
1967-1974

DAYTONA - PALM BEACH
FLORIDA

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9606

INSTRUCTIONS

- A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
 1. Letter all information.
 2. In "Remarks" column cross out words that do not apply.
 3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
11472A	11/30/79	Michael J. Honick	Full Part Before After Verification Review Inspection Signed Via Drawing No. #19 QC.
11485B	1/14/80	Michael J. Honick	Full Part Before After Verification Review Inspection Signed Via Drawing No. #18 QC.
11476	1/29/80	Michael J. Honick	Full Part Before After Verification Review Inspection Signed Via Drawing No. #29 QC.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
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