9988

Diagram No. 1245-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. HSB-10-5-81

Office No. H-9988

LOCALITY

State Florida

General Locality Indian River

Locality Williams Point to Indian River City

1981-82

CHIEF OF PARTY
LCDR G.W.Jamerson

LIBRARY & ARCHIVES

DATE April 2, 1985

☆U.S. GOV. PRINTING OFFICE: 1980—766-230

9988

INDEX

* Removed from the original Descriptive Report and filed with original survey records.

NOAA FORM 77-28 (11-72)

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

REGISTER NO.

HYDROGRAPHIC TITLE SHEET

H-9988 ✓

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.

HSB-10-5-81 ✓

State Florida ✓

General locality Indian River ✓

Locality Williams Point to ~~Addison Point~~ Indian River City

Scale 1:10,000 ✓ **Date of survey** 16 Nov.1981 - 20 Apr.1982 ✓

Instructions dated August 26, 1981 ✓ **Project No.** OPR-G207-HSB-81 ✓

Vessel Hydrographic Surveys Branch, HFP-4 ✓

Chief of party George W. Jamerson, LCDR, NOAA ✓

Surveyed by N. E. Perugini, E. L. Martin, D. M. Bryant, D. J. Parris, L. S. Biscorner, H. J. Hickman

Soundings taken by echo sounder, ~~hand lead~~ pole

Graphic record scaled by HFP-4 Personnel

Graphic record checked by HFP-4 Personnel

Protracted by NA **Automated plot by** Field Sheet - PDP8e Xynetics 1201 (AMC)

Verification by AMC Verification Branch

Soundings in ~~fathoms~~ feet **at** ~~MLW~~ ~~MLLW~~ Low Water Datum

REMARKS: Change No. 1 dated October 1, 1981 ✓

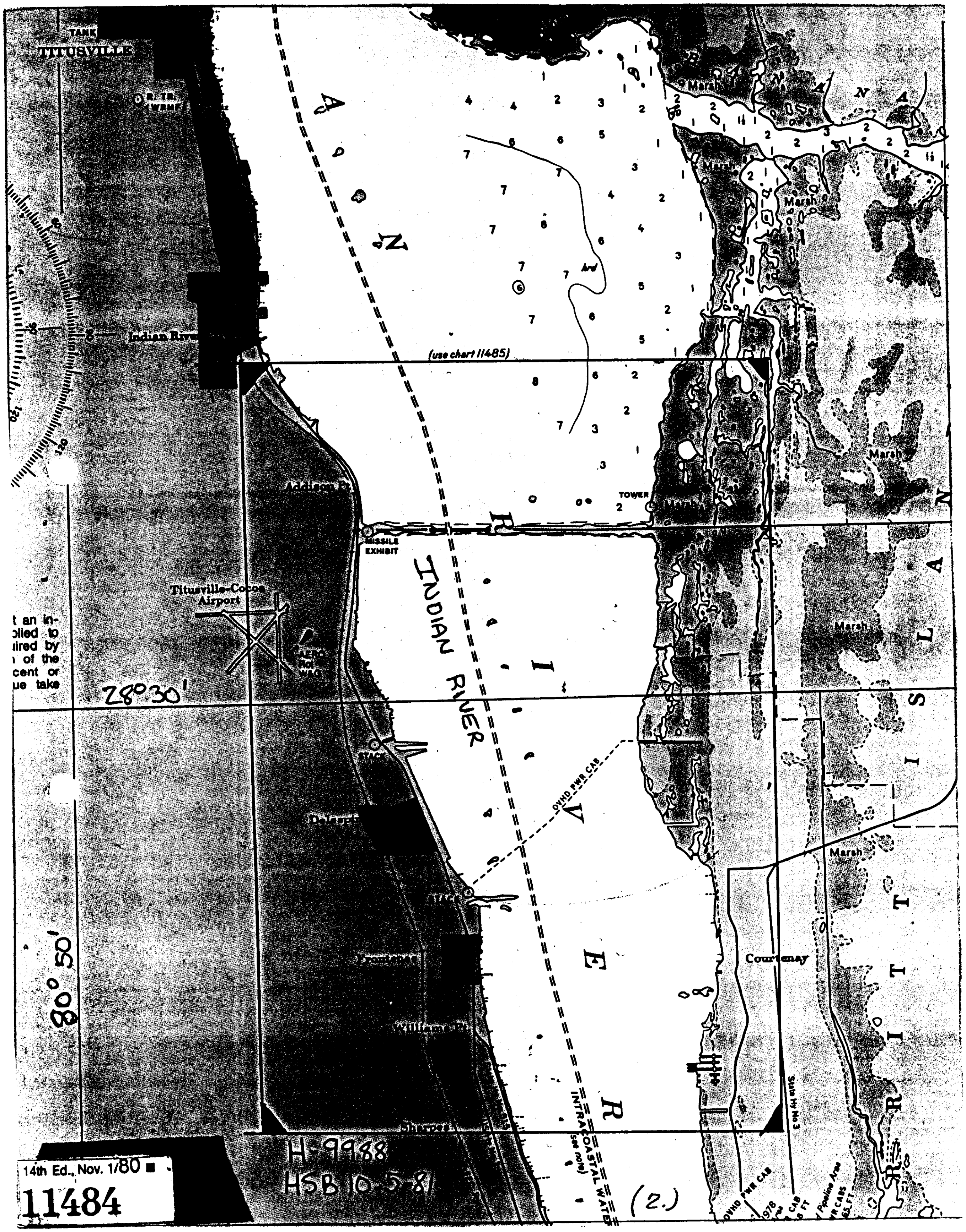
Notes in the Descriptive Report were made in red during office processing.

Awois and SURF ✓ RWD 10/85

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

(1)

☆ U.S. GPO: 1974-0-768-081/1207


TANK
TITUSVILLE
Indian River
(use chart 11485)
Addison Pt.
MISSILE EXHIBIT
TOWER
Marsh
Titusville-Cocoa Airport
28°30'
80°50'
INDIAN RIVER
STACK
Frontenac
Williams Pt.
Sharpes
Courtenay
INTRACOASTAL WATER
H-9988
HSB 10-5-81
(2.)
14th Ed., Nov. 1/80
11484

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9988
HSB 10-5-81

Scale: 1:10,000
Chief of Party: George W. Jamerson, LCDR, NOAA
Officer in Charge: Nicholas E. Perugini, LTJG, NOAA
(February 8, 1982 - end of survey)
Hydrographic Surveys Branch, Hydrographic Field Party #4
Vessels : Launches 8604, 0520, 1279

A. PROJECT

This survey was conducted in accordance with Project Instructions OPR-G207 dated August 26, 1981 and the following change: Change No. 1, October 1, 1981.

B. AREA SURVEYED

The survey area was the Indian River, north from the Williams Pt - Courtenay area to one mile north of Addison Pt. The project area, located between Titusville and Cocoa, FL. contains a stretch of the Intracoastal Waterway, as well as several privately maintained channels. Geographic bounds of the survey area are as follows:

South 28°~~26'52~~ 27 ØØ"N	West 80°47'40"W
North 28°33'12"N	East 80°43'05"W

The survey was conducted from November 16, 1981 ~~thru~~ through April 20, 1982 (JD 320-110) inclusive.

C. SOUNDING VESSEL

All sounding were collected with the following survey vessels:

NOAA Launch 8604 (EDP 8604) - 21 foot fibercraft. A problem with transducer placement will be discussed in Section D.

NOAA Launch 0520 (EDP 0520) - 22 foot Monark.

NOAA Launch 1279 (EDP 1279) - 13 foot Boston Whaler.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Soundings were recorded with a DE-719B Raytheon Fathometer. Serial numbers and dates of operation are as follows:

VESNO ~~8640~~ 8604	Model Raytheon 719B
JD 320-35	S/N 5799

VESNO 0520	MODEL RAYTHEON 719B
JD 025-075	S/N 5799
075-084	7881
085-110	9221
VESNO 1279	All soundings taken by pole.

On JD 75 an internal electronic problem resulted in failure of fathometer S/N 5799. Soundings collected with this fathometer, until that time, are of excellent quality. The chart paper take-up system in recorder S/N 7881, caused periodic "riding up" on the upper guide spool. Data quality was acceptable during the brief period of operation.

Calibration zero, tide and draft, and speed of sound settings were monitored continuously and adjustments made when necessary.

Velocity of sound corrections were computed from bar check averages for vessels 8604 and 0520. Velocity corrections for vessel 8604, Table I, were found to be zero for all depths based on 20 bar checks during its period of operation. Corrections for vessel 0520, Table II are based on 40 bar checks. No velocity table is submitted with vessel 1279, as all soundings were taken by pole. Graphs and bar check averages are appended to this report.

After its period of operation, a problem was discovered with the location of the transducer on vessel 8604. The transducer was mounted on the transom of the vessel, which is of light construction. When two men stood on the stern, taking a bar check, the transducer depth increased 0.3 feet over the depth in normal hydro positions. Thus, on direct comparison logs, the transducer draft is .3 feet greater than hydro draft. Upon discovery of this problem, the vessel was no longer used.

Settlement and squat tests were run on vessels 8604 and 0520. It should be noted that the settlement and squat correction for vessel 8604 is 0.4 feet for normal hydro speed (1800 RPMs). The slope of the curve is steep at this point, which may introduce small errors in correctors. No irregularities were noted in the settlement and squat character of 0520. Graphs for each vessel are appended.

E. HYDROGRAPHIC SHEETS

Field sheets were prepared using a PDP-8e computer and a DP-3 complot plotter. Work sheets, semi-smooth, and smooth field and overlay sheets are submitted with this survey. All mainscheme, crosslines, and aids to navigation are plotted on the smooth field sheets, while bottom samples developments and DPs are shown on the overlays. Prior survey soundings and charted soundings are shown on separate overlays. For comparison the final smooth sheet and verification of the survey will be accomplished at the Atlantic Marine Center on the Harris/7 computer and the Xynetics 1201 plotter.

F. CONTROL STATIONS

Accuracy for all control stations used during this survey is third order or better. Positions for signals 040, 584 and 588 were taken directly from NGS files. The following stations were established by Coastal Mapping Division, Photo Party 61 in 1976; 036, 042, 082, and 046. The following stations were established by the Field Support Section, HSB and have been submitted to NGS: 035, 048, 050, 062, 080, 084, 587, 617, 620, 621, and 622. The field party established station 583 to third order standards. Field records have been forwarded to HSB for submission to NGS.

All stations are referenced to the North American 1927 Datum. A list of all control stations used during this survey is included in the appendix of this report. Signals 036 and 042, established by Photo Party 61, were not monumented according to then current requirements, and are designated by the lesser cartographic code 254.

G. HYDROGRAPHIC POSITION CONTROL

The methods used to control this survey were range/range (Del Norte Transponder System) and "See Field Sheet". Del Norte equipment used during the survey is as follows:

DMU ------- S/N 515, 298, 578
Master ----- S/N 1060, 1070, 250

Remote	Code	S/N	
	72	245	X
	74	927	1316
	76	244	1135
	78	253	249

DMU-Master combinations were calibrated regularly over baselines computed by inverse between two third order stations. Baseline used throughout the survey are as follows:

Parris 1981 ---- Stradley, 1940 ---- 2,771 meters
NASA E 1976 ---- Stradley, 1940 ---- 4,789 meters
MAGGI 1981 ---- Kimberley 1981 ---- 4,446 meters

Baseline calibration forms are submitted with the field records.

Daily calibration checks were made at fixed day beacons with third order position, prior to and upon completion of hydro. When daily calibration checks showed correctors greater than five meters at the start of the day, the system was generally re-baseline calibrated. When morning and afternoon correctors fell within five meters of true, zero (0) corrector was applied for the day. When morning correctors were less than five meters, and afternoon were greater, the two were averaged, and applied for the day. This case occurred once on JD 95, vessel 0520.

Numerous problems occurred with the Del Norte positioning system during the period of the survey. Most failures were traced to internal malfunctions in DMU's, Masters, and Remotes. Due to the close proximity to the Kennedy Space Center, periods of interference causing erratic Del Norte readings were observed, and noted in the sounding volume. This interference did not affect the overall quality of the data.

On JD 329 DMU S/N 298 showed an apparent failure when the morning calibration check registered a -18 m corrector when interogating Remote Code 72, S/N 245. The hydrographer during that period ran with this corrector on the following days:

VESNO 8604	JD	POS	CORRECTOR
	329	231-249	-18
	338	393-451	-16
	007	937-1030	-18
	018	1031-1065	-19
	019	1066-1113	-20

These days were ultimately rejected and the work was rerun.

On the day preceeding these problems, JD 328, no closeout calibration was obtained on DMU S/N 298, thus the possibility existed that the 18 meter error could have developed during the course of the day. Morning calibration showed that the corrector was +5 for remote S/N 245. After examining the records, it was judged that position 146-153 should be based on the morning calibration. Positions 149 and 150, referenced in the sounding volume as being in the proximity of small islands, support the fact that the 18 meter corrector was not present at these times. Positions 166, 173, 174, 187, and 188 reflect the presence of the 18 meter corrector. Without the correction applied, these positions plot on the shore. At a later date, the true shoreline was verified by positions 2699-2701, supporting the fact that the 18 meter corrector was present in the area. It should be noted that the sounding volume records indicate that seas were too rough for an ending calibration and that both Del Norte rates were within 5 meters when passes were made at the fixed point. The validity of this method of calibration is questionable.

Since this problem was recognized after smooth^field plotting, JD 328 was plotted with zero (0) correctors. Positions 166, 173, 174, and 188 were changed, and hand plotted, taking into account correctors of (+5-18).

H. SHORELINE - See section 2.b of the Evaluation Report.

Shoreline manuscripts used for this survey are as follows:

TP-00112 - Date of issue 1973
TP-00113 Aerial photos flown in 1969
TP-00133
TP-00134

Field edit was conducted by Coastal Mapping Division personnel in 1971. The field party obtained hydrographic positions

on all salient features, natural and man-made. In addition the shoreline was verified by running hydro lines as close to the shore as possible in a skiff.

Since the photos were taken in 1969, man-made features have changed the character of the shoreline in many areas. The following changes to the manuscript are reflected on the field sheet:

TP-00112

Position 2151-2157
Supercede manuscript position of private channel markers with hydro fixes at the following location: 28°32'49.3"N, 80°47'19.6"W

Position 2150 - Mangrove clump - T-sheet location used.

Location 28°32'41.8"N
80°47'24.5"W

No ramp was observed at this location; delete from manuscript.

Position 2142-2149

Location 28°32'42.72"N
80°47'19.00"W

Add private markers based on hydro positions.

Position 2131

Location 28°32'21.38"N
80°47'05.27"W

Add pile

Position 2447

Location 28°30'56.99"N
80°46'~~56.01~~"W
55.91

Add pier

Position 2451

Location 28°30'52.32"N
80°46'56.41"W

Delete ramp - none observed

Position 2455-2460

Location 28°30'48.37"N
80°46'55.82"W

Add private channel markers

Position 2468-2471

Location 28°30'45.0"N
80°46'55.9"W

Add piles

Position 2476-2480

Location 28°30'39.79"N
80°46'54.98"W

Add private markers

Position 2485-2486

Location 28°30'37.64"N
80°46'49.38"W

Add private markers

Position 2489-2490

Location 28°30'35.90"N
80°46'56.82"W

Add new pier

Position 2491

Location 28°30'32.37"N
80°46'56.70"W

Add new pier

Position 2492

Location 28°30'26.65"N
80°46'53.70"W

Add piles and ruins

Position 2493, 2495

Location 28°30'25.5"N
80°46'53.0"W

Supercede manuscript position with hydro fix.

Position 2494

Location 28°30'25.24"N
80°46'53.30"W

Add private ramp

Position 2496-2498

Location 28°30'26"N
80°46'50"W

Supercede manuscript position with hydro fix. T-sheet location used - private markers shown

Position 2503-2506

Location 28°30'21"N
80°46'50"W

Add piles

Position 2506

Location 28°30'19.74"N
80°46'51.~~61~~ 62"W

Add stump

Position 2507 - T-sheet position used

Location 28°30'15.13"N
80°46'47.11"W

Add private ramp

Position 2508

Location 28°30'15.09"N
80°46'46.~~55~~ 56"W

Add pipe

Position 2509

Location 28°30'12.21"N
80°46'45.~~41~~ 42"W

Add pile

Position 2510-2511

Location 28°30'11.94"N
80°46'45.14"W

New pier

Position 2512-2513

Location 28°30'08.53'N
80°46'43.98"W

Add new pier

Position 2514-2515

Location 28°30'07.12"N
80°46'42.09"W

Add new pier

Position 2516

Location 28°30'03.51"N
80°46'40.~~19~~"W

Add pile

Position 2519-2520

Location 28°30'01.~~28~~ 29"N
80°46'~~36.99~~ 37.00"W

Add new pier

Position 2521-2522

Location 28°29'59.98"N
80°46'37.~~08~~ 09"W

Add new pier

TP-00113

Position ~~2131~~ 2031

Location 28°33'00.02"N
80°43'33.07"W

Add duckblind

Position 2050

Location 28°32'34.19"N
80°43'40.70"W

Add duckblind

Position 2087

Location 28°31'49.79"N
80°44'31.13"W

Isle is not present as shown on T-sheet. SMALL bank exposed at time of survey as shown by position 2087. Supercede manuscript with hydro information.

Position Bridge and Floodgate - T-sheet location used

Location ~~28°31~~ 28°31'24"N
80°43'42"W

Searched for, but could not find deep in mangrove. Retain as shown on manuscript.

Position 2299

Location 28°31'17.35"N
80°43'44.08"W

Add duckblind in ruins

Position 2298

Location 28°31'13.56"N
80°43'44.80"W

Add duckblind in ruin

Position 2294

Location 28°31'07.04"N
80°43'44.36"W

Add duckblind

Position 2287

Location 28°30'54.10"N
80°43'46.24"W

Add duckblind in ruins

Position 2265

Location 28°30'06.33"N
80°43'52.65"W

Add duckblind in ruins

TP-00134

Position 2654

Location 28°28'22.~~79~~ 96"N
80°43'20.~~09~~ 20"W

Add piles

Position 2659

Location 28°28'16.~~16~~ 33"N
80°43'14.~~79~~ 88"W

Add piles

Position 2660

Location 28°28'15.~~49~~66"N
80°43'15.~~35~~44"W

Add ~~pipe~~ stake (metal)

Position 2664-2665

Location 28°28'10.~~1~~3"N
80°43'14.~~2~~6"W

Add ~~piles~~ row of pile

Position 2666

Location 28°28'08.~~56~~74"N
80°43'13.~~84~~92"W

Add duckblind

Position 2677

Location 28°27'~~55.98~~56.18"N
80°43'14.~~46~~53"W

Add stakes

Position 2680

Location 28°27'~~55.98~~52.04"N
80°43'14.~~46~~77"W

Add piles

Position 2681

Location 28°27'~~51.89~~52.09"N
80°43'13.~~89~~95"W

Add new pier

Position 2682

Location 28°27'49.~~74~~94"N
80°43'13.~~50~~56"W

Add ruins as shown on field sheet. Ruins 25 meters to south not observed.

Position 2683

Location 28°27'48.~~34~~54"N
80°43'13.~~36~~42"W

Add piles

Position 2696-2697

Location 28°27'~~26.87~~ 27.11"N
80°43'09.54"W

Add piles

Position 2712-2714

Location 28°27'13.~~16~~ 41"N
80°43'12.~~37~~ 35"W

Add piles

Position 2698

Location 28°27'29.~~56~~ 77"N
80°43'11.~~05~~ 7"W

Add obstruction

TP-00133 See section 2.b of the Evaluation Report

A discrepancy between hydro positions and manuscript position of man-made features was noted on this sheet. Generally, hydro position along the southwest shoreline plotted 10-15 meters north of manuscript positions. Hydro control was checked during the period and found to be adequate. The following information indicate that problems may exist with the compilation:

1) NGS stations "Williams 1956" and "Florida Power and Light Stack Center, 1966" do not fall on the T-sheet positions when plotted graphically. Both show 5-10 meter differences. Positions for these stations are as follows:

28°26'59.34240"N
80°45'45.43810"W Williams, 1956

28°28'09.46934"N
80°45'50.51439"W FL Power and Light Stack Center

2) When occupying Will-2, 1976, a sextant angle between Light 60 and the above stack was turned, and found to agree with the computed forward azimuth using these three third-order positions. On the manuscript, the angle does not fit graphically. See JD 110, vesno 0520, page 11.

3) When aligning TP-00133 and 00112 to the north, the Florida East Coast Railroad shows poor junction, indicating possible distortion.

Based on the above information it is recommended that the compilation of TP-00133 be reviewed by Coastal Mapping. Revisory photography should be flown in this area if the discrepancy can not be resolved.

Discrepancies on TP-00133 are as follows:

Position 2812-2813

Location 28°27'05.06"N
80°45'39.28"W

Add new pier

Position 2814-28~~51~~ 15

Location 28°27'08.23"N
80°45'39.40"W

Add new pier, Boho

Position 2816-2817

Location 28°27'10.~~56~~ 55"N
80°45'40.44"W

Add new pier

Position 2818-2820

Location 28°27'13.93"N
80°45'39.65"W

Shift pier and dolphin 10 meters north.

Position 2821

Location 28°27'16.88"N
80°45'41.73"W

Add pier and boat shed, ruins to south not observed.

Position 2822

Location 28°27'19.01"N
80°45'41.~~69~~ 70"W

Add pipe

Position 2825, 1272-1273

Location 28°27'23.14"N
80°45'39.~~36~~ 37"W

Tide gage pier verified

Position 2826-2827

Position 28°27'25.57"N
80°45'40.31"W

Add new pier

Position 2828

Location 28°27'31.17"N
80°45'42.~~22~~23"W

Shift 10 meters north

Position 2829

Location 28°27'33.29"N
80°45'41.32"W

Add new pier

Position 2832-2833

Location 28°27'36.~~53~~52"N
80°45'41.66"W

Add piles and pipes

Position 2834

Location 28°27'37.39"N
80°45'42.~~09~~10"W

Add pier ruins

Position 2837-2838

Location 28°27'39.02"N
80°45'42.94"W

Add piles

Position 2839

Location 28°27'44.76"N
80°45'42.03"W

Shift pier north 10 meters

Position 2842-2843

Location 28°27'48.09"N
80°45'41.79"W

Shift pier north 10 meters

Position 2844

Location 28°27'50.62"N
80°45'40.48"W

Add pipe

Position 2845

Location 28°27'52.~~86~~85"N
80°45'42.08"W

Add pipes

Position 2846

Location 28°27'54.05"N
80°45'42.44"W

Add piles

Position 2847

Location 28°27'58.54"N
80°45'42.12"W

Add pile

Position 2850-2856

Location 28°28'02.40"N
80°45'43.21"W

New pier at Florida Power and Light

Position 2592

Location 28°28'19.20"N
80°45'~~53.99~~54.00"W

Add pipes

Position 492-493

Location 28°28'29.04"N
80°46'00.95"W

Shoreline change in area of surfaced ramp.

Position 509

Location 28°28'33.52"N
80°46'02.~~44~~46"W

Revise position for corner of bulkhead.

Position 2613

Position 28°29'25.94"N
80°46'20.~~94~~95"W

Add platform, delete fence in this area.

Position 2536

Location 28°29'42.67"N
80°46'34.~~05~~ 06"W

Add new pier

Position 2534-2535

Location 28°29'49.70"N
80°46'34.~~30~~ 31"W

Add pier ruins, ruins 40 meters to north not observed.

Position 2531-2533

Location 28°29'51.42"N
80°46'34.~~77~~ 78"W

Add piles

Position 2526

Location 28°29'57.03"N
80°46'36.~~40~~ 41"W

Add pile

Position 2524-2525

Location 28°29'57.81"N
80°46'34.~~80~~ 81"W

Add new pier

I. CROSSLINES - See section 3.a of the Evaluation Report

Crosslines constitute 11.9% of main scheme hydrography. Crosslines showed excellent agreement, within one foot in most cases. Discrepancies can be attributed to differences in water levels, as no correctors were applied to soundings.

J. JUNCTIONS

This survey junctions with H-9866 (HSB-10-1-80) to the south, and H-9994 (HSB-10-3-82) to the north. H-9994 was conducted by HFP-5 during the same period as this survey.

One hundred percent of junction soundings agree within one foot with both surveys. Differences can be attributed to the fact that tide reducers were not applied to the field sheet.

K. COMPARISON WITH PRIOR SURVEYS

Comparisons were made with the following prior surveys:

Registry	Scale	Year
H-6664	1:10,000	March 1941
H-6727	1:10,000	February - March 1941

Discrepancies between prior surveys and the present survey are all a result of man-made changes. The general character of the present contours shows excellent agreement with the prior survey. Since depths from the present chart are based on the prior survey, discrepancies will be discussed in Section L.

L. COMPARISON WITH THE CHART - See section 7 of the Evaluation Report.

The Tolmato River to Palm Shores Intracoastal Waterway Nautical Chart No. 11485 is the largest scale chart covering the survey area (1:40,000) comparisons were made with the 19th Edition, dated September 5, 1981. Agreement was good between charted depths and survey soundings. Apparently, a qualitative update to the chart was made several years ago, based on photography that was flown in 1969. Survey information details limits of spoil and dredge areas and should supersede currently charted depictions.

DEVELOPMENT 23 - Private Channel - Location 28°27'16"
80°44'00"

Prior Survey Reference - H-6664, 8-9 feet
Chart 11485 Reference "5 ft mid width of 50 ft, Feb 1980"
Date of Investigation: JD 057 - 6168-6295
JD 060 - 6296-6324

The axis of the Courtenay Channel was crossed at 50-meter spacing from where it joins the Intracoastal Waterway to the west, to a small inlet on the eastern shore. Originally the channel was established for use by citrus growers on Merritt Island to transport their produce by barge to the mainland. The channel is no longer marked or maintained as it was in 1941.

The investigation shows that the channel has shoaled and narrowed since the prior survey. Mid-channel least depths ranged from 5 ft to 8 ft at the time of the survey. The deepest mid-channel least depth found four out from 6320 was ~~4~~ 7 ft, (time of survey) at the following location: 28°27'~~22~~ 16"N 80°~~45~~ 44' ~~15~~"W. It is recommended that the charted channel be retained, and that a revised controlling depth be compiled after smooth tides are applied. - Controlling depth of four (4) feet

The spoil areas to the south were also defined at 50-meter spacing. It is recommended that survey depths of 1-3 feet supersede the currently charted representation. - concur

WK Related LNM 2/83 CL 10:2821

DEVELOPMENT 25

Position 2706 defines a wreck of an 18-foot fibercraft vessel, sitting keel up, ~~0.5~~ 1.0 ft exposed at the time of the survey. Location is as follows: 28°27'21.38"N
80°43'17.07"W

The wreck is a recent occurrence, as it was not present when the main scheme was run. No local knowledge could be found on its origin. It is recommended that the exposed wreck be charted based on position 2706.-concur

DEVELOPMENT 27 - Spoil area - Charted location: 28°27'12"N
80°45'15"W

Prior Survey Reference: H-6664, 6 ft.
Chart 11485 REF: "Shl"
Date of Investigation: JD 54, Position 6044-6057

The spoil area was crossed at 25-meter spacing with a least depth of ~~1.8~~ 1.2 feet (time of survey) noted 5 out of 6050. Location is as follows: 28°27'11.8"N, 80°45'17.2"W. Surrounding depths range from 3-5 feet. It is recommended that reduced survey soundings supersede the currently charted representation.-concur

DEVELOPMENT 26 - Spoil ridge - Charted location: 28°27'~~24~~12.0"N
80°45'05.0"W

Prior Survey Reference: H-6664, 3-4 ft, "Sand Shoal"
Chart REF: "Shl"
Date of Investigation: JD 53 5976-5999
JD 54 6000-6043

~~2.5~~ 3.0 The spoil ridge was crossed at 25-meters and the following ft least depths were noted:

3 out of 6022	28°27'12.3"N	80°45'07.0"W
3 out of 6020	28°27'13.0"N	80°45'06.7"W
4 out of 6038	28°27'~~06.0~~ 05.7"N	80°45'05.6"W

It is recommended that reduced survey depths supersede currently charted depths.-concur

DEVELOPMENT 25 - Spoil area - Charted location 28°27'38"N
80°45'15"W

Prior Survey Reference: H-6664, 4-8 ft
Chart 11485 Reference: "Shl", Spoil areas
Date of Investigation: JD 54, 6058-6091

Two detached spoil banks were crossed at 25-meter spacing. Least depth found at time of survey was 1.0 feet on position 6080. Location is as follows: 28°27'37.43"N, 80°45'22.~~56~~57"W. Surrounding depths are 3-7 feet. Supersede the currently charted depiction with reduced survey depths.-concur

Development 24 - Channel - Charted location 28°28'04"N
80°45'30"W

Prior Survey Reference: H-6664 (Channel not present at time)
Chart 11485 Reference: "10 ft reported, Priv Maintd"
Date of Investigation: JD 50 5913-5975

The channel which is active and maintained by the Florida Power and Light Company was crossed at 50-meter spacing. A channel centerline was run (5962-5965), with a least depth of 10.0 ft found at position 5965. Location is as follows: 28°28'05.06"N, 80°45'13.04"W. - Shoal depths of 4-ft found on the S side of the channel.

It is recommended that the channel controlling depth be re-compiled and based on reduced survey depths. - concur

Depths along the north side of the breakwater were found to be shoaler than prior survey depths. Survey depths of 2-3 feet were found where prior survey depths showed 4 feet.

South of the channel, shoal depths surrounding a charted spoil island has expanded. A 2.7 foot depth, 4 out of 5968, was located on the charted 6 foot contour. Location is as follows: 28°28'~~00.7~~ 00.32"N, 80°45'~~21.5~~ 21.44"W.

It is recommended that survey soundings supersede currently charted depths. - concur

DEVELOPMENT 24A Charted location 28°28'18.0"N
80°45'16.0"W

Prior Survey Reference: H-6664, 5-8 ft
Date of Investigation: JD 50, 5899-5912
Chart 11485 Reference: 5-6 ft

A small ridge, rising to 4 feet in 5-8 ft of water was crossed at 25-meter spacing. A least depth of 4.0 ft, 1 out of 5899 was found at the following position 28°28'~~51.5~~ 22.31"N, 80°45'19.3'W.

Supersede currently charted depths with reduced survey depths in this area. - concur

DEVELOPMENT 8 - Shoal - Charted location 28°28'28"N
80°45'31"W

Prior Survey Reference: H-6664, 5-6 ft.
Chart 11485 Reference: "Shl"
T-Sheet Reference: TP-00133
Date of Investigation: JD 41, 5483-5504; JD 35, 1226-1227

The submerged spoil bank was crossed at 25-meter spacing. The shoal is more expansive than shown on the chart and T-sheet. A least depth of 1.5 feet, 3 out of 5486, was found at the time of the survey at the following location: 28°28'25.0"N, 80°45'35.0"W. Position 1226-1227 define two stumps that are exposed on the spoil bank. It is recommended that the stumps be charted. Supersede charted depths with reduced survey soundings. - concur

DEVELOPMENT 21 - 3 ft Spoil Bank - Survey location 28°28'~~42.5~~ 42.26"N
80°45'~~27.2~~ 27.21"W

Prior Survey Reference: H-6664, 7 ft, not a feature
Chart 11485 Reference: 7-foot, not a feature
Date of Investigation: JD 49, 5739-5750

An uncharted spoil bank was discovered at the above position. A least depth of 3.0 ft at the time of the survey was located two out of 5743., at above location. The ridge extends 75 meters along a north-south axis. Surrounding water depths are 6 feet. Chart the ridge based on reduced survey soundings.-concur

(?) DEVELOPMENT 22 - Channel - Charted Position 28°28'46"N
80°44'30"W

Prior Survey Reference: "5 ft for mid-width of 150 ft, Feb 1977"
Date of Investigation: JD 62, 6454-6577
JD 110, 8163-8187

The unmarked and non-maintained channel leading east from the Intracoastal Waterway, into Sams Creek was crossed at 50 meters. Several 4 foot mid-channel least depths were found toward the eastern shore. The north side of the channel has filled in, shortening its width to 20-30 meters. Toward shore, channel depths have shoaled to 4 ft, but the channel is still well defined, as survey depths are 1-2 ft outside the channel. Channel definition disappears west of the following position in 7-8 ft of water 28°28'46"N, 80°44'36"W. Chart the channel based on reduced survey soundings. ~~Delete dashed lines west of above position~~. Power line support falls inside these channel limits also. Survey depths in the channel are as shallow as 1-ft-chart from present survey. Recommend deletion of channel limits. lines. NC

Piling charted 1985
Dwg 11485 23B
Did not delete channel
— FLB

DEVELOPMENT 7 - Shoal - Charted location 28°28'53"N
80°45'37"W

Prior Survey Reference: H-6664, 7-8 ft.
Chart 11485 Reference: "Shl"
Date of Investigation: JD 35, 1228-1260
JD 96, 8076

On JD 35 a spoil bank was crossed at 25-meter spacing. A least depth of ~~1.8~~ 2.0 ft, 5 out of 1238 was found at the following geographic position: 28°28'53.8 [6]"N, 80°45'36.0 [53]"W. The charted shoal which originates from photography flown in 1969, has expanded north based on survey depths. On JD 96, a 2.0 ft pole sounding (time of survey) was taken on the ridge at position 8076. The location is as follows: 28°28'53.61"N, 80°45'36.68"W. Survey depths surrounding the ridge were found to be 6-7 feet. It is recommended that reduced survey depths supersede currently charted ones.-concur.

DEVELOPMENT 20 - Shoal - Charted location 28°29'00"N
80°45'31.5"W

Prior Survey Reference: H-6664, Spoil ridge, 2-4 ft depths in 1941.
Chart 11485 Reference: 2 - 4 ft spoil ridge
Date of Investigation: JD 49, 5751-5784
JD 63, 6611-6616
JD 96, 8075,8077

The charted spoil ridge was crossed at 25-meter spacing and a fatho L.D. of 4.0 ft (time of survey) was found 3 out of 5765 at the following location 28°29'01.5"N, 80°45'32.~~5~~"W. On JD 96, a search for a least depth was made by pole in the area of prior survey, 2 ft soundings. 4.6 ft least depths were found at the following position:

POS 8075: 28°29'00.85"N
80°45'~~31.90~~"W
31.92

POS 8077: 28°28'54.14"N
80°45'~~30.30~~"W
~~30~~.42

It is recommended that reduced survey soundings supersede currently charted depths.-concur

✓DEVELOPMENT 19 - Dredge hole - Location (not charted)
28°29'10"N, 80°46'00"W
Prior Survey Reference: H-6664, 3-5 ft.
Chart 11485 Reference: 1-3 ft.
Date of Investigation: JD 41, 5516-5525

A dredge hole was defined by splitting the main scheme at 50 meters. The hold extends along a NW-SE axis and is approximately 600X150 meters. Deepest depth found was 18.~~0~~ ft, time of survey, 4 out of 555 on the main scheme at the following position: 28°28'59.~~2~~"N, 80°45'55.6~~3~~"W. Supersede currently charted depths with reduced survey soundings.-concur
18 ft sounding is in excess

✓DEVELOPMENT 9 - Spoil ridge - Location 28°29'21"N
80°45'~~37.2~~"W
36.25
Prior Survey Reference: 3 ft ridge
Date of Investigation: JD 41, 5516-5525
JD 63, 6605-6610

The charted 3-foot spoil ridge was crossed at 25-meter with a least depth of 4.~~0~~ ft found 3 out of 6607 at the above location. Surrounding depths are 7-8 feet. Supersede currently charted depths with survey soundings.-concur

✓DEVELOPMENT 10A - Spoil ridge - Location 28°29'25"N
80°45'38"W
Prior Survey Reference: H-6664, Spoil ridge 3-4 ft.
Chart 11485 Reference: 3 ft
Date of Investigation: JD 49, 5817-5830

The charted spoil ridge was crossed at 25-meter spacing. A least depth of 4.~~0~~ ft, 2 out of 5821, was found at the following position: 28°29'~~27.2~~ 26.0"N, 80°45'38.~~0~~ 37"W. Surrounding depths were found to be 6-7 feet. Supersede currently charted depths with reduced survey soundings.-concur

✓DEVELOPMENT 19A - Spoil ridge - Location 28°29'24"N
80°45'23"W
Prior Survey Reference: H-6664, 7 ft.
Chart 11485 Reference: 6 ft.
Date of Investigation: JD 049, 5785-5816

A spoil ridge, bordering the Intracoastal Waterway was crossed at 25-meter spacing with a least depth of 5.0 ft, time of survey, found 3 out of 5811 at the following position: 28°29'26.~~3~~"N, 80°45'24.~~2~~"W. Surrounding depths are 6-8 ft. Supersede currently charted depths with survey soundings.- concur

DEVELOPMENT 10 - Orlando Utility Commission Private Channel
Charted location: 28°29'33"N, 80°46'00"W
Prior Survey Reference: H-6664, Channel not present
Chart 11485 Reference: "12 feet by 100 ft", "Spoil areas"
Date of Investigation: JD 19, 5167-5181
JD 47, 5592-5738
JD 49, 5831-5838

The channel and adjacent spoil areas were crossed at 25 meters. Lines crossing the active channel, showed depths of 11-13 feet. Along the north side of the channel, near N "8" depths of 8 and 9 feet were found on the edge of the channel. When smooth tides are applied, it is recommended that the channel's controlling depth be re-compiled. Several 3 ft depths north of the channel, in the charted spoils area, should supersede currently charted depths.- Shoaling along the southern edge of the channel is apparent. The charted channel alignment and present survey do not agree. The ~~charted~~ channel limits appear to be adequately marked by floating aids at the time of the survey.

DEVELOPMENT 6 - Spoil Island - Charted location: 28°29'25.5"N
80°45'09.0"W
Prior Survey Reference: H-6664, 7-8 ft.
Chart 11485 Reference: Spoil Island
Date of Investigation: JD 035, 1202-1225

A spoil island exposed 1.0 ft at the time of the survey was defined at 50-meter spacing. Numerous dead trees were observed on the island. The charted island originates from 1969 photography. Retain the island and chart based on the shoreline manuscript and present survey, surrounding depths should be charted based on reduced survey soundings.- Shorten west end of shoal - hydrography crosses exposed shoal.

DEVELOPMENT 5 - Spoil Island - Location 28°29'51.7"N
80°45'16.5"W
Prior Survey Reference: H-6664, 6 ft.
Chart 11485 Reference: Spoil Island
Date of Investigation: JD 29, 5460-5482

The spoil island which originates from the 1969 shoreline manuscript was defined at 50-meter spacing. The island bares 2.0 ~~1.5~~ ft at the time of the survey, and is surrounded by 1-6 ft of water. Chart surrounding depths based on survey soundings. Retain the island as charted.- Chart the island as shown on the present survey.

DEVELOPMENT 4 - Spoil Island - Location 28°30'19"N
80°45'24"W
Prior Survey Reference: H-6664, 5-6 ft.
Chart 11485 Reference: Spoil Island, "Shl"
Date of Investigation: JD 29, 5436-5459

The charted island, which originates from the 1969 manuscript, was defined at 50-meter spacing. The island bared 2~~3~~ ft at the time of the survey, surrounded by depths of 1-6 ft. Retain the island as charted. Supersede the present chart representation with survey depths.-concur - Chart the island as shown on the present survey.

DEVELOPMENT 2 - Spoil Island - Location 28°30'42.5"N
80°45'30.0"W

Prior Survey Reference: H-6664, 6 ft.
Chart 11485 Reference: Spoil Island, "Shl"
Date of Investigation: JD 28, 5391-5414

The charted island which originates from the 1969 manuscript was defined at 50-meter spacing. The island bared 2.0 ft (time of survey) and is surrounded by depths of 1 to 6 ft. Supersede currently charted depths with survey depths surrounding the island.-concur - chart the island as shown on the present survey.

DEVELOPMENT 1 - Spoil Island - Location 28°31'08"N
80°~~54~~45'33"W

Prior Survey Reference: H-6664, 7 ft
Chart 11485 Reference: Island "Shl"
Date of Investigation: JD 28, 5376-5390

The charted spoil island was defined at 50-meter spacing. The island was ~~0.5~~ ft exposed, time of survey, and surrounded by 1-6 ft of water. No source of the island was available to the hydrographer as TP-00112 shows only a shoal area. The uncovered area found by the survey shows a difference from the chart. It is recommended that the survey representation supersede the currently charted one.-concur

DEVELOPMENT 3 - Shoal - Location 28°31'33"N
80°45'41"W

Prior Survey Reference: H-6727, 7-8 ft.
Chart 11485 Reference: "Shl"

The charted shoal, located along the south span of the NASA Causeway was split at 25-meter spacing. Several 2 ft least depths were noted. The shoal is surrounded by depths of 6-8 ft. Supersede the charted representation with survey depths.-concur

DEVELOPMENT 11, 12, 13, 14, 15, 16, 17, 18 - Spoil Ridge
Location: 28°30'21:N (Centered at)
80°45'53"W
Prior Survey Reference: H-6664, 2-4 ft ridge in 8-9 ft of water
Chart 11485 Reference: Same as prior survey
Date of Investigation: JD 43, 5526-5575
JD 49, 5839-5898
JD 63, 6565-6610
JD 96, 8070-8074

The spoil ridge 300 meters west of the Intracoastal Waterway was developed at 20-meter spacing. Numerous 4 foot fatho least depths were found along the ridge. On JD 96, pole searches for least depths were made in the areas of

prior survey 2 foot soundings. The following time of survey least depths were found on this day:

POSNO	LEAST DEPTH	LOCATION
8070	4~~5~~.0 ft	28°31'24.~~97~~96"N 80°46'04.~~23~~25'W
8071	4.~~0~~ ft	28°31'21.~~05~~04"N 80°46'04.~~30~~"W
8072	4.~~0~~ ft	28°31'14.64"N 80°46'03.~~41~~31"W
8073	4.~~0~~ ft	28°30'56.~~18~~17"N 80°46'~~59.99~~00.00"W
8074	4.~~0~~ ft	28°30'50.92"N 80°45'59.~~13~~14"W

Supersede currently charted depths with reduced survey soundings.-concur

✓DEVELOPMENT 33 - Dredge Hole - Location 28°31'48"N (Center)
80°46'34"W

Prior Survey Reference: H-6727, 3-8 ft.
Chart 11485 Reference: 21 ft.
Date of Investigation: JD 64, 6696-6707
JD 78, 7681-7704, 7773-7775

A large dredge hole, north of the NASA Causeway was developed by crossing the main scheme at 50-meter spacing. Deepest depths in the hole were 17 feet. Soundings of 2-10 ft were found over the charted 21-foot depth. TP-00112 reflects the outline of the hole. Surrounding depths are 1-8 feet. Supersede currently charted depths with survey soundings.-concur

✓DEVELOPMENT 28 - Spoil Ridge - Location 28°32'30"N (Center)
80°46'20"W

Prior Survey Reference: H-6727, 3 ft ridge
Chart 11485 Reference: Same
Date of Investigation: JD 76, 7402-7417, JD75, 7293-7401
JD 78, 7738-7739
JD 84, 7856-7893 (Detached pole soundings)

A spoil ridge 300 meters west of the Intracoastal Waterway was split by 25-meter spacing. Numerous 4 ft fatho least depths were found. On JD 84, detached pole soundings were taken in areas of prior survey least depths. A survey least depth of 3.9 ft (time of survey) was found on 7873 at the following location: 28°32'38.55"N, 80°46'23.12"W. Supersede charted depths with survey soundings-concur

DEVELOPMENT 29 - Spoil Area - Location 28°32'43"N
80°45'57"W

Prior Survey Reference: H-6727, 7-8 ft.
Chart 11485 Reference: Spoil Island, "Shl"
Date of Investigation: JD 76, 7418-7440
JD 89, 7920 (Detached pole soundings)

The submerged shoal was crossed at 25-meter spacing with a 2.~~8~~ ft least depth (time of survey) found 4 out of 7429 at the following location: 28°32'41.8~~8~~"N, 80°45'~~55.5~~"W. On JD 89, a detached pole sounding of 3.8 ft (time of survey) was taken on 7920, after a drift search for least depth. Position is as follows: 28°32'42.83"N, 80°45'55.36"W. Delete the buff area on the chart. Supersede the charted representation with reduced survey soundings.-concur

DEVELOPMENT 30 - Spoil Area - Location 28°32'19"N
80°45'51"W

Prior Survey Reference: H-6727, 8-9 ft.
Chart 11485 Reference: Spoil Island, "Sh1"
Date of Investigation: JD 76, 7441-7475
JD 89, 7921

A submerged shoal was developed at 25-meter spacing with a 2.4 ft (time of survey) least depth found 4 out of 7464 at the following location: 28°32'19.~~7~~"N, 80°45'51.~~8~~"W. On JD 89, a pole search in the area showed a least depth of ~~3.4~~ ft (time of survey) depth at position 7921. Location is as follows: 28°32'18.4"N, 80°45'50.~~8~~"W. Delete the charted buff area. Supersede the charted representation with reduced survey soundings.-concur

DEVELOPMENT 31 - Spoil Areas - Charted location
28°31'56"N 28°31'53"N
80°45'45"W 80°45'32"W

Prior Survey Reference: H-6727, 8-9 ft.
Chart 11485 Reference: Exposed Islands
Date of Investigation: JD 76, 7476-7519
JD 89, 7897-7898

Two detached submerged shoals were crossed at 25-meter spacing. Fatho least depths of ~~2.9~~ ft (time of survey) were found 5 out from 7489 and 4 out from 7492 in the vicinity of the following position: 28°31'55"N, 80°45'43.5"W. On JD 89, detached pole soundings were taken on the shoals after drift searches for least depths. Positions are as follows:

Positions: 7898 3.~~8~~ ft (time of survey) 28°31'51.80"N
80°45'30.96"W

7897 ~~3.7~~ ft (time of survey) 28°31'54.60"N
80°45'42.42"W

Delete the buff areas. Supersede the present chart representation with reduced survey depths.-concur

DEVELOPMENT 32 - Spoil Island - Location: 28°31'54"N
80°45'03"W

Prior Survey Reference: H-6727, 7-8 ft.
Chart 11485 Reference: Spoil Island
Date of Investigation: JD 77, 7649-7668
JD 89, 7900

Limits of the spoil island were defined by lines run at 50-meter spacing. The charted island originates from

TP-00112. The island was 1-3 ft exposed at the time of the survey. Survey positions verify the charted representation. Retain the island as charted.-Chart island as shown on the present survey.

DEVELOPMENT 31B - Shoal - Location 28°31'43.~~49~~67"N
80°45'30.~~34~~21"W
Prior Survey Reference: H-6727, 8 ft
Chart 11485 Reference: 8 ft

An uncharted submerged spoil area was crossed at 25-meter spacing with 3.~~0~~ ft least depth found 4 out of 7671. On JD 89, a drift search showed a 4.5 ft pole least depth (time of survey) at position 7899 (location above). Supersede currently charted depths with reduced survey soundings.-concur

DEVELOPMENT 31A - Dredge and Spoil Areas
Location: East of Intracoastal Waterway, along north side of NASA Causeway.
Prior Survey Reference: H-6727, 3-9 ft.
Chart 11485 Reference: 3-9 ft, Spoil Islands
Date of Investigation: JD 76, 7520-7542
JD 77, 7543-7648
JD 90, 2082-2095

The area 700 meters north of the NASA Causeway, east of the Intracoastal Waterway was either split or crossed at 50-meter spacing. The area is spotted with dredge holes and spoil areas, accurately delineated on TP-00112 and TP-00113. Significant areas of change are as follows:

28°31'48"N Dredge hole to ~~18~~17 ft.
80°45'48"W

28°31'48"N Dredge hole to 24 ft. in excess. 22-ft shown on smooth sheet.
80°44'07"W

28°31'41"N Dredge hole to 19 ft. ✓
80°43'50"W

Spoil islands charted at the following position were found to be represented incorrectly: 28°31'49.79"N
80°44'31.13"W

The areas were crossed at 50-meter spacing and show depths of 1 ft. Position 2086 and 2087 define a small area that was uncovered to 0.3 ft at the above position. It is recommended that the charted buff area be deleted and that reduced survey soundings supersede currently charted depths in the entire area.
Concur

PSR 48 - Signs

Numerous, "Slow, no wake, Manatee Area" signs were located throughout the survey area. These structures are composed of 4" diameter pipe, with aluminum signs. The signs were set by the Florida Department of Natural Resources, who maintains them. Upon inspection many of the structures did not have the

the aluminum sign affixed leaving only a pipe exposed. It was determined by the Field Party that the DNR performs routine maintenance on these signs during the winter months. It is recommended that all of the pipes and signs be charted as signs. The following are features that are currently charted and have been verified: and should retained as charted.

POSITION	FEATURE	LOCATION
8065	Sign	28°30'~~11.63~~"N ~~08.32~~ 80°45'~~37.52~~"W 48.1~~0~~
8064	Sign	28°30'14.~~59~~"N ~~72~~ 80°46'33.~~80~~"W ~~83~~
8050	Pipe	28°29'17.~~22~~"N ~~33~~ 80°45'~~38.96~~"W ~~39.07~~
8051	Sign	28°29'02.~~67~~"N ~~79~~ 80°46'05.~~05~~"W ~~15~~
8052	Sign	28°28'51.~~81~~"N ~~93~~ 80°46'02.~~12~~"W ~~24~~
8044	Pipe	28°28'32.~~06~~"N ~~18~~ 80°45'54.~~26~~"W ~~39~~
8045	Sign	28°28'36.~~49~~"N ~~60~~ 80°45'38.~~47~~"W ~~60~~
8046	Sign	28°28'40.~~74~~"N ~~84~~ 80°45'20.~~48~~"W ~~62~~
6148	Sign	28°28'35.16"N ✓ 80°45'09.~~96~~"W ~~97~~
6149	Pipe	28°28'21.91"N ✓ 80°45'04.~~62~~"W ~~63~~
6151	Pipe	28°28'07.93"N ✓ 80°45'13.~~82~~"W ~~83~~
6153	Pipe	28°28'00.78"N ✓ 80°45'13.~~88~~"W ~~89~~
6154	Pipe	28°28'07.89"N ✓ 80°45'01.~~76~~"W ~~77~~
6158	Sign	28°27'24.98"N ✓ 80°44'53.~~22~~"W ~~23~~
1262	Pipe	28°27'22.26"N ✓ 80°45'02.~~86~~"W ~~87~~
1263	Pipe	28°27'19.59"N ✓ 80°45'16.~~58~~"W ~~59~~
1264	Pipe	28°27'19.14"N ✓ 80°45'26.~~74~~"W ~~76~~

The following signs and pipes are not charted, and are recommended to be applied to the chart as signs:

POSITION	FEATURE	LOCATION
8061	Pipe ✓	28°29'40.~~35~~"N 46 80°45'42.~~65~~"W 74
8062	Sign ✓	28°29'~~45.91~~"N 46.03 80°45'58.~~65~~"W 72
8063	Sign	28°29'~~53.95~~"N 54.09 80°46'25.~~76~~"W 81
~~6325~~, ~~2075~~ 2705	Sign	28°27'20.~~27~~"N 55 → ? 80°43'15.~~62~~"W 59

The following charted signs were searched for and not found. ~~It is recommended that they be deleted from the chart~~:- Recommend retention with submerged obstructions in the locations

Signs: 28°28'45.4"N 80°45'39.4"W #11 See Chart Letter 4/7/81
28°29'53.0"N 80°45'50.5"W #4
28°29'38.5"N 80°45'54.0"W #5

PSR 32A - Submerged Piles - Charted Location: 28°27'30"N 80°45'42"W } vicinity of

Source: H-6664
Date of Investigation: JD 109
Positions: 2828-2829

While conducting shoreline verification, a visual search was made in the area of the submerged piles. Water depth in the area was 1-3 ft at the time of the survey, with poor visibility. No remains of the piles were found. Retain the submerged piles as charted.- concur - submerged piles were brought forward from H-6664(1941) to supplement present survey.

PSR 32B - Submerged Piles - Charted Location: 28°27'26"N 80°44'57"W

Source: H-6664 (Sign post)
Date of Investigation: JD 061
Positions: 6328-6349

A controlled fatho search at 10-meter spacing was made within a 50-meter radius of the charted submerged piles, which originated from the 1941 survey as then, a sign post. No evidence of the piles were found. Retain the piles as charted. Data is not for smooth plot.- Concur - chart a submerged pile as brought forward from H-6664(1941) to supplement the present survey.

PSR 32C - Submerged Pile - Charted Location: 28°28'05.5"N 80°43'46.0"W

Source: H-6664 (Old Dolphin)
Data of Investigation: JD 061
Positions: 6350-6371

A controlled fatho search at 10-meter spacing extending in a 50-meter radius around the charted pile was made. No sign of the pile was discovered. The pile originates from the 1941 survey as an old dolphin. Retain the submerged pile as ~~charted~~. Data is not for smooth plot.-concur - The dolphin was brought forward to the present survey as a submerged dolphin from H-6664 (1941)

PSR 32D - Submerged Pile - Charted Location: 28°27'06.5"N
80°43'50.5"W

Source: H-6664
Date of Investigation: JD 109
Position: 6416-6421

A visual search was made in the area in water depths of 1-2 ft. Water clarity was sufficient to see the bottom during the search. An area with radius of 30 meters from the charted position was searched, with no evidence of the piles existence found. Based on the thoroughness of the visual search, it is recommended that the pile be deleted from the chart. Data is not for smooth plot.-concur - Field plot of data was examined

PSR 32E - Submerged Pile - Charted Location: 28°27'14.5"N
80°43'44.0"W

Source: H-6664
Date of Investigation: JD 109
Positions: 6394-6415

A fatho and a visual search was made for this piling at 10-meter spacing within a 50-meter radius of the charted position. Water clarity was good enough to see the bottom in this area as depths ranged from 1-3 feet. Based on the thoroughness of the visual search, it is recommended that the pile be deleted. Data is not smooth plotted.-Concur - Field plot of the data was examined

PSR 32F - Submerged Pile - Charted Location: 28°27'18"N
80°43'33.5"W

Source: H-6664
Date of Investigation: JD 109
Positions: 6372-6393

A fatho and a visual search was made at 10-meter spacing within a 50-meter radius of the charted position of the submerged pile. The pile originated from the 1941 survey and was then broken off. No evidence of the piles existence was found. Retain the pile as charted. Data is not smooth plotted. Concur Submerged piles were brought forward from H-6664 (1941) to supplement the present survey.

PSR 32G - Submerged Piles - Charted Location: 28°27'03"N
80°43'27.5"W

Source: H-6664
Date of Investigation: JD 109
Positions: 6422-6443

A fatho and visual search at 10-meter spacing, within a 50-meter radius was conducted; with no sign of the piles found. Water depth was 1-3 ft, with clarity sufficient enough to see the bottom. Based on the thoroughness of the search, it is recommended that the piles be deleted. Data is not smooth plotted.-Concur - Field plot of the data was examined

PSR 33 - Obstruction Reported - Charted Location: 28°31'43"N
80°45'58"W
Source: LNM H.O. NTM 46/1954
Date of Investigation: JD 83
Positions: 7751-7772

A fatho search at 10-meter spacing in a 50-meter radius of the reported obstruction was made with negative results. Drift soundings over the position were also taken. Sounding lines crossing the channel showed no irregularities. Retain the obstruction as charted. Add existence doubtful note. Data is not smooth plotted. - Concur

PSR 44C - Pile PA - Charted Location: 28°31'45.5"N
80°46'41.0"W

Survey Location: 28°31'43.64"N
80°46'15.60"W

Date of Investigation: JD 78
Position: 7722

A search was made for the pile in its charted position with negative results. A steel I-beam, 7.0 ft exposed, in 9.7 ft of water (time of survey) was located at position 7722. From a distance, the I-beam resembles a wooden pile. The hydrographer recommends that the I-beam be charted at the above survey position and the currently charted pile PA be deleted. - Concur - Chart as shown on the present survey.

PSR 34 - Submerged Pile - Charted Location: 28°32'43.0"N
80°46'24.0"W

Source: H-6727 (Post)
Date of Investigation: JD 83
Positions: 7776-7794

The charted submerged pile, which originated as a post on the 1941 survey, was searched for at 10-meter spacing, within a 50-meter radius of its charted position. No evidence of the submerged pile was found. Retain the submerged pile as charted. Data is not smooth plotted. - Concur - Item was brought forward from H-6727 (1941) as a submerged pile to supplement the present survey.

M. ADEQUACY OF SURVEY - See section 4 of the Evaluation Report.

This survey is complete and adequate to warrant its use to supersede prior survey for charting purposes. During the early part of the survey, a sounding interval of 7-9 mm was used, exceeding the recommended 4-6 mm. Because the hydro run with an excessive sounding interval was in an area with a regular bottom. The quality of the data was not impaired.

N. AIDS TO NAVIGATION

All fixed aids to navigation in the survey area were located and comparisons between their charted, Light List (Vol I, 1982), and surveyed positions were made. All fixed

aids were found to adequately serve the apparent purpose for which they were established.

Buoy C "5", marking the channel to the Orlando Utilities Commission dock, was found to be missing upon inspection. The power company stated that the buoy would be replaced in the near future.

Buoy C "1", marking Jones Point Channel, which is the entrance to the Florida Power and Light Company dock, was found to be missing. The power company was notified and advised the party that the buoy would be replaced. All other floating aids to navigation were located and found to serve the purpose for which they were established.

The overhead power cable crossing the Indian River, from Jones Point to Pine Island, was found to have an 86.5 ft clearance over the channel. The clearance was determined by vertical angle measurements taken on JD 109. Retain the charted authorized clearances of 85 ft and 45 ft. -concur On JD 109, 193000Z clearances of the NASA Causeway bascule bridge was found to be as follows: Vertical clearance 28.3'
Horizontal clearance 93.0"

Retain the charted 27 and 90 ft clearances respectively. -concur

O. STATISTICS

Total number of positions:	5038
Lineal nautical miles main scheme	305.7
Lineal nautical miles crossline	36.4
Lineal nautical miles development	111.6
Total lineal nautical miles hydro	453.7
Total square miles hydro	13.4
Number of bottom samples	113

P. MISCELLANEOUS

Field determinations made on least depths of features are not final, due to the lack of predicted tides in the area. Final least depths will have to be determined when smooth tides are applied.

Data labeled "not for smooth plot", (NSP) can be found, plotted on rough boat sheets.

Q. RECOMMENDATIONS

See sections H, J, K, and L for specific recommendations.

R. AUTOMATED DATA PROCESSING

PROGRAM	DESCRIPTION	VERSION DATE
RK 201	Grid,Signal and Lattice Plot	4/18/75

PROGRAM	DESCRIPTION	VERSION DATE
RK211	Range-Range Non-Real Time Plot	1/15/76
RK300	Utility Computations	2/05/76
RK330	Reformat and Data Check	5/04/76
RK407	Geodetic Inverse/Direct Computation	9/25/78
AM602	Elinore-Line Oriented Editor	5/20/75

S. REFERENCE TO REPORTS

Control Report for OPR-499, dated August 1976
Control Report for OPR-G207, dated November 1981

Respectfully submitted,

Nicholas E. Perugini LTJG NOAA

Nicholas E. Perugini
Lt(jg), NOAA
OIC, HFP-4

Atlantic Marine Center
439 West York Street
Norfolk, VA 23510

October 18, 1982 OA/CAM31:LGC

TO: Commanding Officer
Seventh Coast Guard District
51 Southwest Frist Avenue
Miami, FL 33130

FROM: R. D. Sanocki
Acting Chief, Marine Surveys Division, OA/CAM3

SUBJECT: Notice to Mariners

An uncharted dangerous wreck, 18-ft. fibercraft vessel awash at sounding datum has been located in Latitude 28°27'21.37"N, Longitude 080°43'17.07"W. The wreck is in what appears to be a turning basin in the channel leading to Courtenay, Florida. Awois ✓

The channel, "5 ft. for mid-width of 150 ft., Feb. 1977," leading to Sams Creek charted in approximate Latitude 28°28'45"N, Longitude 080°44'30"W, has shoaled to 1 to 2 feet narrowing to approximately 50 feet the 150-ft. charted width. This shoaling has taken place mainly east of Longitude 80°44'20" and in the northern 2/3 of the channel.

Source: NOS Survey H-9988 (1981-82)

Charts: 11484, 11485

wk related
INM 2/83 EMB
CL 1456 (82)

cc: OA/C322

APPROVAL SHEET
SURVEY H-9988 (HSB-10-5-81)

The hydrographic records transmitted with this report are complete and adequate to supersede prior surveys for charting with no additional field work recommended.

Direct daily supervision was not given by me during this field work.

Approved and forwarded,

Geo. W. Jamerson

George W. Jamerson
Lt. Cdr., NOAA
Chief, Hydrographic Surveys Branch

INDIAN RIVER SIGNAL LIST

H-9988 HSB 10-5-81

035	4	28	35	29107	080	47	23314	139	0000	000000	INDIAN RIVER N LIGHT 35 1981
036	3	28	27	23258	080	45	34702	254	0000	000000	WILL 2, 1976
040	3	28	30	10450	080	46	45629	250	0000	000000	STRADLEY, 1940
042	4	28	29	33956	080	43	59052	254	0000	000000	CABLE, 1976
046	1	28	31	34190	080	44	17201	250	0000	000000	NASA E, 1976
048	4	28	26	26049	080	43	31205	250	0000	000000	MAGGI 1981 *
050	6	28	24	07979	080	44	19164	250	0000	000000	KIMBERLY 1981 *
062	3	28	26	50394	080	44	51091	139	0000	000000	INDIAN RIVER N SEC DBN 2 1981
080	1	28	31	37422	080	46	19392	250	0000	000000	PARRIS 1981
082	6	28	31	37707	080	45	32337	139	0000	000000	MARTIN 1976
084	4	28	28	42978	080	45	15154	139	0000	000000	INDIAN RIVER N LT 55 1981
583	4	28	31	46282	080	43	47269	250	0000	000000	MOORE RM 2 1982
584	4	28	33	38339	080	43	12125	250	0000	000000	MID 1940 *
587	1	28	36	29052	080	43	46835	250	0000	000000	STAYOUT 1962, RM 1, 1982
588	3	28	35	51150	080	48	16401	250	0000	000000	N O USE 1940 *
617	3	28	30	41277	080	45	47934	139	0000	000000	INDIAN RIVER N LT 48 1981
620	4	28	32	08503	080	46	00768	139	0000	000000	INDIAN RIVER N LT 43 1981
621	4	28	32	41391	080	46	10692	139	0000	000000	INDIAN RIVER N LT 41 1981
622	4	28	27	23834	080	44	56776	139	0000	000000	INDIAN RIVER N LT 59 1981

* These stations have final GPs - the remaining stations have been entered into the NGS data base but do not have final GPs.

✓ NGS

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS

ORIGINATING ACTIVITY

- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HFP-4	Florida	Indian River	5/82

The following objects HAVE [X] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-G207	HSB-10-5-81	H-9988	North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION: LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side): OFFICE	FIELD	CHARTS AFFECTED
DAYBEACON	Triangular Red Daymark on Pile Daybeacon 62	28 26	50.394	80 44	51.091		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Pile Daybeacon 60	28 27	23.052	80 44	59.228		3rd Order March 1982	11485
LIGHT	Square Green on Dolphin Light 59 1982, L.L. #4006	28 27	23.834	80 44	56.776		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Dolphin Daybeacon 58	28 27	49.598	80 45	05.505		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Dolphin Daybeacon 56	28 28	16.525	80 45	11.390		3rd Order March 1982	11485
LIGHT	Square Green on Dolphin Light 55, L.L. #4005	28 28	42.978	80 45	15.154		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Pile Daybeacon 54	28 28	42.127	80 45	17.053		3rd Order March 1982	11485
DAYBEACON	Square Green on Pile Daybeacon 53	28 29	15.205	80 45	22.656		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Pile Daybeacon 52	28 29	40.858	80 45	31.932		3rd Order March 1982	11485
DAYBEACON	Square Green on Pile Daybeacon 51 1253(82)	28 30	12.161	80 45	38.145		3rd Order March 1982	11485

NC 98, L-1253(82)

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Nicholas E. Perugini, OIC, HFP4	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Nicholas E. Perugini, OIC, HFP4	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S. GPO:1975-0-665-080/1155

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HFP-4	Florida	Indian River	5/82

The following objects HAVE [XX] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
OPR-G207	HSB-10-5-81	H-9988	North American 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
DAYBEACON	Daybeacon 49 Square Green Daymark on Pile	28 30	42.181	80 45	45.673		3rd Order March 1982	11485
LIGHT	Triangular Red Daymark on Dolphin Light 48, L.L.# 4004	28 30	41.277	80 45	47.934		3rd Order March 1982	11485
DAYBEACON	Square Green Daymarker on Pile Daybeacon 47	28 31	23.400	80 46	19.447		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Pile Daybeacon 44	28 32	07.81	80 46	03.63		Hydro fix Del Norte R/R March 1982	11485
LIGHT	Square Green Daymark on Dolphin Light 43, L.L. #4003	28 32	08.508	80 46	00.777		3rd Order March 1982	11485
LIGHT	Square Green Daymark on Dolphin Light 41, L.L. #4002	28 32	41.411	80 46	10.709		3rd Order March 1982	11485
DAYBEACON	Triangular Red Daymark on Pile Daybeacon 42	28 32	42.16	80 46	14.15		Hydro fix Del Norte R/R March 1982	11485

NC × 99, 4 1-1253(82) 4

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Nicholas E. Perugini, OIC, HFP-4	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Nicholas E. Perugini, OIC, HFP-4	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S.GPO:1975-0-665-080/1155

NOAA FORM 76-40 (8-74)

Replaces C&GS Form 567.

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

XXXXXXXXXXXXXXXX NONFLOATING AIDS OR LANDMARKS FOR CHARTS XXXXXXXXXXXXXXXX

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HSB-HFP4	Florida	Indian River	May 1982

The following objects HAVE [X] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
G-207	----------	H-9988	NA 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
STACK	Florida Power & Light Stack (center)	28 28	09.469	80 45	50.514		NGS published	11485
STACK	Indian River City Orlando E. Utility Stack	28 29	35.434	80 46	49.022		NGS published	11485
MISSILE EXHIBIT	NASA Mercury Missile Exhibit	28 31	37.635	80 46	48.318		3rd order HSB Mar 1982	11485
TOWER	Moore RM 3, 1963 (Bilby tower)	28 31	47.208	80 43	46.664		NGS Published	11485

NC 100. K-1253(82)

DC

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	N.E. Perugini, LTJG, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	N.E. Perugini, LTJG, NOAA	FIELD ACTIVITY REPRESENTATIVE
		OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S.GPO:1975-0-665-080/1155

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

XNONFLOATING AIDS OR XLANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] XHYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [ ] TO BE CHARTED
- [ ] TO BE REVISED
- [XX] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
HSB-HFP4	Florida	Indian River	5/82

The following objects HAVE [ ] HAVE NOT [ ] been inspected from seaward to determine their value as landmarks.

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
G-207	----------	H-9988	NA 1927

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° /	LATITUDE // D.M. Meters	POSITION LONGITUDE ° /	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
TOWER	Elevator Tower (Church of God)	28 26	11.349	80 45	49.818		3rd order HSB Mar 1982	11485
	Note: this feature is not a good landmark.							

NC 101. 1-1253(82)

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	**NAME**	**ORIGINATOR**
OBJECTS INSPECTED FROM SEAWARD	Nicholas E. Perugini, OIC, HFP4	☐ PHOTO FIELD PARTY XX ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Nicholas E. Perugini, OIC, HFP4	FIELD ACTIVITY REPRESENTATIVE
		OFFICE AGTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS
Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.
EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED
Enter the applicable data by symbols as follows:

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V - Verified	
1 - Triangulation	5 - Field identified
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3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

A. Field positions* require entry of method of location and date of field work.
EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.
EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED
When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.
EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH
Enter 'V-Vis.' and date.
EXAMPLE: V-Vis.
8-12-75

**PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

☆ U.S.GPO:1975-0-665-080/1155

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NO.: H-9988

Number of positions	5038
Number of soundings	16777
Number of control stations	32

	TIME-HOURS	DATE COMPLETED
Preprocessing Examination	21	8 NOV 1982
Verification of Field Data	780	5 NOV 1984
Quality Control Checks	170	
Evaluation and Analysis	80	17 NOV 1984
Final Inspection	20	6 DEC 1984
TOTAL TIME	1071	

Marine Center Approval — 17 DEC 1984

Transmittal letter of survey and survey records will be included in the Descriptive Report to identify the records accompanying the survey.

NOAA FORM 61-29
(12-71)

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

REFERENCE NO.

MOA 23 39-85 rgr

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*:

☐ ORDINARY MAIL ☐ AIR MAIL

☒ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

TO:

CHIEF, DATA CONTROL SECTION
HYDROGRAPHIC SURVEYS BRANCH, N/CG243
NATIONAL OCEAN SERVICE, NOAA
ROCKVILLE, MD 20852

DATE FORWARDED

25 MARCH 1985

NUMBER OF PACKAGES

four (4)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H-9988 (HSB 10-5-81), OPR-G247-HSB-81
FLORIDA, INDIAN, RIVER
Williams Point to Indian River City

PKG 1: (tube)
- 1 Smooth Sheet
- 1 Final Position Overlay
- 2 Excess Overlays (level 1, level 2/3)
- 8 Rough Field Sheets
- 1 Original Descriptive Report

PKG 2: (box)
- 19 NOAA Form 77-44 "SOUNDINGS"
- 1 Chart 11485
- 1 Folder containing CALIBRATION AND DP INFO G247
- 1 Folder containing BASELINE CALIBRATION DATA
- 1 Folder containing BARCHECK-SOUNDING CORRECTIONS DATA
- 1 Folder containing MISCELLANEOUS DATA
- 1 Envelope containing MISCELLANEOUS PRINTOUTS

FROM: *(Signature)*
Robert J. Rol
for David B. MacFarland, LCDR, NOAA

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

HYDROGRAPHIC SURVEYS BRANCH, N/MOA232
ATLANTIC MARINE CENTER
NOAA — NATIONAL OCEAN SERVICE
439 WEST YORK STREET
NORFOLK, VA 23510

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED. ☆U.S.GPO:1980-0-665-115/1005

NOAA FORM 61-29 (12-71)

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

REFERENCE NO.

MOA 23 39-85 rgr

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*:

☐ ORDINARY MAIL ☐ AIR MAIL

☒ REGISTERED MAIL ☐ EXPRESS

☐ GBL *(Give number)* _____

TO:

CHIEF, DATA CONTROL SECTION
HYDROGRAPHIC SURVEYS BRANCH, N/CG243
NATIONAL OCEAN SERVICE, NOAA
ROCKVILLE, MD 20852

DATE FORWARDED

25 MARCH 1985

NUMBER OF PACKAGES

four (4)

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

H-9988 (HSB 10-5-81), OPR-G247-HSB-81
FLORIDA, INDIAN RIVER
Williams Point to Indian River City

PKG 1: (tube)
- 1 Smooth Sheet
- 1 Final Position Overlay
- 2 Excess Overlays (level 1, level 2/3)
- 8 Rough Field Sheets
- 1 Original Descriptive Report

PKG 2: (box)
- 19 NOAA Form 77-44 "SOUNDINGS"
- 1 Chart 11485
- 1 Folder containing CALIBRATION AND DP INFO G247
- 1 Folder containing BASELINE CALIBRATION DATA
- 1 Folder containing BARCHECK-SOUNDING CORRECTIONS DATA
- 1 Folder containing MISCELLANEOUS DATA
- 1 Envelope containing MISCELLANEOUS PRINTOUTS

FROM: *(Signature)*
Robert A. Rose
for David B. MacFarland, LCDR, NOAA

RECEIVED THE ABOVE
(Name, Division, Date)

Return receipted copy to:

HYDROGRAPHIC SURVEYS BRANCH, N/MOA232
ATLANTIC MARINE CENTER
NOAA – NATIONAL OCEAN SERVICE
439 WEST YORK STREET
NORFOLK, VA 23510

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED. ☆U.S.GPO:1980-0-665-115/1005

DATE: August 10, 1982

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): 872-1456 Titusville, FL
872-1574 Williams Point, FL

Period: November 16, 1981 - April 20, 1982

HYDROGRAPHIC SHEET: H-9988

OPR: G-207

Locality: Indian River, Florida

Plane of reference (~~mean lower low water~~ LOW WATER DATUM): 872-1456 = 3.15 ft.
872-1574 = 1.10 ft.

Height of Mean High Water above Plane of Reference is

REMARKS: Recommended Zoning:

Use automatic zoning.

James R Hubbard
Chief, Tidal Datums and Information Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9988

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 1486	B ON PREVIOUS SURVEY NO. TP-04013	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ADDISON POINT	X									1
BELLWOOD	X									2
COURTNEY	X									3
DELESPINE	X									4
FLORIDA (title)	X									5
FRONTENAC	X									6
INDIAN RIVER										7
INDIAN RIVER CITY	X									8
NASA PARKWAY WEST CAUSEWAY(cult. fea.)	X									9
PINE ISLAND	X									10
SAMS CREEK	X									11
THREE CABBAGES		X								12
WILLIAMS POINT	X									13
JONES POINT										14
MERRITT ISLAND										15
										16
										17
					Approved:					18
										19
					Charles G. Hamilton					20
					Chief Geographer - N/CG2x5					21
					NOV 06 1984					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-9988 FIELD NO.: HSB 10-5-81

Florida, Indian River, Williams Point to Indian River City

SURVEYED: 16 November 1981 through 20 April 1982

SCALE: 1:10,000 PROJECT NO.: OPR-G207-HSB-81

SOUNDINGS: RAYTHEON DE-719B Fathometer, Sounding Pole

CONTROL: Del Norte (Range/ Range), See Boat Sheet

Chief of Party.....G. W. Jamerson

Surveyed by.....N. E. Perugini
.....E. L. Martin
.....D. M. Bryant
.....D. J. Parris
.....L. S. Biscorner
.....H. J. Hickman

Automated Plot By.....Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. No unusual problems were encountered during office processing.

b. Notes in the Descriptive Report were made in red during office processing.

c. The sounding datum in this area is a local low water datum and is referred to as LOW WATER DATUM. Tidal conditions are such that Mean Lower Low Water is not definable. Elevations of features seaward of the shoreline such as piles, etc., are referenced to Low Water and the descriptive labels for such features are shown in vertical lettering when they extend one (1) foot or more above LWD and in slanted lettering when the elevations of such features are less than one (1) foot above LWD. Most features a foot or more above LWD are exposed during high water conditions which may occur in this area due to meterological conditions.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections F, G, and S of the Descriptive Report.

b. Shoreline originates with stable base copies of registration copies of Coastal Zone Maps TP-00112 of 1969-70, TP-00113 of 1967-70,

TP-00133 of 1969-70, and TP-00134 of 1969-71. Revisions in red by the hydrographer were transferred to the smooth sheet. Copies of the shoreline maps provided were not made at the correct scale. The shoreline was transferred to the smooth sheet by making local adjustments for scale distortion throughout the survey.

c. The shifting of features recommended by the hydrographer is probably due to the distortion discussed in the preceding section of this report.

3. HYDROGRAPHY

a. Soundings at crossings agree within the criteria stated in sections 4.6.1 and 6.3.4.3 of the Hydrographic Manual and section 6.6 of the Project Instructions.

b. The standard depth curves could be drawn in their entirety with the exception of the zero (0) curve. The hydrographer was unable to delineate the low water line, zero (0) curve, because of the large shallow areas and tide conditions (see section 1.c. of this report). Supplemental curves were drawn to better delineate the bottom configuration.

c. Development of the bottom configuration and determination of least depths is considered adequate.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual with the following exceptions:

a. The hydrographer failed to recognize two (2) Notice to Mariners items in the survey area. A Notice to Mariners was drafted and forwarded to the appropriate Coast Guard district and other offices during office processing. A copy of the Notice to Mariners letter is included with the Evaluation Report.

b. Geographic names were not researched by the hydrographer as completely as required by section 4.2.4 of the Project Instructions and section 5.7 of the Hydrographic Manual. A more complete geographic names list was compiled for approval during office processing using the proper chart and shoreline manuscripts.

c. Line spacing in the area of the Intracoastal Waterway was not in compliance with the fifty (50) meter criteria found in section 6.5.1 of the Project Instructions and section 4.3.4.1 of the Hydrographic Manual.

d. The sounding interval criteria of not more than six (6) millimeters at the scale of the survey, section 1.4.6 of the Hydrographic Manual, was not complied with by the hydrographer. Approximately forty (40) percent of the hydrography run exceeded the criteria by three and one-half (3.5) to four (4) millimeters. The hydrographer recognized this deficiency and commented that he felt that the quality of the

survey was not degraded. The fathograms were carefully examined and appropriate inserts where necessary were made to delineate the bottom configuration.

e. Presurvey Review Item #32 - submerged piles were not searched for by the hydrographer using the improvised wire drag method recommended by the Presurvey Review. The hydrographer did not explain his reason for not using this method of investigation. A chain drag would have been appropriate if an improvised wire drag was not practical.

f. The hydrographer located a buoy on year day 091 in an area where there were no other floating aids to navigation. There was no reason for an aid in the area of the buoy that was located. Four (4) days later, year day 095, the hydrographer located the same buoy in its apparent proper location. The hydrographer failed to recognize that the buoy was off station when it was first located and also failed to delete the erroneous position. The erroneous position was deleted during office processing.

g. The hydrographer located another buoy and did recognize that it was off station; however, the hydrographer failed to delete the erroneous position from the survey records. This position was deleted during office processing.

h. The TC/TI tapes submitted by the field were not correct for vessel number (VESNO) 8604. The TRA Problem was discussed in section D of the Descriptive Report but the data tapes were not corrected. This was corrected during office processing.

i. A duplicate velocity table for 1982 had to be made during office processing because the processing system requires separate velocity tapes for each year that hydrography is run.

j. In some cases, the hydrographer's descriptions in the Descriptive Report do not concur with the descriptions found in the field records, e.g. positions 2850-2856 are described as a new pier in the Descriptive Report and a concrete jetty in the sounding volume.

k. Seven (7) of the stations on the signal list submitted by the hydrographer were undescribed; these stations were assigned a cartographic code of 139. Appendix B of the Hydrographic Manual explains that a station with the cartographic code 139 is "...limited to described, marked....". Appropriate cartographic codes were applied during office processing.

l. The hydrographer did an excellent job of obtaining data for determination of sound velocity correctors.

m. The hydrographer made an excellent comparison with the chart.

n. The hydrographer made excellent notes comparing the photogrammetric manuscripts with the actual conditions in the survey area at the time of the survey.

5. JUNCTIONS

H-9866 (1980-81) to the south
H-9994 (1982) to the north

Adequate junctions were effected with the above surveys.

6. COMPARISON WITH PRIOR SURVEYS

H-6664 (1941) 1:10,000
H-6727 (1941) 1:10,000

The above surveys taken together cover the present survey area in its entirety.

Soundings on the prior survey compare well in general with the present survey. Depths vary from one (1) to two (2) feet in some portions of the survey area except in dredged channels, spoil dumping areas, borrowed areas, and areas of cultural development.

Several potential dangers to navigation were brought forward from the above prior surveys to supplement the present survey. See section L of the Descriptive Report for discussions of these items.

The present survey except as noted above is adequate to supersede the prior surveys in the common area.

7. COMPARISON WITH CHART 11485 (19th Edition, SEP 5/81)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys and U.S. Army Corps of Engineers surveys. Discussion of changes generally involves dredged channels, dredging or dredged spoil areas and cultural features. Attention is directed to the following:

1) The wreck mentioned in section L of the Descriptive Report, page 19, is in the turning basin at the eastern end of the channel leading to the town of Courtney.

2) The western side of the Banana River has many small piers, piles, etc. Considering the chart scale, the chart compiler will have to determine the applicability of these piers, piles, etc. on future chart editions.

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

b. Controlling Depths

1) The project depth for the Intracoastal Waterway is twelve (12) feet. The shoalest depth found in the channel is seven (7) feet in approximate Latitude 28°29'51"N, Longitude 80°45'34"W. It is

recommended that the controlling depths be revised according to the latest U.S. Army Corps of Engineers surveys in the common area.

2) The charted channel in Latitude 28°29'33"N that leads westward to a facility maintained by the Orlando Utility Commission has a charted, 12 FT BY 100 FT, note. The controlling depths found in this channel were three (3) and five (5) feet on the south side. A close examination shows one (1) and two (2) foot depths adjacent to the two (2) jetties that shelter the channel west of Longitude 80°46'12"W. The channel is being used and the present survey depths should be used for a controlling depths unless subsequent data indicates otherwise. The charted channel alignment and the present survey depths are not in agreement. The channel limits appeared to be adequately marked by floating aids at the time of the present survey.

* LNM 88 Revised to 3 FT 1982

3) The channel in Latitude 28°28'30"N, leading eastward to Sams Creek, is charted, 5 FT FOR MID-WIDTH OF 150 FT FEB 1977, has depths of two (2) to four (4) feet along the edges and four (4) feet along its centerline. This channel is unmarked and not being maintained. It is recommended that the note be changed on the channel controlling depth to four (4) feet. It is further recommended that the channel limit lines be deleted from the chart. See section L. of the Descriptive Report.

* LNM 88 Revised to 4 FT centerline 1982

4) The channel in Latitude 28°28'04"N leading westward charted, 10 feet rep Priv Maintd, has shoaled to four (4) feet on the south edge. The note should be revised to reflect the present survey findings.

Revised to 4 FT * 1982

5) The channel in Latitude 28°27'16"N, leading eastward to Courtney charted, 5 FT FOR MID-WIDTH OF 50 FT FEB 1980, has shoaled. The shoalest depth found in the charted limits is two (2) feet. It appears that a channel with a shoalest depth of four (4) feet is slightly north of the charted channel limits. It is recommended that the note on the chart be change to reflect the present survey information unless subsequent information indicates otherwise.

Not Recommended

c. Aids to Navigation

All fixed and floating aids to navigation located within the present survey area appear adequate to serve their intended purpose.

7. COMPLIANCE WITH PROJECT INSTRUCTIONS

The present survey adequately complies with the Project Instructions except as noted in section 4 of this report.

8. ADDITIONAL FIELD WORK

This is an excellent survey; no additional field work is recommended.

* LNM 88 AE

Reginald L. Keene
Cartographic Technician
Verification of Field Data

Robert G. Roberson
Senior Cartographer
Evaluation and Analysis

Robert R. Hill, Jr.
Senior Cartographic Technician
Verification Check

Inspection Report
H-9988

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey complies with National Ocean Service requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected

R. D. Sanocki
Chief, Hydrographic Surveys
Processing Section
Hydrographic Surveys Branch

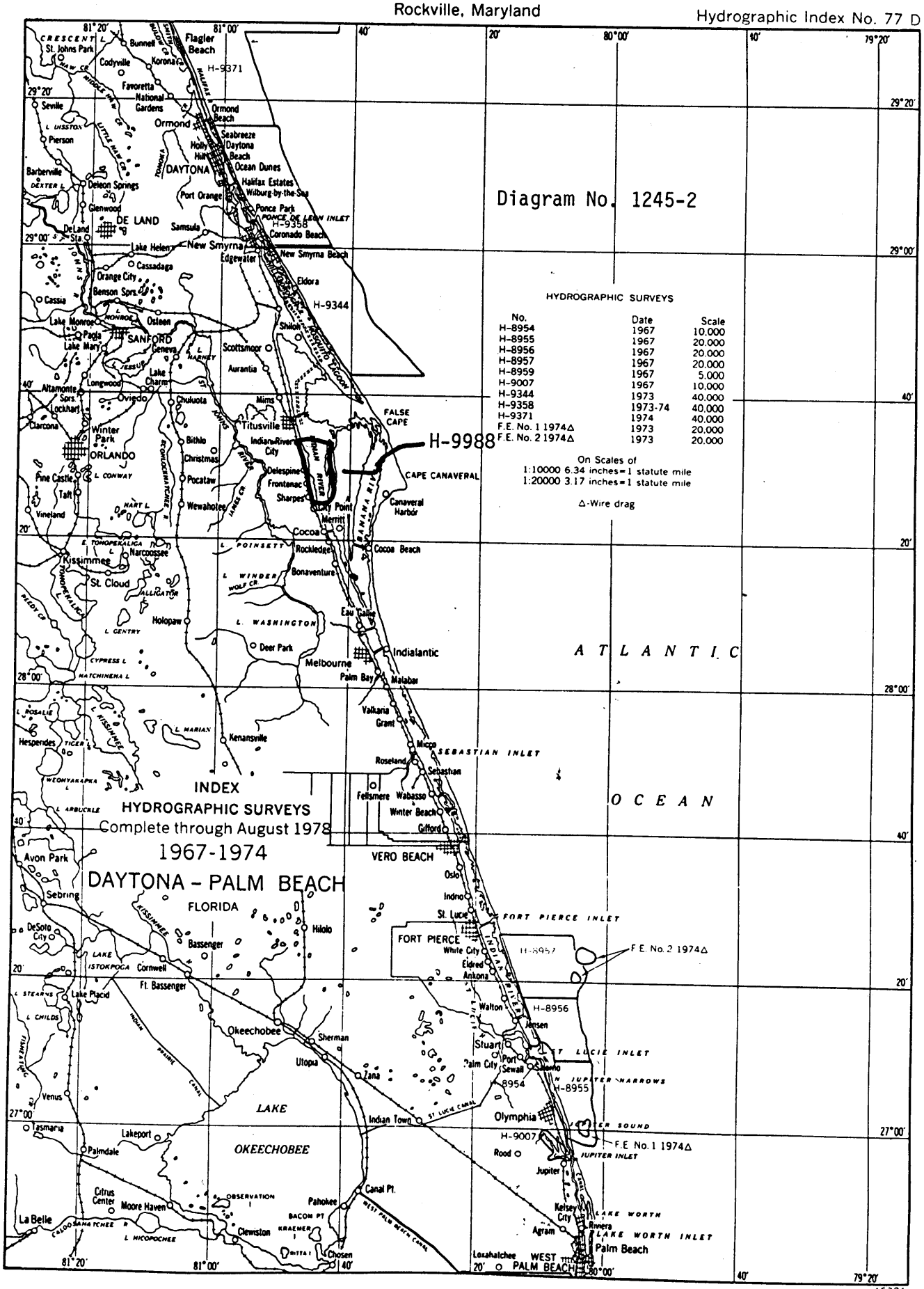
David B. MacFarland, Jr., LCDR, NOAA
Chief, Hydrographic Surveys Branch

Approved December 17, 1984

Wesley V. Hull, RADM, NOAA
Director, Atlantic Marine Center

DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Ocean Survey
Rockville, Maryland

Hydrographic Index No. 77 D



A5324

NOAA FORM 75-96
(10-83)

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

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9988

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
11485B	11-1-88	El Bal...	Full ~~Part~~ ~~Before~~ After Marine Center Approval Signed Via
			Drawing No. 25
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
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			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.

Appd To Std 4-4-85 [illegible]