

H10539

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic  
Side Scan Sonar

Field No. MI-10-3-94

Registry No. H-10539

LOCALITY

State Florida

General Locality Gulf of Mexico

Sublocality 5 NM West of Egmont Key

19 94-95

CHIEF OF PARTY  
CAPT N. A. Prahl & CDR R. L. Parsons

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DATE SEP 10 1996

H-10539

**HYDROGRAPHIC TITLE SHEET**

MI-10-03-94

**INSTRUCTIONS:** The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: Florida

General locality: Gulf of Mexico

Locality: Approaches to Tampa Bay - 5 NM WEST OF EGHONT KEY

Scale: 1: 10,000 Date of survey: 18 May to 07 June 1994

Instructions dated: 08 March 1994 Project Number: OPR-J343-MI-94

Vessel: NOAA Ship MT MITCHELL S-222

Chief of Party: CAPT Nicholas A. Prah

Surveyed by: J.C. Gardner, J.A. Ferguson, E.J. Van Den Ameele, M.P.M. Soracco, S.A. Shaulis, U.L. Gardner, P.L. Lewit, M.E. Ahern, M.J. Annis, L.A. Butler, and M.T. Lathrop.

Soundings taken by echo sounder, hand lead-line, or pole: DSF 6000N fathometer

record scaled by: MT MITCHELL personnel

Graphic record checked by: MT MITCHELL personnel

Protracted by: N/A Automated plot by: ENCAD NOVATET III (AHB)  
Zeta 936 Plotters (FIELD)

Verification by: Hydrographic Surveys Branch ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in: Feet:  (AHB) Fathoms: (FIELD) Meters: (\*) at MLW: (\*) MLLW: (\*)

Remarks: Basic hydrography and 100 % side scan sonar coverage

Time zones used: 0 (UTC) for data acquisition

0 (UTC) for tidal data

Surf/AWOLs 8/28/96 mLR

NOTES IN RED WERE MADE DURING OFFICE PROCESSING.

SEP 10 1996 bc

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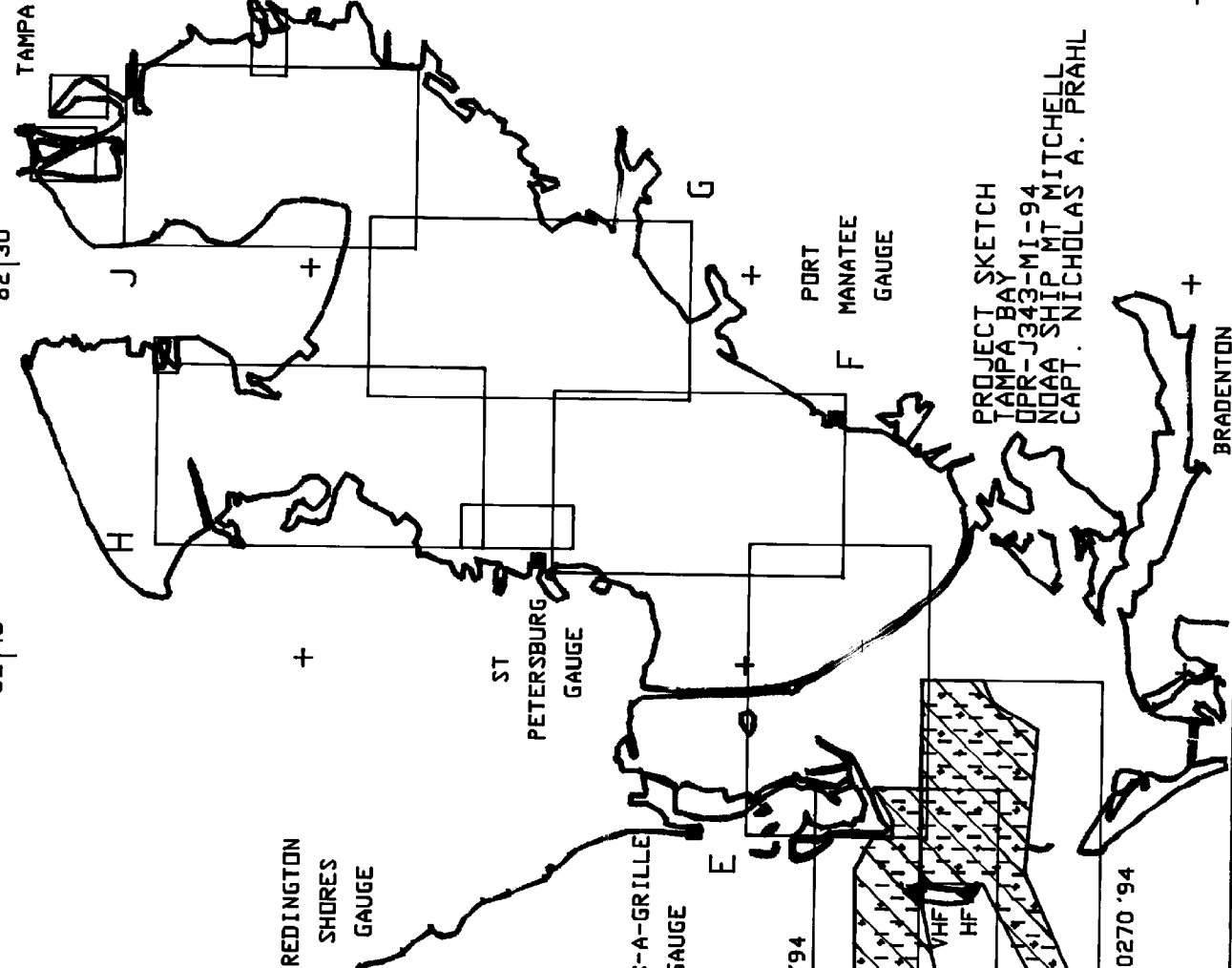
## APPENDICES

APPENDIX I *	DANGER TO NAVIGATION REPORTS
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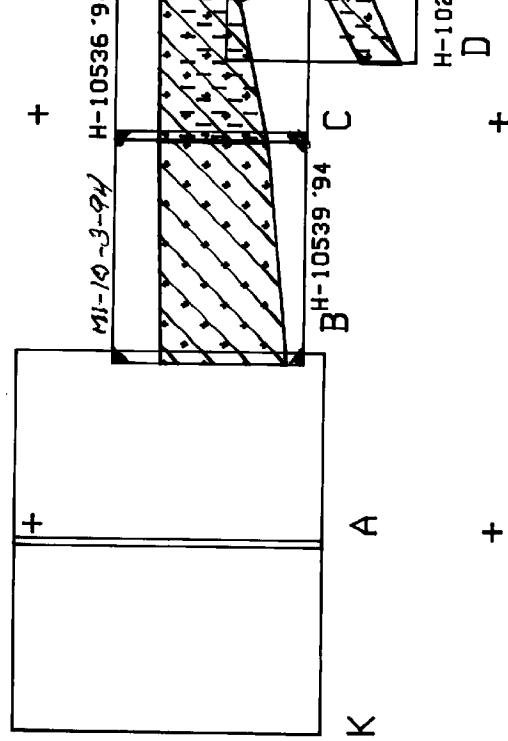
\* FILED WITH THE ORIGINAL FIELD DATA

APR	MAY	JUN	TOTAL
11.0	25.0	10.0	46.0
20.0	1070.6	194.4	1285.0
5.0	571.8	322.8	899.6
0	55.6	25.9	81.5
1	2	1	4
5	14	6	25
		3	3
		1	1

- ▲ GPS REF STATION
- TIDE GAUGE
- ▨ HYDRO
- 100% SSS
- 200% SSS



PROJECT SKETCH  
 TAMPA BAY  
 OPR-J343-MI-94  
 NOAA SHIP MT MITCHELL  
 CAPT. NICHOLAS A. PRAHL



## **A. PROJECT**

**A.1** This survey was conducted in accordance with Project Instructions OPR-J343-MI-94, Approaches to Tampa Bay, Florida.

**A.2** The original date of these project instructions is March 8, 1994.

**A.3** There were no changes to these project instructions corresponding to this survey.

**A.4** This survey corresponds to project sheet letter "B".

**A.5** Project OPR-J343-MI-94 responds to requests from the Tampa Bay Pilots, the Tampa Bay Marine Advisory Council, local port authorities, the seventh U. S. Coast Guard District, and the U.S. Army Corps of Engineers (USACE), to obtain modern hydrography under the navigable area concept plus 200% side scan sonar coverage, of the safety fairway and fairway anchorages adjacent to USACE dredged channels at the approaches to Tampa Bay, Florida. It is anticipated that knowledge of these depths will allow some relief for shipping traffic from these narrow and heavily used channels.

## **B. AREA SURVEYED**

**B.1** This survey is located in the Gulf of Mexico, offshore of the entrance to Tampa Bay, Florida. The survey includes Egmont Channel, the Safety Fairway north and south of the channel, the delineated spoil areas south of the channel, and the fairway anchorage north of the channel. The frequent traffic in this area includes large cargo and petroleum ships, cruise ships, tugs and barges, commercial fishing vessels, and pleasure craft.

**B.2** The survey sheet is rectangular and is delineated to the north and south by latitudes 27° 38' 8.7" N and 27° 34' 1.9"N respectively, and to the east and west by longitudes 082° 50' 42.4" W and 082° 56' 14.0" W respectively.

**B.3** Survey operations on this sheet began 18 May 1994 (DN 138) and concluded 7 June 1994 (DN 158).

## **C. SURVEY VESSELS**

**C.1** The following vessels participated in this survey:

<u>Vessel</u>	<u>Electronic Data Processing Number</u>	<u>Primary Function</u>
MT MITCHELL	2220	Bottom Samples
JENSEN LAUNCH 1008 (MI - 4)	2224	Side Scan Sonar, Hydrography
JENSEN LAUNCH 1021 (MI-5)	2225	Hydrography, Side Scan Sonar, Bottom Samples, Detached Positions
BOSTON WHALER (MI - 1)	2221	CTD casts

**D. AUTOMATED DATA ACQUISITION AND PROCESSING** *SEE ALSO THE EVALUATION REPORT.*

D.1 Survey data acquisition and processing utilized the HDAPS system with the following software versions:

<u>PROGRAM</u>	<u>VERSION</u>	<u>INSTALLATION DATE</u>
BACKUP	2.00	15 APR 94
BASELINE	1.14	15 APR 94
BIGABST	2.07	15 APR 94
BIGAUTOST	3.01	15 APR 94
BLKEDIT	2.02	15 APR 94
CARTO	2.13	15 APR 94
CLASSIFY	1.05	15 APR 94
CONTACT	2.34	15 APR 94
CONVERT	3.62	15 APR 94
DAS_SURV	6.70	07 MAY 94
DIAGNOSE	3.04	15 APR 94
DISK_UTIL	1.00	15 APR 94
DP	2.14	15 APR 94
EXCESS	4.21	15 APR 94
FILESYS	3.24	15 APR 94
GRAFEDIT	1.06	15 APR 94
HIPSTICK	1.01	15 APR 94
HPRAZ	1.26	15 APR 94
INVERSE	2.01	15 APR 94
LISTDATA	1.02	15 APR 94
LOADNEW	2.10	15 APR 94

LSTAWOIS	3.07	15 APR 94
MAINMENU	1.20	15 APR 94
MAN_DATA	2.01	15 APR 94
NEWPOST	6.01	15 APR 94
PLOTALL	2.27	15 APR 94
POINT	2.10	15 APR 94
PREDICT	2.01	15 APR 94
PRESURV	7.08	15 APR 94
PRINTOUT	4.03	15 APR 94
QUICK	2.05	15 APR 94
RAMSAVER	1.02	15 APR 94
REAPPLY	2.10	15 APR 94
RECOMP	1.02	15 APR 94
SCANNER	1.00	15 APR 94
SELPRINT	2.04	15 APR 94
SYMBOLS	N / A	15 APR 94
VERSIONS	1.00	15 APR 94
ZOOMEDIT	2.24	15 APR 94

A *LOTUS 1-2-3* spreadsheet was used in calculating DGPS performance checks. A copy of this spreadsheet program is included in Separate III.

**D.2** Velocity corrections were determined using the programs *VELOCITY*, version 2.10, dated March 15, 1994; and *CAT*, version 2.00, dated December 18, 1992. These programs were used to process CTD data obtained from Seacat casts.

**D.3** No non-standard automated data acquisition or processing methods were used in this survey.

## **E. SIDE SCAN SONAR EQUIPMENT**

**E.1** Side scan sonar (SSS) operations used an EG&G Model 260-TH slant range corrected side scan recorder and a model 272-T (single frequency) towfish. Launches MI-4 (vesno 2224) and MI-5 (vesno 2225) both utilized this configuration. The following list summarizes the equipment serial numbers and corresponding dates of side scan sonar equipment used in this survey.

<u>VESSEL</u>	<u>EQUIPMENT</u>	<u>SERIAL NUMBER</u>	<u>DATES USED</u>
2224	Recorder	016948	05 JUN - 07 JUN
2224	Towfish	0011902	05 JUN - 07 JUN
2225	Recorder	016673	04 JUN - 07 JUN
2225	Towfish	0011901	04 JUN - 07 JUN

**E.2** Side scan sonar operations used a 20° beam depression, which is the normal setting.

**E.3** The frequency used for side scan sonar operations was 100 kHz. Both vessels used this frequency throughout all SSS operations.

**E.4 a.** In sufficiently deep water sonar operations used the 100 meter range scale, with line spacing equal to 170 meters, based upon a maximum estimated position error of 15 meters. In water depths below 10 meters sonar operations used the 75 meter range scale, with line spacing equal to 120 meters, based upon the same estimated position error. For developments, the 50 meter and 25 meter range scales were used because they provide better resolution.

**b.** Both vessels obtained confidence checks twice daily, once at the commencement of sonar operations, and again at the close of sonar operations. Sand waves along the sea bed, and contacts discovered during the course of SSS operations, provided excellent confidence checks.

**c.** Side scan sonar operations covered the area designated on the provided chartlet with nearly 100% coverage. There were a few gaps of 100% coverage, which were not filled due to time restrictions. In addition, 200% coverage was obtained in nearly all of Egmont Channel. Time constraints precluded total 200% coverage of the survey area. *SEE SECTION E. OF THE ADDENDUM APPENDED TO THIS REPORT.*

**d.** Side scan sonar lines were run parallel to Egmont Channel, which has an orientation of 083°/263° T. No significant conditions were encountered which encumbered SSS operations.

**e.** Both vessels (MI-4 and MI-5) used a block and electric winch attached to the stern to deploy and tow the SSS towfish.

**E.5** All contacts detected during side scan sonar operations were entered into contact tables in the HDAPS system. Three contacts were further developed by obtaining additional side scan sonar coverage over the items. Time constraints precluded both side scan sonar development of additional contacts, and diver investigations of significant contacts.



E.6 Overlap was checked on-line using the real-time plot and the edited swath plot for gaps. Several gaps of 100% SSS coverage were covered by running additional SSS lines. Gaps were primarily caused by loss of the DGPS signal for 30 seconds or more, when HDAPS would end data collection (see section I.2). These losses were short in duration, usually not more than five minutes; therefore data collection resumed once the signal was regained as the launch continued along the same track, causing a gap of only 200 to 300 meters. Time constraints precluded running additional lines of SSS to cover the remaining gaps. The gaps can be found by examining the swath plot included with the separates.

## F. SOUNDING EQUIPMENT

F.1 All vessels participating in this survey used a Raytheon DSF-6000N to obtain soundings. The following list summarizes the serial numbers and dates used of all sounding equipment used in this survey.

<u>VESSEL</u>	<u>SERIAL NUMBER</u>	<u>DATES USED</u>
2220	A110N	20 MAY - 21 MAY
2224	B042N	05 JUN - 07 JUN
2225	B053N	18 MAY - 26 MAY
		02 JUN - 07 JUN
2225	B051N	01 JUN

F.2 No other sounding equipment was involved in this survey.

F.3 There were no instances in which sounding equipment presented problems with data acquisition.

F.4 The Raytheon DSF-6000N is a dual beam echosounder, with both a high frequency (100 kHz) and a low frequency (24 kHz) beam. Soundings from both the high frequency and low frequency were recorded; however only the high frequency sounding was used for plotting. Low frequency soundings were examined for spikes and nearby items, and, if encountered, were inserted in the digital records and plotted.

## G. CORRECTIONS TO SOUNDINGS

G.1 The following is a summary of corrections applied to echo-soundings, and the methods used to obtain them. For detailed information and tables used to determine corrections to soundings, refer to the SOUNDING EQUIPMENT CALIBRATION AND CORRECTION REPORT included in the separates. *FILED WITH THE ORIGINAL FIELD DATA.*

a. The velocity of sound through the water was determined by a Seacat conductivity, temperature, and depth (CTD) sensor. The serial number of the sensor used was 192472-0284, and the latest calibration date of this sensor was 22 December 1993. To ensure accurate performance of Seacat unit 192472-0284, a simultaneous cast was performed with this unit and Seacat unit 192472-0285 on 24 April 1994 (DN 114). The two casts showed excellent agreement, with the percentage difference between casts equalling zero. The latest calibration date of the latter unit was 15 December 1993.

The following list summarizes the positions and dates of all CTD casts used to determine the velocity of sound through the water, for application in this survey.

<u>Cast #*</u>	<u>Date</u>	<u>Latitude</u>	<u>Longitude</u>	<u>HDAPS Table #</u>	<u>Applied Day #'s</u>
04	16 MAY	27°36'15"N	082°45'32"W	3	136-151
05	01 JUN	27°36'16"N	082°45'33"W	4	152-158

\* Casts 1, 2, and 3 occurred prior to the start of this survey.

b. There were no variations in the instrument initial

c. There were no other corrections to instruments.

d. Leadline comparisons were performed on the days indicated below by the vessels indicated. All comparisons of the fathometer against leadline checks were within  $\pm 0.2$  meters. These differences were all attributed to human error; therefore no correctors were applied to echo-soundings due to fathometer error. No comparisons were made with the DSF-6000N used by MT MITCHELL (vesno 2220) on DN's 140 and 141 for bottom sampling. Depths collected by MT MITCHELL on these days were changed to 9999.9 in the HDAPS Detached Position Editor, and were not included in the smooth plot or the excess plot.

<u>DN</u>	<u>Vessel</u>	<u>S/N</u>	<u>Fathometer Depth</u>	<u>Lead Line Depth</u>	<u>Difference</u>
155	2224	B042N	8.6 m	8.7 m	-0.1 m
158	2224	B042N	7.6	7.6	0.0
138	2225	B053N	8.3 m	8.3 m	-0.0 m
143	2225	B053N	8.8	8.8	0.0
146	2225	B053N	9.9	10.1	0.2
152	2225	B051N	8.8	8.7	0.1
155	2225	B053N	9.6	9.5	0.1
158	2225	B053N	9.0	9.2	-0.2

e. Correctors were applied to both high frequency and low frequency echo-soundings.

f. The static drafts of launches 1002 and 1021 were determined in April 1994 at the Atlantic Marine Center, Norfolk, Virginia, while the launches were in their davits. A calibrated steel tape was used to measure the distance from the transducer to an arbitrary reference line on each vessel. The launches were then placed in the water and the difference between this reference line and the waterline was measured, and the static draft was subsequently determined. These correctors were applied to raw echo-soundings via the HDAPS offset tables. Because MT MITCHELL (vesno 2220) and launch MI-1 (vesno 2221) did not collect soundings, it was not necessary to obtain or apply static draft correctors for these vessels.

g. Settlement and squat correctors for launch 1002 (MI-4, vesno 2224) were determined 30 April 1993 on the Elizabeth River in Portsmouth, Virginia. Settlement and squat correctors for launch 1021 (MI-5, vesno 2225) were determined 31 March 1994 at the same location. An observer stationed on a pier used a level to determine changes in relative height of the launches as they ran toward and away from the observer at various speeds. These correctors were applied to soundings through the HDAPS offset tables, based upon survey launch speed. Settlement and squat correctors for MT MITCHELL (vesno 2220) and launch MI-1 (vesno 2221) were not required, since these vessels did not collect echo-soundings.

h. No vessels in this survey used heave, roll, and pitch sensors.

**G.2** No unusual methods or instruments were used to determine corrections to echo-soundings.

**G.3** There was no need for special sounding correctors in this survey.

**G.4** A pneumatic depth gauge was not used in this survey.

**G.5** On day number 158 (07 JUN 1994) sea action in excess of one meter affected the fathogram trace. On this day, survey operations included both side scan sonar, and hydrographic developments of sonar contacts. MT MITCHELL personnel scanned the sea action out of the fathograms and edited the selected soundings accordingly, and, in some cases, rejected data with excessive sea action.

On no other days was sea action significant; nor did survey operations encounter other environmental conditions which affected corrections to soundings.

- G.6 a.** Mean-lower-low-water (MLLW) served as the tidal datum for this survey. Predicted tide data for Tampa Bay were provided on magnetic floppy disk at the start of the survey, and were applied as correctors to echo-soundings during the course of survey operations.

Two tide stations monitored water levels. A gage already in existence served as the primary station. This gage is at Redington Long Pier, Redington Shores, Florida (station number 872-6575), and served as direct control for datum determination. A secondary gage was established by MT MITCHELL personnel at a historical site at St. Petersburg Beach (South), Florida (station number 872-6430).

For detailed information on tide and water level correctors, refer to appendix V. *FILED WITH THE ORIGINAL FIELD DATA.*

- b.** A height correction ratio of 0.75 and a time difference of -10 minutes were applied to predicted tides information at Clearwater Beach, Florida.

- c.** The project instructions indicated zoning of tides correctors on this sheet. There were two zones indicated on this sheet, which were divided by longitude  $82^{\circ} 55.0'W$ . Because this was at the extreme western edge of the sheet, and because the zone west of this longitude includes overlap with sheet "A" of the same project, correctors for the zone west of this longitude were not applied to any soundings collected during this survey. All predicted tides correctors used the time difference and height ratio described in G.6.b. *APPROVED TIDES AND ZONING WERE APPLIED DURING OFFICE PROCESSING.*

## **H. CONTROL STATIONS**

- H.1** The horizontal datum used in this survey is NAD 83.

- H.2** A list of horizontal control stations ~~appears in Appendix III.~~ *IS APPENDED TO THIS REPORT*

**H.3** NOAA HF and VHF DGPS reference stations were established on Egmont Key and used for positioning. The NOAA HF reference station was established at the third order horizontal control station TAMPA PILOTS (PID AG9476), and the NOAA VHF reference station was established at the third order horizontal control station EGMONT KEY LH ECC (PID AG9474). Both stations were monumented by the National Ocean Service in 1981, and recovered as described, by MT MITCHELL personnel in March, 1994. The position for each station was obtained from the NGS database and verified by MT MITCHELL and Atlantic Marine Center Electronics Engineering Division personnel, using the NOS *MONITOR* program.

The *MONITOR* program was run over the HF station TAMPA PILOTS. The M-XII receiver at this station received correctors from the VHF base station at EGMONT KEY LH ECC and computed a differentially corrected position. This position was then output to a PC

running the *MONITOR* program. The program was run for twenty-four hours, and showed that no multi-path or other site-specific problems existed. The *MONITOR.SUM* file is located in appendix III, along with the scatterplot. \* FILED WITH THE ORIGINAL FIELD DATA.

**H.4** No horizontal control stations were established by MT MITCHELL during this survey. However, the Field Surveys Unit of the Field Photogrammetry Section conducted a horizontal control survey of the Tampa Bay area to establish and verify landmarks and fixed aids to navigation for project OPR-J343-MI-94.

**H.5** The Horizontal Control Report will be submitted by the Field Surveys Unit.

**H.6** There were no problems or anomalies in positioning control of this survey.

## **I. HYDROGRAPHIC POSITION CONTROL**

**I.1** Hydrographic sounding positioning was obtained using Differential Global Positioning System (DGPS).

**I.2** In accordance with the Field Procedures Manual, the maximum expected positional error (EPE) for this survey was 15 meters (1.5 mm at a scale of 1:10,000). Therefore the maximum allowable horizontal dilution of precision (HDOP) for this survey was 3.7, based upon the following formula:

$$\text{HDOP}_{\max} = \frac{\text{EPE}_{\max}}{(\text{ESE}^2 + \text{EDE}^2)^{1/2}}$$

In accordance with the Field Procedures Manual, the assumed estimated system error (ESE) was 4.0. The project instructions indicated that an ESE of 2.5 was allowable when using the VHF fly-away reference station for positioning; however since this station was used primarily for GPS performance checks and not for position control, an ESE of 4.0 was used consistently throughout the survey. The estimated distance error (EDE) is calculated as 2 meters per 100 nmi from the reference station. No position in this survey exceeded 9.7 nautical miles from the reference station; therefore the estimated distance error was negligible.

On no occasions did the HDOP exceed the maximum value of 3.7. In most instances it remained well below a value of 2.6, and usually was between 1.0 and 2.0. On several occasions the HDOP fell below 1.0, indicating extremely accurate DGPS positioning. Therefore, the EPE remained well below the maximum value of 15 meters, and positioning accuracy standards were met as described in the Field Procedures Manual and the Hydrographic Manual.

On day number 158 (7 JUN 94), MT MITCHELL encountered electronic problems with both the HF and VHF reference stations, resulting in a loss of the signal. When HDAPS loses GPS positioning correctors, it computes positions by dead-reckoning (DR), based upon the course and speed of the vessel at the time the signal was lost. When this occurs longer than 30 seconds, HDAPS assigns a fix number to the last selected sounding and ends data collection. Because the accuracy of DR'd positions is questionable, data with more than one consecutive DR'd selected sounding was rejected and re-run.

I.3 The following table summarizes the manufacturer, model number, and serial number of all DGPS equipment used in this survey:

**HF SHORE STATION:**

<u>Equipment and Manufacturer</u>	<u>Model</u>	<u>Serial No.</u>	<u>Dates Used</u>
Ashtech GPS receiver	M-XII	700354B2504	03 MAY - 06 JUN
HF transceiver	LRD-2	613	03 MAY - 06 JUN
GPS antenna		70228D2311	03 MAY - 06 JUN

**VHF SHORE STATION:**

<u>Equipment and Manufacturer</u>	<u>Model</u>	<u>Serial No.</u>	<u>Dates Used</u>
Ashtech GPS receiver	M-XII	700354B2503	03 MAY - 06 JUN
TAD VHF transmitter	MD-150	57531	03 MAY - 06 JUN
GPS antenna		70228D2317	03 MAY - 06 JUN

## SURVEY VESSELS:

<u>Vessel No.</u>	<u>Mfr. and Model</u>	<u>S / N</u>	<u>Dates Used</u>
2220	Ashtech DGPS receiver	700417B1196	20 MAY - 21 MAY
2220	LRD-1 HF receiver	A002719	20 MAY - 21 May
2220	GPS Antenna	not recorded	20 MAY - 21 MAY
2224	Ashtech DGPS receiver	A000436	05 JUN - 07 JUN
2224	LRD-1 HF receiver	A006148	05 JUN - 07 JUN
2224	Maxon VHF receiver	A004831	05 JUN - 07 JUN
2224	GPS Antenna	700378A0468	05 JUN - 07 JUN
2225	Ashtech DGPS receiver	A000434	18 MAY - 07 JUN
2225	LRD-1 HF receiver	A002720	18 MAY - 07 JUN
2225	Maxon VHF receiver	20813457	18 MAY - 07 JUN
2225	GPS Antenna	700391A0517	18 MAY - 07 JUN

I.4 DGPS performance checks were performed on day numbers 138, 143, 146, 152, 155, 156 and 158, using the following method. Two launches would lay side-by-side, dead in the water, with their respective GPS antennas as close as sea conditions would allow. One vessel would use the HF station and the other the VHF for control. The vessels would then simultaneously "mark" their positions by dumping the on-line HDAPS screen to the printer. The eastings and northings were then entered into a *LOTUS 1-2-3* spreadsheet, which calculated the inverse distance between positions, to ensure that it did not exceed an  $EPE_{max}$  of 15 meters (1.5 mm at 1:10,000). The following constant values were used in the spreadsheet:

<u>Reference Station</u>	<u>ESE</u>	<u>EDE</u>	<u>MAX HDOP</u>
HF fly-away	4.0	0.0	3.0
VHF fly-away	4.0	0.0	3.0

There were a total of seven performance checks during this survey, none of which failed. The maximum inverse distance noticed between antennas was 5.87 meters, well below the maximum EPE of 15 meters. The average number of days between performance checks was 3.3.

## J. SHORELINE

This sheet contains no shoreline.

## **K. CROSSLINES**

**K.1** Crosslines on survey H-10539 equaled 9.7 percent of total mainscheme hydrographic coverage. All crosslines were run perpendicular to mainscheme lines, except the crossline run on the range on the centerline of Egmont Channel, which had a head of 263 T.

**K.2** Apart from the spoil areas and Egmont Channel, the bottom on this sheet was gently sloped. Agreement of crosslines was excellent in all areas, with all of the 721 intersections agreeing within 0.4 meters and the majority within 0.3 meters.

**K.3** Because the agreement of crosslines was excellent, no reconciliation of differences was necessary.

**K.4** The vessel used to run crosslines was the same vessel used to run mainscheme hydrography.

## **L. JUNCTIONS *SEE ALSO THE EVALUATION REPORT.***

**L.1** Survey H-10539 junctions with survey H-10536 (1:10,000, April-June 1994) along its entire eastern edge. These two surveys were conducted concurrently by MT MITCHELL. The area of overlap is bounded by longitudes 82°50'42.4"W and 82°50'30.0"W.

**L.2** All soundings outside of the delineated spoil area in this junction agreed within 0.3 meters. Within the spoil area, soundings differed by as much as 0.6 meters, but still generally agreed within 0.3 meters. The greater differences can be attributed to a combination of the extremely irregular contour within the spoil area, and slight differences in tracks between vessels used in each of the surveys. An examination of the fathometer traces within this area reveals that these spoil areas are littered with "peaks" and "deeps." Sounding lines run by launches used in each of the surveys may not have hit exactly on the same location of each "peak" or "deep."

**L.3** The slight differences mentioned above at the junction of these two surveys were not deemed significant enough to warrant further investigation.

**L.4** No adjustments to soundings, depth curves, or features are recommended at this junction.



**M. COMPARISON WITH PRIOR SURVEYS** *SEE THE EVALUATION REPORT*

Prior survey comparison will be performed by the Atlantic Hydrographic Section, in accordance with project instructions. This survey contained no item investigations.

**N. ITEM INVESTIGATION REPORTS** *SEE ALSO THE EVALUATION REPORT.*

This survey contained no assigned AWOIS items.

**O. COMPARISON WITH CHARTS** *SEE ALSO THE EVALUATION REPORT.*

O.1 This survey affects the following NOS charts:

<u>Chart No.</u>	<u>Latest Edition</u>	<u>Scale</u>	<u>Date</u>
411	41st	1:2,100,000	2 FEB 91
11006	27th	1:875,000	2 OCT 93
11013	39th	1:200,000	25 APR 93
11400	28th	1:456,394	27 FEB 93
<del>11411 SC</del>	<del>8th</del>	<del>1:40,000</del>	<del>14 NOV 92</del>
11412	35th	1:80,000	24 APR 93
11414	34th	1:40,000	9 JAN 93
11420	21st	1:470,940	10 AUG 91

There were no Notice to Mariner updates corresponding to these charts during the time of this survey.

O.2 a. No danger to navigation reports were filed by MT MITCHELL pertaining to this survey.

b. Side scan sonar operations on this survey discovered a number of significant contacts which, based upon shadow length, were possibly dangers to navigation. These items were discovered late in SSS operations, just shortly before the scheduled departure of MT MITCHELL from Tampa Bay. Two contacts, numbers 5149.00 and 8009.26, were further developed using SSS, and number 8009.26 was also further developed by echo-sounder (refer to separate V\* for SSS contact tables). MT MITCHELL planned to dive on these two items on day number 158 (7 JUN) or day number 159 (8 JUN), but weather conditions on these days precluded diving operations. MT MITCHELL sailed from Tampa Bay on day number 159; therefore there was not another opportunity to dive upon these items. Time constraints also

precluded further investigation of additional SSS contacts. The table below summarizes the estimated height of contacts deemed significant, based upon contact height as calculated using SSS shadow length, and a subjective evaluation of the sonargram.

<u>Contact No.</u>	<u>Height(m)</u>	<u>Easting</u>	<u>Northing</u>
5034.63	3.2	22648.3	14053.4
5149.0	1.0	28525.9	14719.0
8009.26	1.3	28480.3	14507.9
8099.64	2.5	26174.0	14343.0
8253.38	1.7	28324.9	14275.7
8259.82	1.9	25116.7	13905.3

A SSS contact plot is included with the separates.

MT MITCHELL plans to investigate these items further when she returns to Tampa Bay in April 1995.

**O.3** This section includes a comparison of this survey with charts 11412 and 11414 only. The remaining charts affected by this survey are at a scale too small to allow a meaningful comparison.

a. In gently sloping areas, agreement between soundings is satisfactory, with charted soundings generally within one foot of observed soundings. Differences within and adjacent to Egmont Channel, and near charted spoil areas, are discussed below.

b. Within the portion of Egmont Channel not maintained by the USACE, observed soundings were consistently 0.3 meters shoaler than charted soundings, indicating possible accretion of sediment within the channel. In areas directly adjacent to Egmont Channel, observed soundings were consistently 0.9 meters deeper than charted soundings. Line spacing in these areas was reduced to 50 meters to ensure adequate coverage.

c. South of Egmont Channel, it appears that spoil material has been dumped outside of the delineated spoil areas, causing observed soundings in some cases to be 3.7 meters shoaler than charted soundings. This was determined from the fathograms of sounding lines run in these areas, which are very similar in appearance to fathograms from lines run within charted spoil areas. Line spacing was reduced to 25 meters in these areas to ensure adequate coverage.

d. In the portion of Egmont Channel maintained by the USACE, observed soundings in all cases were equal to or deeper than the controlling depths of the channel.

e. In Egmont Channel, in addition to reducing line spacing to 50 meters, additional lines were run along the range line marking the channel centerline, and along the outer edges of the channel.

- O.4 a. Apart from floating aids to navigation and bottom samples, no other non-sounding features are present in this survey.
- b. No charted PA, ED, or PD items are within the survey limits.
- c. No wrecks or obstructions were found during survey operations.

O.5 No changes to scale, coverage, or format are recommended for charts affected by this survey.

**P. ADEQUACY OF SURVEY** *SEE ALSO THE EVALUATION REPORT.*

This survey is incomplete. Hydrography is adequate and complete for purposes of updating soundings on nautical charts affected by this survey. Hydrography within charted spoil areas may be insufficient to remove spoil areas from the chart and replace with soundings. MT MITCHELL had planned to survey the spoil areas at a line spacing of 25 meters, but due to time and weather constraints, only 50 meter line spacing was accomplished. Because of the irregular nature of the bottom in these spoil areas, this amount of coverage may be insufficient.

SSS coverage is also incomplete. MT MITCHELL nearly completed 100% coverage, and accomplished only a small portion of 200% coverage. There were, as previously discussed, several significant sonar contacts which were not properly investigated.

**Q. AIDS TO NAVIGATION**

Q.1 There was no correspondence between MT MITCHELL and the U.S. Coast Guard regarding the location, maintenance, or establishment of floating aids to navigation within the limits of this survey.

Q.2 The following table is a comparison between the charted position and surveyed position of floating aids to navigation located within the survey limits. This survey contains no fixed aids to navigation. *THESE AIDS APPEAR ADEQUATE TO SERVE THEIR INTENDED PURPOSES.*

<u>Floating ATON</u>	<u>Charted Position</u>	<u>Survey Position</u>	<u>Difference (m)</u>
G "5" <i>LIGHTED WHISTLE "5"</i>	27-35-54.6N 82-55-35.1W	27-35-55.4N 82-55-28.3W	209.9
R "6" <i>LIGHTED "6"</i>	27-35-47.0N 82-55-34.0W	27-35-43.1N 82-55-32.6W	128.1
G "7" <i>LIGHTED "7"</i>	27-36-05.8N 82-53-51.5W	27-36-05.1N 82-53-52.1W	27.2
R "8" <i>LIGHTED BELL "8"</i>	27-35-57.0N 82-53-51.1W	27-35-54.5N 82-53-53.1W	99.0
G "9" <i>LIGHTED WHISTLE "9"</i>	27-36-15.1N 82-52-09.9W	27-36-15.3N 82-52-02.8W	220.7
R "10" <i>LIGHTED "10"</i>	27-36-06.9N 82-52-07.8W	27-36-06.7N 82-52-09.6W	54.6
G "11" <i>LIGHTED "11"</i>	27-36-20.2N 82-50-25.4W	27-36-25.4N 82-50-25.3W	159.9
R "12" <i>BELL "12"</i>	27-36-16.8N 82-50-24.5W	27-36-17.4N 82-50-24.7	20.4

**Q.3** No floating aids to navigation exist on this survey sheet which are not in the Light List. The characteristics of all floating aids to navigation (light and sound) are described correctly in the light list and on the nautical chart.

**Q.4** There are no bridges, overhead cables, or overhead pipelines within the survey limits.

**Q.5** There are no submarine cables, pipelines, or ferry routes within the survey limits.

## **R. STATISTICS**

<u>Statistic</u>	<u>2220</u>	<u>2221</u>	<u>2224</u>	<u>2225</u>	<u>Total</u>
Positions	24	0	367	2417	<b>2808</b>
Linear NMi Hydrography	0	0	0	372.2	<b>372.2</b>
Square NMi Hydrography	0	0	0	14.0	<b>14.0</b>
Linear NMi SSS	0	0	69.2	75.9	<b>145.1</b>
Square NMi SSS	0	0	6.1	7.9	<b>14.0</b>
Production Days	2	2	3	15	<b>17</b>
Detached Positions	0	0	0	8	<b>8</b>
Bottom Samples	24	0	0	32	<b>56</b>
Velocity	0	2	0	0	<b>2</b>

## **S. MISCELLANEOUS** *SEE ALSO THE EVALUATION REPORT.*

### **S.1 Items of significant scientific value**

- a) No silting was noticed during this survey.
- b) No unusual submarine features were discovered during this survey.
- c) No anomalous tide conditions were discovered during this survey.
- d) No strong currents were noticed within the survey limits.
- e) No magnetic anomalies were noticed at any time during this survey.

S.2 Bottom samples acquired in this survey have been submitted to the Smithsonian Institution in accordance with project instructions. A copy of the transmittal letter is included in Separate 2.

## **T. RECOMMENDATIONS**

T.1 MT MITCHELL should complete 200% side scan sonar coverage and resolve contacts when she returns to Tampa Bay in 1995. Hydrography within spoil areas can also be augmented at this time.

T.2 MT MITCHELL knows of no planned dredging within the limits of this survey.

T.3 There were no unusual conditions or sea features which require further investigation.

## **U. REFERRAL TO REPORTS**

The following reports are not included with the survey records:

Horizontal Control Report.

**SUBMITTAL SHEET**

**Survey H-10539**

This descriptive report accurately describes all activities pertaining to the control, collection, and processing of data for this survey, and is respectfully submitted by

*E.J. Van Den Ameele*

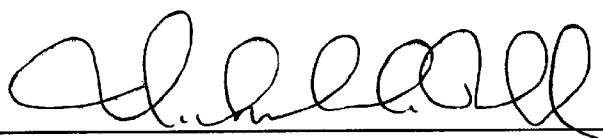
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Ensign Edward John Van Den Ameele, NOAA

**Letter of Approval**

**Registry Number H-10539**

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report, final field sheets, and all accompanying data have been closely reviewed and are considered complete and adequate for nautical charting.



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Captain Nicholas A. Prah, NOAA  
Commanding Officer  
NOAA Ship MT MITCHELL



## Horizontal Control Stations

### Station TAMPA PILOTS (#AG9476)

LAT: 27° 35' 06.21396" N  
LONG: 082° 45' 40.51161" W

ANTENNA ELEVATION: -14.2 meters

SOURCE: NGS Database, established in 1981

### Station EGMONT KEY LH ECC (#AG9474)

LAT: 27° 36' 02.89170" N  
LONG: 082° 45' 38.39070" W

ANTENNA ELEVATION: -1.0 meters

SOURCE: NGS Database, established in 1981

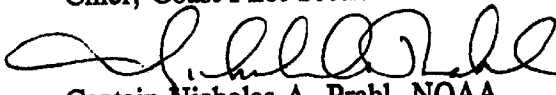
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UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic Atmospheric Administration  
Office of NOAA Corps Operations  
NOAA Ship MT. MITCHELL S-222  
439 W. York Street  
Norfolk, VA 23510-1114

June 28, 1994

MEMORANDUM FOR: Thomas Jackson  
Chief, Coast Pilot Section

FROM:   
Captain Nicholas A. Prahl, NOAA  
Commanding Officer  
NOAA Ship MT MITCHELL

SUBJECT: Coast Pilot Report for Hydrographic Project OPR-J343-MI-94,  
Approaches to Tampa Bay, Florida

The survey was conducted from 23 April - 08 June. During this period survey operations covered Egmont channel near buoys 5 and 6 east to buoys 21 and 22 in Mullet Key channel. The Southwest channel and anchorage east of Egmont Key were also covered. Other observations were made during the transits of the ship to port at St. Petersburg.

The Coast Pilot reviewed for the project area was Coast Pilot 5, 24th Edition, 1993. Items of note are listed here with the affected page and paragraph numbers.

Page 128, (17): The radiobeacon on the North end of Egmont Key began transmissions as a differential GPS beacon in April of this year at 310.0 KHz and 200 bps. The reference station equipment is supplied and maintained by the state of Florida, and the U.S. Coast Guard has allowed the equipment to be connected to the marine beacon. This beacon will not be part of the final Coast Guard network of differential beacons. A new beacon will be established at another location in the future. The beacon tower is a red and white painted metal structure approximately 25 meters east of the Egmont Key Light.

The buildings near the center of Egmont Key are no longer part of a Coast Guard station. There is one building designated as the Tampa Bay Pilots dispatch station. Several other small buildings are temporary homes for pilots. In addition, the pilot boats are docked at the pier at this center inshore part of the key. Depths of 3.5 meters were reported at the pier. There is a prominent communications tower near the pilot station lookout tower.

Shoaling exists at the small pier just inside the north end of the key. Depths of 2.5 meters or less were observed by MT MITCHELL personnel.

Small recreational vessel traffic were observed as heavy during the weekends and holidays of the survey period primarily near the state parks of Egmont and Mullet keys.



Page 128, (18): The water tank shape on St. Jean Key should be noted as spherical supported by one column. A tower with red aircraft warning lights stands out near the north end of Mullet Key, approximate position 27° 38.6' N, 82° 44.2' W, determined by MT MITCHELL anchor bearings.

Page 129, (79): In the vicinity of buoys 7 & 8 of Egmont channel, depths as shallow as 7.7 meters were observed extending from the spoil areas northward to the southern edge of the channel.

Page 129, (81): Reported shoaling position was observed at 27° 36.1' N, 82° 44.3' W with depths as shallow as 7.3 meters.

Page 129 (85): A Physical Oceanographic Real Time System (PORTS) has been established in Tampa Bay. The system provides real time current, water level, and wind measurements at multiple locations. Data is disseminated by telephone voice response on 813-822-5836, as well as modem dial up on 813-822-5931, 8 data bits, 1 stop bit, no parity, keyword PORTS. In addition, Tampa Bay PORTS data are broadcast over NOAA weather Radio hourly.

Page 130, (93): The pilot boats TAMPA and ST. PETERSBURG are no longer used. The boats kept at the pilot station and used to transfer pilots to vessels are named MANATEE, DE SOTO, and EGMONT.

Page 130, (95): Vessels are requested to have pilot ladders 2.5 meters above the water.

Page 138, (256): There is an airport runway near the entrance to the Port of St. Petersburg with low flying private aircraft.

**SPECIAL NOTE: Survey data (depths) are subject to final verification.**

H-10539

GEOGRAPHIC NAMES

Name on Survey	A CHART NO. 11414, 11412, 11400 B ON PREVIOUS SURVEY 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										
	A	B	C	D	E	F	G	H	K		
EGMONT CHANNEL	X		X							1	
EGMONT KEY (title)	X		X							2	
FLORIDA (title)	X		X							3	
MEXICO, GULF OF	X		X							4	
PALATINE SHOAL	X		X							5	
										6	
										7	
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										25	

Approved

*Charles Conroy*

Chief Geographer

JUN 14 1996

# DESCRIPTIVE REPORT ADDENDUM

to Hydrographic Survey

**MI-10-03-94**

**H-10539**

Tampa Bay and Approaches

Gulf of Mexico

Florida

MT. MITCHELL conducted survey work on H-10539 in 1994. The survey was not completed. Only the first 100% side scan was completed before MT. MITCHELL departed the survey area. This addendum describes the field work conducted in 1995 to complete the survey.

H-10539

HYDROGRAPHIC TITLE SHEET

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 NUMBER:

MI-10-03-94 (B)

State: Florida

General locality: Tampa Bay GULF OF MEXICO

Locality: 5 Nautical Miles West of Egmont Key

Scale: 1: 10,000 Date of survey: 02 May to 25 July 1995

Instructions dated: 03 March 1995 & 30 March 1995 Project Number: OPR-J343-MI-95

Vessel: NOAA Ship MT MITCHELL S-222

Chief of Party: CDR Roger L. Parsons

Surveyed by: J.A. Ferguson, T. Duffy, E. J. Van Den Ameele, J.D. Swallow, J.A. Mann, E.J. Sinos, R.H. Aldridge, R.C. Jones, S.A. Shaulis, U.L. Gardner, Jr., P.G. Lewit, M.J. Annis, E.R. Yniguez, C.A. Neely, S. L. Scherer, M.S. Platz, and M. Wiseman.

Soundings taken by echo sounder, hand lead-line, or pole: DSF 6000N fathometer

Electronic record scaled by: MT MITCHELL personnel

Electronic record checked by: MT MITCHELL personnel

Protracted by: N/A Automated plot by: ENCAD NOVAJET III (AHB)  
Zeta 936 Plotters (FIELD)

Verification by: Hydrographic - Surveys Branch ATLANTIC HYDROGRAPHIC BRANCH PERSONNEL

Soundings in: Feet:  Fathoms:  Meters:  at MLW:  MLLW:

Remarks: Basic Hydrographic and 200% Side Scan Sonar coverage of Safety Fairway.

Electronic Data Processing (EDP) numbers involved in data acquisition: 2223, 2224, and 2226.

Time zones used: +0 for data collection and tidal data.

Survey work began in 1994 and completed in 1995.

This Descriptive Report Addendum describes work conducted in 1995.

NOTES IN RED WERE MADE DURING OFFICE PROCESSING

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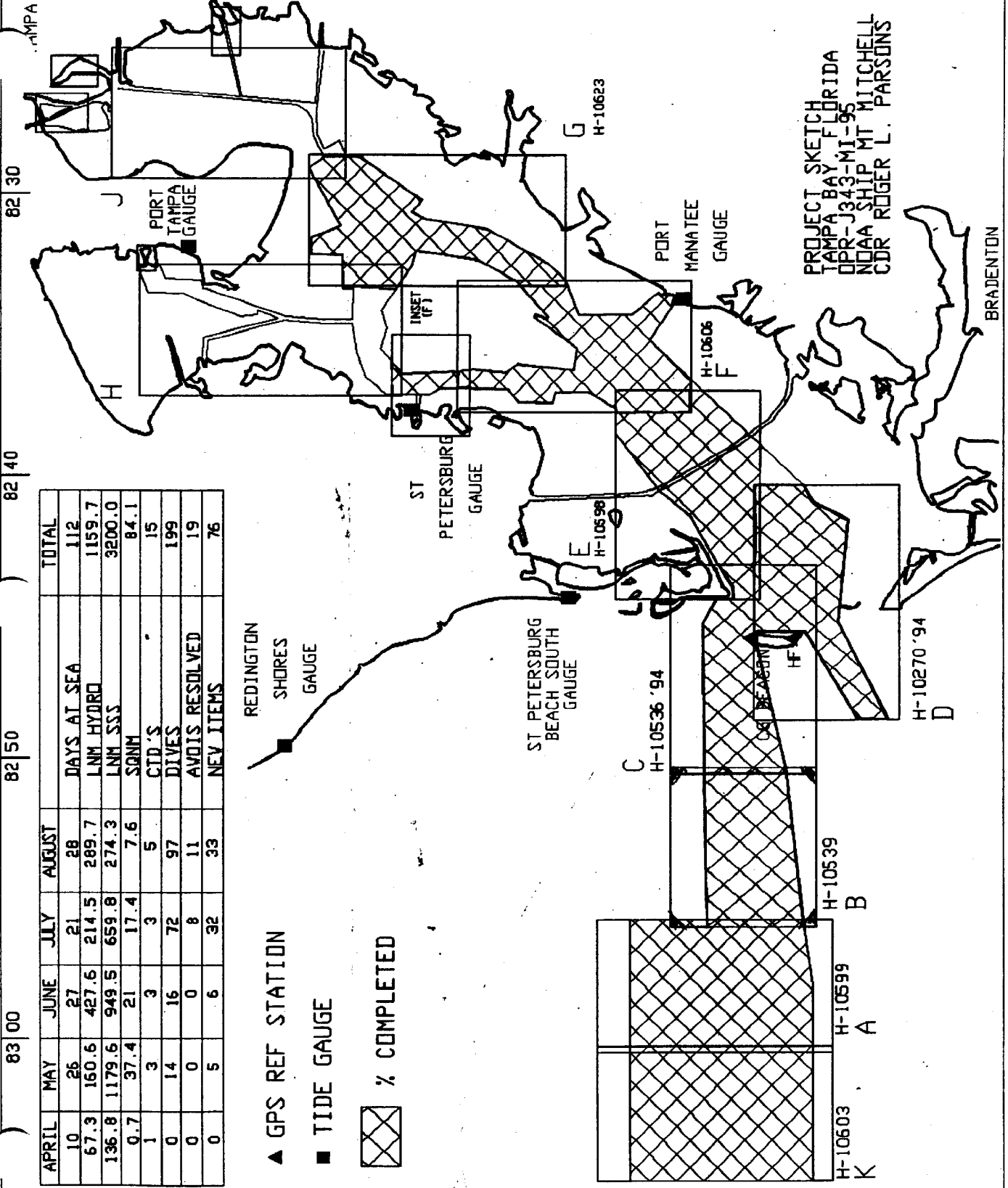
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### Appendices

- I. Danger to Navigation Reports/ Dive Investigation Reports \*
- II. Non-Floating Aids and Landmarks for Charts \*
- III. List of Horizontal Control Stations
- IV. Geographic Names (*FIELD*) \*
- V. Tides and Water Levels \*
- VI. Supplemental Correspondence \*
- VII. Approval Sheet

APRIL	MAY	JUNE	JULY	AUGUST	TOTAL
10	26	27	21	28	112
67.3	160.6	427.6	214.5	289.7	1159.7
136.8	1179.6	949.5	659.8	274.3	3200.0
0.7	37.4	21	17.4	7.6	84.1
1	3	3	3	5	15
0	14	16	72	97	199
0	0	0	8	11	19
0	5	6	32	33	76

- ▲ GPS REF STATION
- TIDE GAUGE
- ▣ % COMPLETED



PROJECT SKETCH  
 TAMPA BAY FLORIDA  
 OPR- J343-MI-95  
 NOAA SHIP MT MITCHELL  
 CDR ROGER L. PARSONS

BRADENTON



## **A. PROJECT**

This survey was conducted in accordance with Project Instructions OPR-J343-MI. The original date of these project instructions is March 8, 1994. A new set of project instructions was issued for calendar year (CY) 1995 operations, dated March 3, 1995. Change number 1, dated March 30, 1995, altered the tide gauge requirements for the project.

This survey was assigned sheet letter B in the Project Instructions.

## **B. AREA SURVEYED**

No change to area surveyed, refer to original Descriptive Report (DR).

Survey operations in 1995 began on May 2 (DN 122) and concluded on July 25 (DN 206).

## **C. SURVEY VESSELS**

The following vessels participated in this survey during 1995 operations:

<u>Vessel</u>	<u>Electronic Data Processing Number</u>	<u>Primary Function</u>
MT. MITCHELL	2220	Data Processing
JENSEN LAUNCH 1004 (MI-3)	2223	Side Scan Sonar, Hydrography
JENSEN LAUNCH 1002 (MI-4)	2224	Dive support, Detached Position
JENSEN LAUNCH 1008 (MI-6)	2226	Dive support, Detached Position, Side Scan Sonar

There were no unusual vessel configurations used for data acquisition during the survey. No problems were encountered with the standard launch stern tow of the side scan sonar towfish.

## **D. AUTOMATED DATA ACQUISITION AND PROCESSING** *SEE ALSO THE EVALUATION REPORT.*

Survey data acquisition and processing were accomplished using the HDAPS system with the

following software versions:

<u>Program Name</u>	<u>Version</u>	<u>Date Installed</u>
BACKUP	2.00	March 8, 1995
BASELINE	1.14	March 8, 1995
BIGABST	2.07	March 8, 1995
BIGAUTOST	3.01	March 8, 1995
BLKEDIT	2.02	March 8, 1995
CARTO	2.17	March 8, 1995
CLASSIFY	2.12	April 12, 1995
CONTACT	2.48	April 12, 1995
CONVERT	3.65	March 8, 1995
DAS_SURV	6.80	April 12, 1995
DIAGNOSE	3.05	March 8, 1995
DISK_UTIL	1.00	March 8, 1995
DP	2.18	March 8, 1995
DPCONVERT	1.03	March 8, 1995
DSNEDITS	1.04	March 8, 1995
EXCESS	4.32	March 8, 1995
FILESYS	3.31	March 8, 1995
GRAFEDIT	1.06	March 8, 1995
HIPSTICK	1.01	March 8, 1995
HPRAZ	1.26	March 8, 1995
INVERSE	2.02	March 8, 1995
LISTDATA	1.02	March 8, 1995
LOADNEW	2.13	March 8, 1995
LSTAWOIS	3.10	March 8, 1995
MAINMENU	1.20	March 8, 1995
MAN_DATA	3.02	March 8, 1995
NEWPOST	6.13	March 8, 1995
PLOTALL	2.32	March 8, 1995
POINT	2.12	March 8, 1995
PREDICT	2.01	March 8, 1995
PRESURV	7.11	March 8, 1995
PRINTOUT	4.04	March 8, 1995
QUICK	2.07	March 8, 1995
RAMSAVER	1.02	March 8, 1995
REAPPLY	2.12	March 8, 1995
RECOMP	1.04	March 8, 1995
SCANNER	1.00	March 8, 1995
SELPRINT	2.05	March 8, 1995
SYMBOLS	2.00	March 8, 1995
VERSIONS	1.00	March 8, 1995

*SHIPDIM* version 2.1 and a LOTUS 1-2-3 spreadsheet were used to compute DGPS performance checks.

Two programs were used to compute velocity correctors: *VELOCITY* (Ver. 2.11), dated September 21, 1994, and *CAT* (Ver. 2.00), dated December 18, 1992.

## **E. SIDE SCAN SONAR EQUIPMENT**

Identical procedures, line spacing, configurations and equipment types were used as described in the 1994 DR. Equipment serial numbers for 1995 operations follow:

<u>Vessel Number</u>	<u>Equipment Type</u>	<u>Serial Number</u>	<u>Days Used</u>
2223	EG&G Recorder	12102	122-206
2223	EG&G Towfish	10823	122-145
2223	EG&G Towfish	11591	151-206
2226	EG&G Recorder	16669	122-206
2226	EG&G Towfish	11904	122-206

200% side scan coverage of the survey area was completed. Several small gaps in the 100% coverage run in 1994 were filled in 1995.

All contacts detected during side scan sonar operations were entered into contact tables in the HDAPS system. Fatho spikes were entered as contacts (tables one and two) for correlation with side scan contacts (tables three through seven). 1994 contacts (tables 17 and 18) were loaded on the system so that a final contact correlation between 1994 and 1995 data could be made. Significant contacts were developed and/or investigated by divers. Section N has a complete description of item investigations.

## **F. SOUNDING EQUIPMENT**

Identical procedures, configurations and equipment types were used as described in the 1994 DR. The following list summarizes the serial numbers and dates of the Raytheon DSF6000N fathometers used during 1995 operations.

<u>Vessel Number</u>	<u>Serial Number</u>	<u>Days Used</u>
2223	B046N	122-135

2223	B053N	137-143
2223	B047N	144-151
2223	B054N	152-193
2223	A108N	194-202
2223	B047N	202-206
2224	B054N	122-138
2224	B053N	151-206
2226	B047N	122-141
2226	B046N	142-206

A MOD III diver's depth gauge (S/N 68337) was used during 1995 operations. *SMLGAUGE* Version 2.2 program was used to compute the least depths from readings of the MOD III obtained during dives. System checks on the fathometers were performed using lead lines. These lines were calibrated as per instructions in the Hydrographic Manual section 7.2.1.2. Refer to **Separate IV**\* for calibration data and the list of lead line checks.

## **G. CORRECTIONS TO SOUNDINGS**

Identical procedures and equipment were used as described in the 1994 DR. For detailed information and tables used to determine corrections to soundings in 1995, refer to **Separate IV**\* "Sounding Equipment Calibrations and Corrections".

The Seacat units were recalibrated on February 24, 1995. A Data Quality Assurance (DQA) Test was conducted with each velocity cast to ensure the meter was within tolerance. DQA tests were done with hydrometers calibrated by using standards of the National Institute of Standards and Technology which conforms to and satisfy the requirements set for this project. Refer to **Separate IV**\* for dates and positions of casts and for sound velocity correctors applied to this survey in 1995.

The static draft of the launches (VesNos. 2223, 2224, 2226) were redetermined in February, 1995. A calibrated steel tape was used to measure the distance from the transducer to a reference line on the launch above the waterline. The launches were then put in the water and the distance from the waterline to the reference line was measured. Static drafts were used in HDAPS offset tables online and during post-processing for all launches. Refer to **Separate III**\* for the offset tables. There was no significant difference between the static draft measured in the Elizabeth River and the static draft measured in the project area.

Settlement and squat correctors for each launch were determined, using procedures outlined in the Hydrographic Manual, on the Elizabeth River in 1995 (2223 and 2226 in February, 2224 in April). An observer, stationed with a level on a pier, measured changes in relative height

*\* FILED WITH THE ORIGINAL FIELD DATA.*

as each launch ran toward and away from the observer at various speeds. Settlement and squat correctors were applied to soundings through the HDAPS offset table. Refer to **Separate IV \*** for results of the static and dynamic draft determinations.

Pneumatic depth gauges were not used during this survey. The MOD III pressure gauge was used for least depth determination during diver investigations. A DQA was performed once daily during non-dive days and before and after dive operations on dive days. The DQA was performed by comparing the MOD III gauge to the ship's barometer and entering the readings into the *DAILYDQA* program. A printout was produced for each check. Copies are included in **Separate IV. \***

The tidal datum for this project is Mean Lower Low Water (MLLW). Predicted tides from a gage at Clearwater Beach, Florida (872-6724) were provided on magnetic (floppy) disk before the start of 1995 operations. Water levels were monitored for the primary gage at Redington Beach (872-6575) and at a secondary gage (872-6430) which was located at St. Petersburg Beach. Refer to **Appendix V** for a description of these gages. *APPROVED TIDES WERE APPLIED DURING OFFICE PROCESSING*

The data from the disk were used to generate predicted tide correctors for the tide tables. The tide tables were applied on-line and during processing of sounding data. A copy of the tide tables is included in **Separate IV. \***

Zoning was required for this project. This survey was all inclusive of zone two. This zone required a -10 minute time correction and a 0.75 range ratio to the predicted tides at Clearwater Beach (872-6724). Refer to **Appendix V** for more information about this zone.

## **H. CONTROL STATIONS** *SEE ALSO THE EVALUATION REPORT.*

MT. MITCHELL personnel reestablished the HF DGPS reference station on horizontal control point TAMPA PILOTS for 1995 operations. In addition, a United States Coast Guard (USCG) differential beacon on Egmont Key was available.

Station TAMPA PILOTS on Egmont Key, Florida was recovered and position reverified by MT. MITCHELL personnel in April, 1995. This position was used to set up a NOAA High Frequency (HF) DGPS system for secondary position control of the project. Program *MONITOR* version 3.0 was run for 24 hours once the system was established to confirm the position and ensure that no multi-path or other site specific problems existed. This was done by setting up an Ashtech M-XII receiver connected to a Magnavox MX-50R beacon receiver over the mark and comparing the known position to the computed position. The MX-50R received differential correctors from the U.S. Coast Guard beacon on Egmont Key. See **Appendix III** for the *MONITOR* output.

## **I. HYDROGRAPHIC POSITION CONTROL**

The primary method of sounding position control was Differential Global Positioning System (DGPS). The United States Coast Guard differential beacon on Egmont Key was used as the primary source of differential correctors. Identical field procedures were used as described in the original DR. In addition, MT. MITCHELL monitored two reference stations and recorded performance checks with the SHIPDIM program Version 2.1 during all periods of hydrography. The outlier files produced by the program were reviewed daily. A printed copy of the performance checks and all performance checks conducted by the launches are included in **Separate III**. *FILED WITH THE ORIGINAL FIELD RECORDS*

The following table summarizes the manufacturer, model number, and serial number of all DGPS equipment used in this survey:

The NOAA HF DGPS shore system consists of :

Ashtech M-XII GPS receiver	S/N 700354B2501
L1/L2 GPS antenna	S/N 700228D2311
Raytheon 152 transceiver	S/N BS29252
LRD-2 Long Range Data Modulator	S/N 606, DN 122-159
	S/N 613, DN 159-206

On each launch there is an Ashtech GPS receiver, a Magnavox MX-50R DGPS beacon receiver for U.S.C.G. differential beacons, and a LRD-1 long range data receiver for the NOAA HF DGPS system. The ship also has the same equipment but is set up to monitor two reference stations simultaneously. The units used are as follows:

<u>VESSEL</u>	<u>MODEL</u>	<u>S/N</u>
2220	Ashtech M-XII GPS Receiver "A"	700417B1129
	Ashtech M-XII GPS Receiver "B"	700417B1004
	Magnavox MX-50R Beacon Receiver "A"	315
	Magnavox MX-50R Beacon Receiver "B"	316
	LRD-1 HF Receiver	205
	GPS Antenna (starboard)	700391A0270
	GPS Antenna (port)	700391A0451
2223	Ashtech M-XII GPS Receiver	700417B1196
	Magnavox MX-50R Beacon Receiver	168
	LRD-1 HF Receiver	249
	GPS Antenna	700371A0533
2224	Ashtech M-XII GPS Receiver	700417B1190
	Magnavox MX-50R Beacon Receiver	207

	LRD-1 HF Receiver	250
	GPS Antenna	700378A0468
2226	Ashtech M-XII GPS Receiver	700417B1197
	Magnavox MX-50R Beacon Receiver	219
	LRD-1 HF Receiver	299
	GPS Antenna	700391A0232, DN 122-137
	GPS Antenna	700391A0509, DN 138-206

## **J. SHORELINE**

This sheet contains no shoreline.

## **K. CROSS LINES**

No change, refer to original DR. Soundings collected during 1995 operations compared well with soundings collected in 1994.

## **L. JUNCTIONS** *SEE ALSO THE EVALUATION REPORT.*

This survey junctions with survey H-10536 to the east as described in the original DR. In addition, the survey junctions with H-10599 to the west. Survey H-10599 is a 1:10,000 scale survey conducted in 1995 by MT. MITCHELL personnel. Comparison between the two surveys is excellent. Soundings generally agree to within 0.3 meters.

## **M. COMPARISON WITH PRIOR SURVEYS** *SEE ALSO THE EVALUATION REPORT*

No change, refer to original DR.

## **N. ITEM INVESTIGATION REPORTS**

A total of 198 contacts were entered into the HDAPS contact utility program during 1995 operations. The contacts were checked for correlation with other contacts and, if significant, were considered for development and diver investigation. If the contacts were insignificant they were labeled in the tables as 'NC' (No Correlation). Refer to **Appendix I**,\* for diver investigation forms and diver sketches. All least depths listed below are not corrected for tides.

*\* FILED WITH THE ORIGINAL FIELD RECORDS*

**Item B-1**

**Location:** Extends from 27/35/55 N 082/53/53 W  
to 27/35/58 N 082/53/35 W

**Type of Feature:** Ridge located near channel.

**Description:** Several contacts were found during main scheme side scan operations. Several developments were run (position numbers 1004-1012, 1885-1887, 1888-1897). A ridge that extends above the flat bottom was discovered. A fathometer development was run with 5 meter line spacing to ensure that the least depth of the ridge was covered (position numbers 2445-2467).

**Recommendation:** Chart least depth soundings after smooth tides applied and HDAPS EXCESS program is run. *CONCUR. CHART PRESENT SURVEY DEPTHS*

**Item B-2**

**Location:** 27/35/51.13 N 082/51/58.60 W

**Type of Feature:** Metal piping forming a 91M by 4M frame.

**Description:** Several contacts were found during main scheme side scan operations. A development was run (position numbers 1000-1003). A dive was conducted on DN 124. Divers found a large framing of pipe. Total dimensions were 91.4 meters (300 feet) by 4.3 meters (14 feet). The piping formed a large double ladder type formation (see diver's sketch). The item was located in a depression, therefore, the least depth was greater than the surrounding depths (detached position number 4).

**Recommendation:** Do not chart. The item could easily foul an anchor, however, it is located in the safety fairway, therefore, vessels should not be anchoring in the vicinity. Since it lays in a depression, it is not a hazard to navigation. *CONCUR*

**Item B-3**

**Location:** 27/36/02.41 N 082/53/35.19 W

**Type of Feature:** Rock.

**Description:** Several contacts were found during main scheme side scan operations. Two



developments were run (position numbers 1830-1839, 1949-1954). A dive was conducted on DN 190. Divers found a rock covered with coral 3.0 meters (10 feet) wide that extended 1.5 meters (5 feet) off the bottom. A MOD III divers depth gage was used to determine a least depth of 14.5<sup>13.8</sup> meters (47.6<sup>45</sup> feet) at 1452 UTC on DN 190. Position was determined by detached position number 1924.

Recommendation: Chart a sounding of 4<sup>5</sup> feet. Object is in the channel but is several feet below the controlling depth of Egmont channel (43 feet). Therefore, do not recommend charting an obstruction or rock symbol as it may confuse pilots and captains transiting the channel. *CONCUR.*

*and Add notation. rkey*

#### Item B-4

Location: 27/35/43.84 N 082/52/05.48 W

Type of Feature: Metal pipe.

Description: Several contacts were found during main scheme side scan operations. Two developments were run (position numbers 1840-1845, 1910-1913). A dive was conducted on DN 190. Divers found a length of pipe embedded in the bottom. The pipe was two feet in diameter, and extended out of the bottom at an angle. 16.8 meters (55 feet) was exposed and the least depth extended 1.2 meters (4 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of 8.0<sup>7.2</sup> meters (26.2<sup>25</sup> feet) at 1733 UTC on DN 190. Position was determined by detached position number 1929.

Recommendation: Chart an obstruction, least depth of 2<sup>3</sup> feet. *CONCUR. CHART AS 23 Obstrn*

#### Item B-5

Location: 27/35/58.08 N 082/51/57.70 W

Type of Feature: Metal Pipe.

Description: Several contacts were found during main scheme side scan operations. A development was run (position numbers 1846-1852). A dive was conducted on DN 190. Divers found a length of pipe laying on the bottom. The pipe was 31.4 meters (103 feet) long and the least depth extended 1.2 meters (4 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of 10.2<sup>10.1</sup> meters (33.3<sup>32</sup> feet) at 1848 UTC on DN 190. Position was determined by detached position number 1932.

Recommendation: Chart an obstruction, least depth of 33 feet. *CONCUR. CHART AS 33 Obstrn*

**Item B-6**

Location: 27/36/08.86 N 082/51/40.89 W

Type of Feature: Abandoned concrete anchor block.

Description: Several contacts were found during main scheme side scan operations. Several developments were run (position numbers 1853-1862, 1916-1920, 1955-1966). A dive was conducted on DN 203. Divers found an abandoned concrete anchor block with approximately 15 meters (50 feet) of chain attached extending 1.2 meters (4 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of 10.1 meters (33.1 feet) at 1830 UTC on DN 203. Position was determined by detached position number 12.

Recommendation: Chart an obstruction, least depth of 33 feet. *Do NOT CONCUR. CHART 33*  
~~SIGNAL SOUNDINGS OF 31 FEET IN VICINITY OF LAT: 27° 36' 06.82" N~~ *Obstr*  
~~LONG: 82° 51' 37.46" W~~

**Item B-7**

Location: 27/36/05.59 N 082/52/05.06 W

*LAT: 27° 36' 09" N*  
*LONG: 82° 51' 41" W*  
*GRM 9-9-96*

Type of Feature: Abandoned concrete anchor block.

Description: Several contacts were found during main scheme side scan operations. A development was run (position numbers 1914-1915). A dive was conducted on DN 190. Divers found an abandoned concrete anchor block. The anchor is 1.5 meters (5 feet) by 1.4 meters (4.5 feet) and extends 1.1 meters (3.5 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of 9.6 meters (31.5 feet) at 1810 UTC on DN 190. Position was determined by detached position number 1931.

Recommendation: Chart an obstruction, least depth of 31 feet. *CONCUR. CHART AS 31 Obstr*

**Item B-8**

Location: 27/35/42.99 N 082/53/26.49 W

Type of Feature: Pipe.

Description: Several contacts were found during main scheme side scan operations. A development was run (position numbers 1898-1903). A dive was conducted on DN 190. Divers found a pipe laying on the bottom. The pipe is 22.9 meters (75 feet) long and 0.6 meters (2 feet) in diameter. A MOD III diver's depth gage was used to determine a least

depth of <sup>12.5</sup> ~~13.1~~ meters (<sup>41</sup> ~~43.0~~ feet) at 1541 UTC on DN 190. Position was determined by detached position number 1926.

**Recommendation:** Do not chart. Extends less than a meter off the bottom. 50 meters to the east-southeast is a spoil mound (least depth 7.7 meters) which is more significant. *CONCUR (25 FT)*

**Item B-9**

**Location:** 27/35/59.46 N 082/54/05.82 W

**Type of Feature:** Rocks.

**Description:** Several contacts were found during main scheme side scan operations. A development was run (position numbers 1879-1884). A dive was conducted on DN 190. Divers found a scattered pile of rocks and coral. The pile was 21.9 meters (72 feet) by 3.0 meters (10 feet) and extended 0.9 meters (3 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of <sup>13.9</sup> ~~14.7~~ meters (<sup>48.8</sup> ~~48.2~~ feet) at 1407 UTC on DN 190. Position was determined by detached position number 1922.

**Recommendation:** Do not chart rock symbols. Extends less than a meter off the bottom and is deeper than the controlling depths of Egmont Channel. Chart sounding of <sup>48</sup> ~~48~~ feet. *CONCUR And, Add notation, rky.*

**Item B-10**

**Location:** 27/36/07.17 N 082/55/15.16 W

**Type of Feature:** Rock

**Description:** Several contacts were found during main scheme side scan operations. Two developments were run (position numbers 1863-1870, 1941-1948). A dive was conducted on DN 203. Divers found a large area of rock and coral. The largest rock measured 1.2 meters (4 feet) across and extended 1.2 meters (4 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of 13.2 meters (43.3 feet) at 1700 UTC on DN 203. Position was determined by detached position number 10.

**Recommendation:** Chart a submerged rock, least depth of <sup>2</sup> ~~43~~ feet. *DO NOT CONCUR. CHART AS A 42 FT SOUNDING. ADD NOTATION RKY IN VICINITY OF LAT: 27°36'07"N LONG: 82°55'09"W*

**Item B-11**

**Location:** 27/35/47.99 N 082/53/18.80 W

Type of Feature: Two rocks.

Description: Several contacts were found during main scheme side scan operations. A development was run (position numbers 1904-1909). A dive was conducted on DN 190. Divers found two rocks extending 1.5 meters (5 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of 11.0 meters (36.1 feet) at 1652 UTC on DN 190. Position was determined by detached position number 1928. *FATHOMETER DEPTH OF 10.1 M REDUCED TO 10.5 M (34 FT)*

Recommendation: Chart a submerged rock, least depth <sup>4</sup>36 feet. *CONCUR. CHART AS 34 RK*

*Depth hard, Sub within 1000 ft*

**Item B-12**

Location: 27/35/37.23 N 082/54/27.20 W

Type of Feature: Pile of rock, coral, rubble.

Description: Several contacts were found during main scheme side scan operations. A development was run (position numbers 1871-1878). A dive was conducted on DN 190. Divers found a pile of rocks covered in sea growth covering an area 4.6 meters (15 feet) by 3.0 meters (10 feet) and extending 0.9 meters (3 feet) off the bottom. A MOD III diver's depth gage was used to determine a least depth of <sup>12.3</sup>13.1 meters (43.0 feet) at 1327 UTC on DN 190. Position was determined by detached position number 1921.

Recommendation: Do not chart. Object extends less than a meter off the bottom and the least depth is not less than the controlling depth of Egmont Channel. Chart 43 foot sounding. *Do NOT CONCUR. CHART AS 40 RK.*

**Item B-13**

Location: 27/35/35.95 N 082/55/33.18 W

Type of Feature: Metal piping forming a 20M by 4M frame.

Description: Several contacts were found during main scheme side scan operations. A development was run (position numbers 1933-1940). A dive was conducted on DN 203. Divers found a framing of metal pipe 20.4 meters (67 feet) by 4.3 meters (14 feet) and extending 1.2 meters (4 feet) off the bottom. The piping formed a large double ladder type formation (see diver's sketch). B-13 is a short version of item B-2. A MOD III diver's <sup>FATHOMETER</sup> depth ~~gage~~ was used to determine a least depth of <sup>13.6</sup>13.5 meters (44.5 feet) at 1740 UTC on DN 203. Position was determined by detached position number 11.

Recommendation: Chart an obstruction, least depth of <sup>2</sup>44 feet. *Concur*

## Other Items Resolved With Fathometer Developments

### FATHO DEVELOPMENT 1.

Location: 27/35/34.3 N 082/55/21.5 W

Type of Feature: Fathometer detects pinnacle during main scheme side scan operations (position 1306.57).

Description: Fathometer development was run over the item (position numbers 2468-2483) on DN 206 at 5 meter line spacing. Detect a feature that extends 1.2 meters above the surrounding bottom. Least depth obtained at position 2476.13 (<sup>13.1</sup>12.9 meters (<sup>43</sup>42.3 feet) uncorrected raw fatho depth).

Recommendation: Chart a sounding of 4<sup>3</sup> feet (plus correctors). *CHART REPRESENTATIVE DEPTHS IN THIS AREA.*

### FATHO DEVELOPMENT 2.

Location: 27/35/43.0 N 082/53/24.7 W

Type of Feature: Fathometer detects two piles of probable spoil material during main scheme side scan operations (positions 1290.62 and 1290.72).

Description: Fathometer development was run over the item (position numbers 2484-2507) on DN 206 at 5 meter line spacing. Least depth of 8.4 meters (27.6 feet)(uncorrected raw fatho depth) obtained at position 2488.18.

Recommendation: Chart a sounding of 28 feet (plus correctors). *DO NOT CONCUR. CHART SHOALER DEPTH IN THE IMMEDIATE AREA*

### FATHO DEVELOPMENT 3.

Location: 27/36/38.6 N 082/52/40.4 W

Type of Feature: Uncorrelated side scan contact number 1568.34 is a strong hit and the corresponding fathogram shows a large bump that extends 2 meters from the bottom.

Description: Fathometer development was run over the item (position numbers 2439-2444) on DN 204 at 25 meter line spacing. A second fathometer development was run on DN 206 (position numbers 2508-2551) at 5 meter line spacing. The second development showed a spoil like mound next to an obstruction. Least depth of the spoil mound is 9.0 meters (29.5

feet)(uncorrected raw fatho depth) obtained at position 2528.14. The least depth of the obstruction is 8.6 meters (28.2 feet)(uncorrected raw fatho depth) obtained at position 2516.28. The two items are 54 meters apart.

**Recommendation:** At scale of chart only one item may be charted. Therefore, chart an obstruction, least depth 28 feet (~~plus correctors~~). *CONCUR CHART AS 28 Obstr*

#### FATHO DEVELOPMENT 4.

**Location:** 27/35/49.9 N 082/51/29.2 W

**Type of Feature:** Spoil pile and possible obstruction entered as fatho contact number 1340.64.

**Description:** Fathometer development was run over the item (position numbers 2552-2568) on DN 206 at 5 meter line spacing. Least depth of mound is ~~5.5~~ <sup>4.3</sup> meters (18.0 feet)(uncorrected raw fatho depth) obtained at position 2554.13.

**Recommendation:** Chart an ~~18~~ <sup>5</sup> foot sounding (~~plus correctors~~). *CONCUR*

#### O. COMPARISON WITH CHARTS *SEE ALSO THE EVALUATION REPORT*

No change, refer to original DR. All unresolved contacts listed in the 1994 DR have been resolved. No further work required.

#### P. ADEQUACY OF SURVEY *SEE ALSO THE EVALUATION REPORT.*

This survey is now complete. Hydrography is adequate and complete for purposes of updating soundings on nautical charts affected by this survey. Side scan coverage is complete to resolve all items.

#### Q. AIDS TO NAVIGATION

No change, refer to original DR.

#### R. STATISTICS

Statistics for 1995 operations:

<u>Statistic</u>	<u>Total</u>
Positions	1551
Linear NMI Hydrography	58.8
Linear NMI SSS	158.5
Square NMI SSS	10
Production Days	14
Detached Positions	12
Bottom Samples	0
Velocity	5

**S. MISCELLANEOUS**

*SEE ALSO THE EVALUATION REPORT*

No change, refer to original DR.

**T. RECOMMENDATIONS**

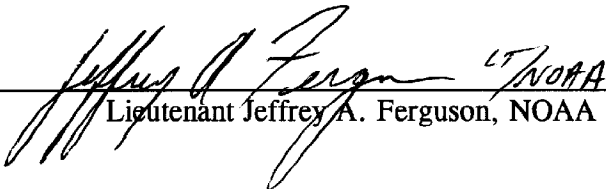
Survey is complete, no further recommendations.

**U. REFERRAL TO REPORTS**

No change, refer to original DR.

**SUBMITTAL SHEET**  
**Survey H-10539**

This descriptive report accurately describes all activities pertaining to the control, collection and processing of data for this survey during 1995 operations, and is respectfully submitted by:

  
Lieutenant Jeffrey A. Ferguson, NOAA





UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SERVICE  
Office of Ocean and Earth Sciences  
Silver Spring, Maryland 20910

### TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: December 5, 1994

MARINE CENTER: Atlantic

HYDROGRAPHIC PROJECT: OPR-J343

HYDROGRAPHIC SHEET: H-10539

LOCALITY: Tampa Bay, Florida

TIME PERIOD: May 18 - June 7, 1994

TIDE STATION USED: 872-6430 St. Petersburg Beach, South End, Fl.  
Lat.  $27^{\circ} 41.0'N$  Lon.  $82^{\circ} 44.3'W$

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 9.73 ft.  
HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 2.1 ft.

#### REMARKS: RECOMMENDED ZONING

1. West of  $82^{\circ} 55.0'W$ , apply a -20 minute time correction, and a X0.88 ratio to heights using St. Petersburg Beach, Fl. (872-6430).
2. East of  $82^{\circ} 55.0'W$ , apply a -10 minute time correction, and a X0.95 ratio to heights using St. Petersburg Beach, Fl. (872-6430).

Notes: Times are tabulated on Greenwich Mean Time.  
Data for St. Petersburg Beach, Fl. (872-6430) is stored in temporary file #672-6430.

  
CHIEF, DATUMS SECTION



**APPENDIX III**  
**List of Horizontal Control Stations**

1. List of Horizontal Control Stations.
2. Copy of *MONITOR* program output plot and statistics.

**Horizontal Control Stations**

**Station 000 - United States Coast Guard, Egmont Key, Florida Differential Beacon**

Lat: 27° 36' 01.488" N  
Long: 082° 45' 37.170" W  
Transmission Rate: 200 bps  
Transmission Frequency: 310 KHz  
Source: USCG DGPS Radio beacon Prototype Status & Operating Specifications

**Station 001 - TAMPA PILOTS, Egmont Key, Florida (NOAA-HF System)**

Lat: 27° 35' 06.214" N  
Long: 082° 45' 40.512" W  
Transmission Rate: 100 bps  
Transmission Frequency: 2774.50 KHz  
Antenna Elevation: 14.0 meters  
Source: NGS, established in 1981 and position confirmed by MT. MITCHELL in 1995

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**APPENDIX VII**  
**Approval Sheet**

Registry No. H-10539

Field operations of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed for accuracy pertaining to the control, collection and processing of data for this survey. The information obtained from this survey is adequate for updating the chart.

A handwritten signature in black ink, appearing to read "R. L. Parsons", written over a horizontal line.

Commander Roger L. Parsons, NOAA  
Commanding Officer, NOAA Ship MT. MITCHELL

08/21/96

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NUMBER: H-10539

NUMBER OF CONTROL STATIONS	2
NUMBER OF POSITIONS	2808
NUMBER OF SOUNDINGS	21762

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	347.50	04/29/96
VERIFICATION OF FIELD DATA	167	06/27/96
ELECTRONIC DATA PROCESSING	0	
QUALITY CONTROL CHECKS	0	
EVALUATION AND ANALYSIS	42	07/09/96
FINAL INSPECTION	34	06/18/96
TOTAL TIME	591	
ATLANTIC HYROGRAPHIC SECTION APPROVAL		07/12/96

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**ATLANTIC HYDROGRAPHIC BRANCH  
EVALUATION REPORT FOR H-10539 (1994-95)**

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

The 1994 field work for this survey was considered incomplete. The Addendum to the Descriptive Report describes the field work conducted in 1995.

**D. AUTOMATED DATA ACQUISITION AND PROCESSING**

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

Hydrographic Processing System (HPS)  
AutoCAD, Release 12  
QUICKSURF, version 5.1  
MicroStation, version 5.0  
NADCON, version 2.10  
I/RAS B, version 5.01

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

**H. CONTROL**

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). The smooth sheet has been annotated with ticks showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on the NAD 27, move the projection lines 1.108 seconds (34.11 meters or 3.41 mm at the scale of the survey) north in latitude, and 0.593 seconds (16.25 meters or 1.62 mm at the scale of the survey) east in longitude.

**L. JUNCTIONS**

H-10536 (1994) to the east  
H-10599 (1995) to the west

A standard junction was not effected between the present survey and surveys H-10536 (1994) and H-10599 (1995). In this case the note ADJOINS has been shown on the present survey smooth sheet. Any adjustments to the depth curves will be made on the chart during compilation.

There are no contemporary surveys to the north, and south of the present survey. Present survey depths are in harmony with the charted hydrography to the north, and south.

**M. COMPARISON WITH PRIOR SURVEYS**

A comparison of prior surveys was not done during office processing in accordance with section 4. f the memorandum titled *Changes to Hydrographic Survey Processing*, dated May 24, 1995.

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

- O. COMPARISON WITH CHARTS** 11400 (28<sup>th</sup> Edition Feb 27/93)  
 11412 (34<sup>th</sup> Edition Apr 24/93)  
 11414 (34<sup>th</sup> Edition Jan 9/93)  
 11420 (23<sup>rd</sup> Edition Oct 29/94)

**Hydrography**

The charted hydrography originates with prior surveys and requires no further consideration. The hydrographer makes an adequate chart comparison in section O.3. of the Descriptive Report. The following should be noted:

Five charted Spoil Areas in the vicinities of Latitude 27°35'45"N, Longitude 82°50'30"W, Latitude 27°35'35"N, Longitude 82°52'00"W, Latitude 27°35'25"N, Longitude 82°53'30"W, Latitude 27°35'17"N, Longitude 82°54'55"W, and Latitude 27°35'10"N, Longitude 82°56'00"W were developed by the hydrographer. It is recommended that the charted limits and notations Spoil Area be retained and the blue tint be deleted within the limits of the spoil areas. Soundings in the common areas should be charted to reflect the present survey soundings.

**P. ADEQUACY OF SURVEY**

This is an adequate hydrographic/side scan sonar survey. No additional work is recommended.

**S. MISCELLANEOUS**

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

H-10539

MT MITCHELL Processing Team

*Reginald L. Keene Sr.*

**Reginald L. Keene Sr.**  
Cartographic Technician  
Verification and Evaluation and Analysis

APPROVAL SHEET  
H-10539

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or 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 digital data for this survey. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Richard H. Whitfield  
Richard H. Whitfield  
Cartographer  
Atlantic Hydrographic Branch

Date: 12 July 1996

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

Nicholas E. Perugini  
Nicholas E. Perugini, CDR, NOAA  
Chief, Atlantic Hydrographic Branch

Date: 12 July 1996

\*\*\*\*\*

Final Approval:

Approved: Andrew A. Armstrong, III  
Andrew A. Armstrong, III  
Captain, NOAA  
Chief, Hydrographic Surveys Division

Date: Sept 9, 1996



MARINE CHART BRANCH  
**RECORD OF APPLICATION TO CHARTS**

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10539

**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
11414	7/19/96	<i>[Signature]</i>	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No.
11413	7/27/96	<i>[Signature]</i>	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No.
11400	10-7-96	<i>Del Mr</i>	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No.
11420	11-3-96	<i>Chris Vibeau</i>	Full <del>Part Before</del> After Marine Center Approval Signed Via Drawing No.
			Full Part Before After Marine Center Approval Signed Via Drawing No.
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SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED.