

PHOTOGRAMMETRY BRANCH
COASTAL MAPPING PROGRAM

PROJECT CM-8011
COMPLETION REPORT

FLORIDA

GULF COAST - APALACHEE BAY

Saint Marks River Entrance
Map: TP-01103

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES

Agency Vault - Original Report

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Gulf Coast - Apalachee Bay
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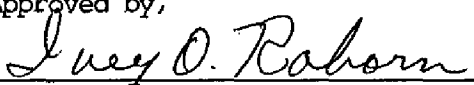
Clearance and Approval

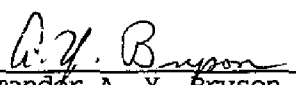
This report summarizes the photogrammetric operations related to project completion and is submitted for approval. The maps, associated project data, and this report meet the requirements and standards of the Photogrammetry Branch Coastal Mapping Program. Clearance for project registration is requested.

Submitted by,


Robert W. Rodkey, Jr.
Chief, Coastal Mapping Unit
Photogrammetric Production Section

Approved by,

 11/21/88
Ivey O. Raborn Date
Acting Chief, Photogrammetric Production Section
Photogrammetry Branch, NCD

 11/21/88
Commander A. Y. Bryson, NOAA Date
Chief, Photogrammetry Branch
Nautical Charting Division, Office of Charting and Geodetic Services

COMPLETION REPORT

COASTAL MAPPING PROGRAM PROJECT CM-8011

Florida

Gulf Coast - Apalachee Bay

Saint Marks River Entrance

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COASTAL MAPPING PROGRAM PROJECT CM-8011

Introduction

Coastal Mapping Program Project CM-8011 was planned to provide four coastal survey maps with accompanying photobathymetric data overlays depicting the shoreline and cartographic features of mapping interest in the coastal zone from the Saint Marks River Entrance westerly to Southwest Cape of Saint James Island, Florida. This geographic area is located in the northwestern section of Apalachee Bay on the Gulf Coast of Florida. Refer to FIGURE 1 for a graphic reference of the project site location.

The project was organized into three parts based on the configuration of flight lines. Part 1 consisted of map TP-01103. Part 2 consisted of maps TP-01101 and TP-01102. Part 3 consisted of map TP-01100. All maps were to be prepared at 1:15,000 scale with the Lambert conformal conic projection based on the North American Datum of 1927. Parts 2 and 3 were cancelled on August 30, 1984. On May 8, 1985, the photobathymetry requirement for map TP-01103 was indefinitely postponed. At that point, compilation of map TP-01103 was continued as a standard coastal survey which depicts the Saint Marks River entrance and adjacent area. Refer to FIGURE 2 for coordinate information and a larger scale diagram of the final project site. Each memorandum affecting the cancellation of Parts 2 and 3 and the postponement of photobathymetry are bound in Appendix F for reference.

The purpose of the project is consistent with the Photogrammetry Branch Coastal Mapping Program, which is to provide contemporary coastal zone survey data for the maintenance of the National Ocean Service Nautical Charting Program.

Planning

Mr. Robert Williams, Chief, Coastal Planning Unit, initiated the planning phase for this project in August 1980 based on tentative field activities scheduled for December 1980. The Coastal Surveys Unit of the Atlantic Marine Center was tasked with all horizontal and vertical control requirements. The Flight Operations Unit of the Photogrammetry Branch was assigned the task of providing the proper conditions for the aerial photographer to acquire the necessary photographic coverage. Formal instructions for the field operations phase of the project were issued on January 29, 1981 and are bound in this report as Appendix A.

Field Operations

Field operations for this project consisted of aerial photography, tidal observations and the recovery, establishment and identification (premarking) of horizontal and vertical control necessary for aerotriangulation. The field survey party consisting of Messrs. Hall and Middleton was under the direction of Mr. R. S. Tibbetts for both the Spring and Fall 1981 phases of field activity.

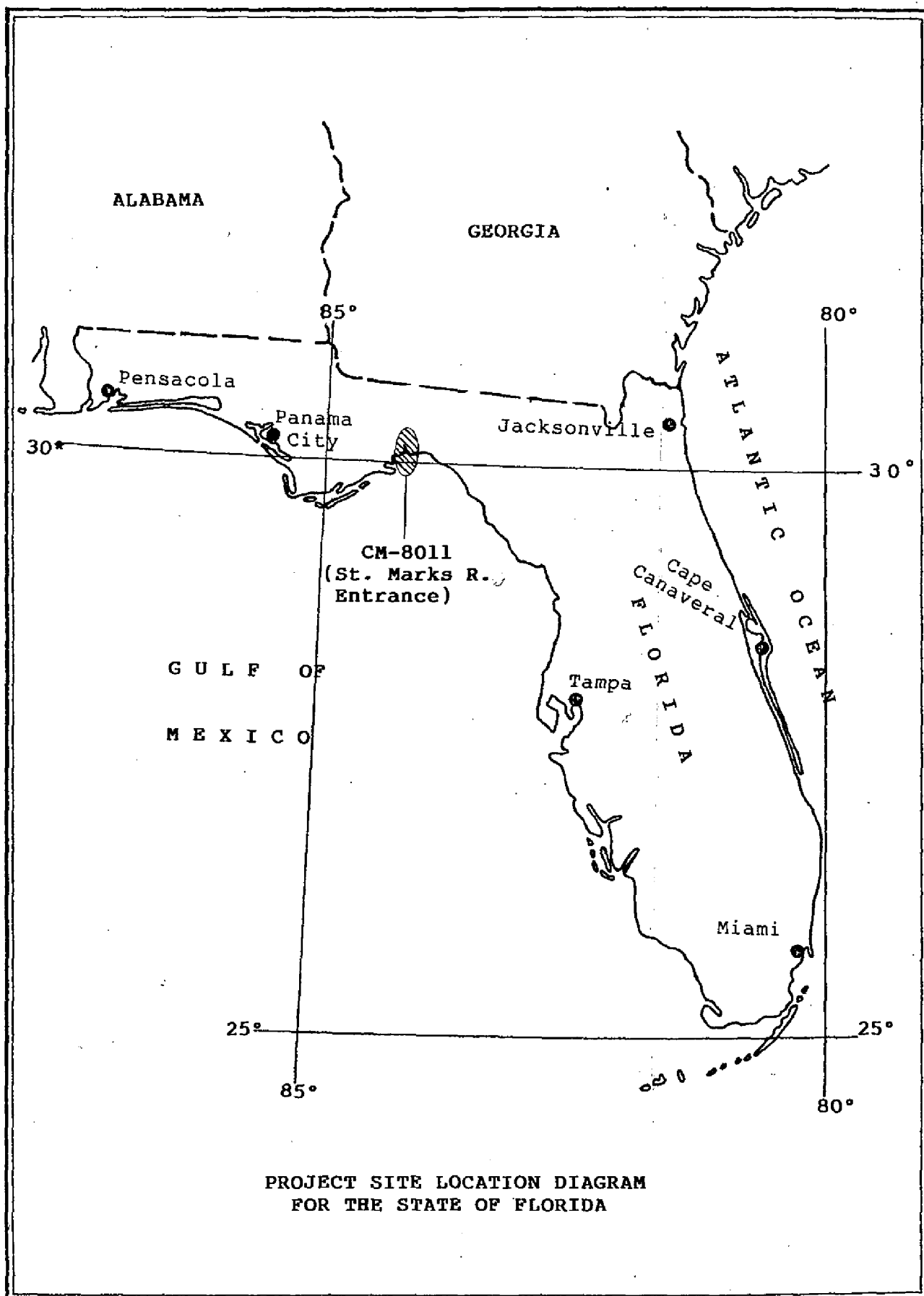


FIGURE 1. Project Site Location Diagram

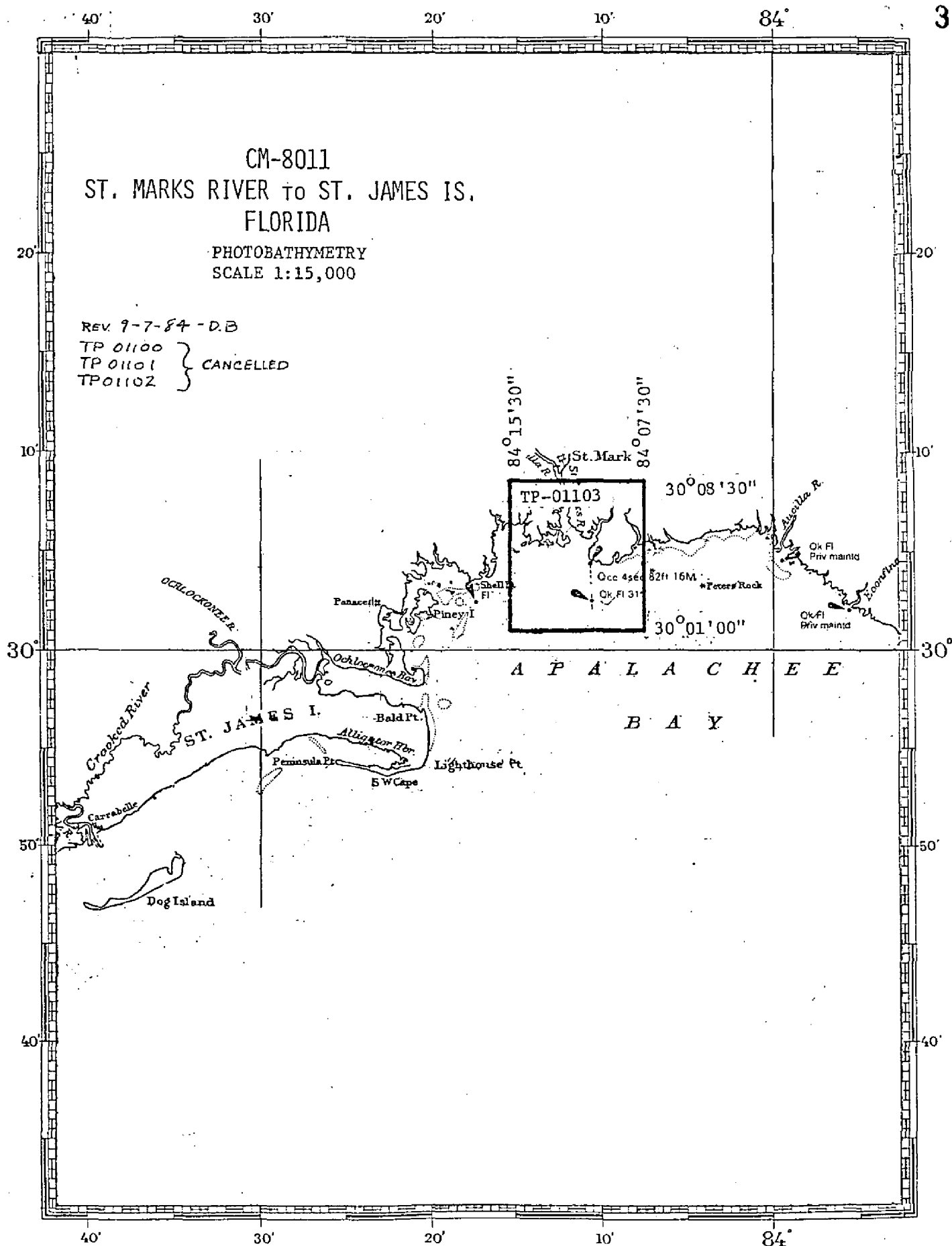


FIGURE 2. Project Diagram

The recovery, establishment and identification (premarking) of horizontal and vertical control was accomplished in two phases: December 1980 thru May 1981 (Spring 1981) and October 1981 thru December 1981 (Fall 1981). All necessary targets were in place during photographic operations and tide staffs were observed at the appropriate times of photography. In the Spring 1981 phase of field operations, three tide staffs were used: the permanent staff at Shell Point (872-8229), a temporary staff at Bald Point (872-8237) and Teresa Beach (872-8311). During the Fall 1981 phase, the Shell Point and Bald Point staffs were used. Refer to LISTING 1 for information on the horizontal control used in this project. A report describing the surveying portion of the field operations phase is bound with this report as Appendix B.

A Turbo Commander 690 aircraft piloted by LT Layton and copiloted by LT Bradley of the NOAA Corps was used for the Spring 1981 photographic operation. The photography acquired during the Spring 1981 operation was executed by Mr. Larry Franklin, aerial photographer. The type of photographs acquired at that time were the 1:40,000 scale infrared Mean High Water and Mean Lower Low Water, the 1:10,000 scale photographs of vertical targets and 1:40,000 scale color photographs for aerotriangulation. A Turbo Commander 690 aircraft piloted by LT Bergner and copiloted by LT Muller of the NOAA Corps was used for the photographic operation during the Fall 1981 photographic operation. The photography acquired during the Fall 1981 operation was executed by Mr. Robert Clark, aerial photographer. The type of photographs acquired at that time were the 1:15,000 scale compilation photographs.

High and low altitude natural color photographs were obtained to complete this map. Color photographs required for basic aerotriangulation were taken with a Wild RC-10 camera with Z cone at 1:40,000 scale. The calibrated focal length of the Z cone is 153.14 mm. Compilation photographs were exposed with a Wild RC-8 camera with E cone at 1:15,000 scale. The calibrated focal length of the E cone is 152.71 mm. In addition, support natural color photographs at 1:10,000 scale were secured using a Wild RC-10 with Z cone, providing the field identified (premarked) vertical control points required for aerotriangulation and compilation. Supplemental tide-coordinated photographs (MHW and MLLW) were also obtained to complement the establishment of tidal datums and vertical control required for compilation. These photographs were taken in February and March 1981 using a RC-10 camera with Z cone at 1:40,000 scale.

Aerotriangulation

Formal instructions for the aerotriangulation phase of this project were issued on July 20, 1982 and are bound with this report as Appendix C. The aerotriangulation phase was initiated by Mr. Steve Solbeck in November 1982 under the direction of Mr. Don Norman, Chief, Aerotriangulation Unit of the Rockville, Maryland office. Standard procedures were followed to assure compliance with the customary requirements of a typical coastal mapping/photobathymetry project. The Aerotriangulation Report is bound with this report as Appendix D.

PROJECT GEODETIC CONTROL LISTING

Page 1 of 1

PROJECT: CM-8011; St. Marks River Entrance, Apalachee Bay, Gulf Coast of Florida

GEODETIC DATUM: North American Datum of 1927

The following permanent geodetic control was recovered or established during photogrammetric operations. Data pertaining to stations is resident in the National Geodetic Survey Division (NGSD) Horizontal Control Databank.

Refer to Nautical Charting Division Standard Digital Data Exchange Format documentation for quality code (QC) criteria.

STATION NAME	STA NO	Geodetic Coordinates (°-'-")		QC	Location Day/Year
		Latitude	Longitude		
ST MARKS LIGHTHOUSE 1933	1057	30-04-25.052	084-10-47.088	3	001/1933
LEON TOWER 1935	1025	30-07-50.465	084-11-46.211	3	001/1935
MOUND TOWER 1935	1033	30-05-16.124	084-09-46.424	3	001/1935
AXE 1940	1004	30-05-04.94	084-13-13.53	3	001/1940
H-62-01-A1-AMC 1981	unknown	30-06-14.679	084-06-44.629	3	130/1981
GOOSE CREEK 1935	1014	30-06-16.974	084-15-44.134	3	001/1935
MC ALISTER 1933	1030	30-08-39.838	084-18-38.949	3	001/1933
- end -					

Remarks:

All geodetic survey operations were performed by personnel of a Photogrammetric Field Party headed by Mr. James Shea in Spring and Fall of 1981.

Listing approved by: 

Final Reviewer

Date 11/18/87

LISTING 1. Project Geodetic Control

Thirteen strips of natural color photographs were bridged using analytic aerotriangulation methods; two 1:40,000 scale strips taken December 10, 1981 and eleven 1:15,000 scale strips taken November 25, 1981. The high altitude strips were bridged to provide horizontal control for the low altitude strips. Horizontal and vertical control points used to bridge these strips were field identified (premarked) and transferred photogrammetrically from support color photographs obtained earlier during the same year. Horizontal control points were transferred for 1:40,000 scale photographs taken in February 1981 and vertical control points were transferred from the 1:10,000 scale photographs taken in May 1981. Based on an analysis of the adjusted data, the fit to horizontal control was within the allowable tolerance for the National Standards of Map Accuracy.

Refer to FIGURE 3 for information on the photographs selected for the project and to FIGURE 4 for bridging photographs and the placement of geodetic control within the project site. Not every photograph of the project site was processed through the aerotriangulation phase due to the 80% endlap and 60% sidelap of the project photographs. The full accounting of photography acquired for this project is maintained on the appropriate photo index maintained by the Map and Imagery Information Unit.

The base manuscripts and final map bases were plotted on a Coradimat plotter by Mr. Hollowell Jones in December 1982.

Compilation

Formal instructions for the office phase of the project were issued on March 21, 1983 and are bound in this report as Appendix E. Basic procedures and requirements of the coastal mapping program were followed for the completion of the project except for the format and content of this report. A Descriptive Report for the map will not be compiled. Instead, this project completion report will serve as the authoritative summary for the completion of the project. This format conforms to that described in an initiative to cancel the Descriptive Report requirement for a standard coastal mapping project which was proposed by the Coastal Mapping Unit of the headquarters office in October 1987.

The compilation phase was initiated in August 1983 by Mr. William Maynard under the direction of Mr. Robert Rodkey, Chief, Coastal Mapping Unit of the Rockville, Maryland office. Mr. Maynard executed the compilation of map TP-01103 through application of standard analog procedures utilizing a Wild B-8S stereoplotter. Photobathymetric and cartographic feature discrete point data were measured and recorded digitally via an ALTEK Unit with tape transport interfaced with the Wild B-8S. The digital data was processed off-line utilizing standard programs. Difficulties were encountered in meeting the strict vertical control requirements and problems with the film positives were identified as the cause. After analysis, the photobathymetric survey requirement was indefinitely postponed on May 8, 1985. The quality of the compilation photographs was adequate for completing a standard coastal survey but not for the completion of photobathymetry. Office review of the map was conducted by Mr. Edward Allen in June 1986.

The following photographs were used in the production of the map:

Photo Numbers#	Date	Time*	Scale	Stage of Tide
81E(C)6397-6411(odd only)	11-18-81	0914-0916	1:15,000	+1.61 MLLW
81E(C)6480-6498(even only)	11-18-81	0948-0951	1:15,000	+1.47 MLLW
81E(C)6505-6523(odd only)	11-18-81	1000-1003	1:15,000	+1.40 MLLW
81E(C)6532-6546(even only)	11-18-81	1015-1019	1:15,000	+1.26 MLLW
81E(C)6588-6602(even only)	11-18-81	1243-1245	1:15,000	+1.08 MLLW
81E(C)7398-7412(even only)	11-25-81	1220-1222	1:15,000	+0.67 MLLW
81E(C)7439-7440	11-25-81	1236-1237	1:15,000	+0.92 MLLW
81Z(R)1908-1912	02-05-81	1209-1211	1:40,000	+0.15 MLLW
81Z(R)2249-2253	02-20-81	1128-1131	1:40,000	+0.03 MLLW
81Z(R)3217-3221	03-06-81	1400-1401	1:40,000	-0.34 MHW
81Z(R)3235-3238	03-06-81	1420-1422	1:40,000	-0.21 MHW

- (C) indicates natural color photographs

(R) indicates tide coordinated infrared photographs

* - Time given reflects Standard Time of the Eastern Time Zone

Refer to FIGURES 3,4 and 5 for diagrams depicting the coverage of the various types of photographs in relationship to the project site.

The final map was smooth drafted except for the application of annotation and labeling which was completed through the use of waxed back stripper film. Labeling of discrete point features was executed in accordance with procedures later documented in Coastal Mapping Program Production Procedure Memo No. 1, a copy of which is bound in this document as Appendix H. A listing of approved geographic names was provided by the Staff Geographer and is bound in this report as Appendix G.

Final Review

The final review phase was initiated in July 1987 by Mr. Robert Rodkey. The coastal survey map and associated discrete point data of this project were evaluated as meeting the requirements of the National Standards of Map Accuracy. Refer to LISTING 2 for the final listing of discrete point data for application in the nautical charting program. The coastal survey map and project data sets comply with the general requirements of a standard coastal mapping project. Standard procedures, except where noted in this report, were adhered to for the compilation, drafting and reproduction of the coastal survey map of this project. All source data and photogrammetric measurement instruments meet the standards of accuracy established for the disciplines of field surveying and photogrammetry.

After the completion of the final review phase, a comparison was made against the following NOS nautical charts:

11405, 21st Edition (December 15, 1984), 1:80,000 scale,
11406, 9th Edition (July 4, 1987), 1:15,000 scale,

The results of the chart comparison were annotated on the Chart Maintenance Print of the map which was forwarded to the Marine Chart Branch.

Dissemination of Project Data

The dissemination of project data is in accordance with the following:

NATIONAL ARCHIVES/FEDERAL RECORDS CENTER

Brown Jacket containing:

- One copy of the project diagram
- One copy of the Aerotriangulation Report
- One copy of Project Geodetic Control (NOAA Form 76-41)
- One copy of listing of Aerotriangulated pass points et al.
- Field Data Binder* titled: CM-8011, Triangulation Computation for H-62-01-A1-AMC 1981
- Field Data Binder* titled: CM-8011, Horizontal Panel Volume
- Field Data Binder* titled: CM-8011, Vertical Panel Volume
- One copy of this Project Completion Report

AGENCY ARCHIVES

- Registration Copy of Map
- Original Project Completion Report

PHOTOGRAMMETRIC ELECTRONIC DATA LIBRARY

There is no digital data of this project maintained in the library

MARINE CHART BRANCH

- Chart Maintenance Print of Map
- Copy of the Cartographic Features of Charting Interest listing
- Copy of this Project Completion Report

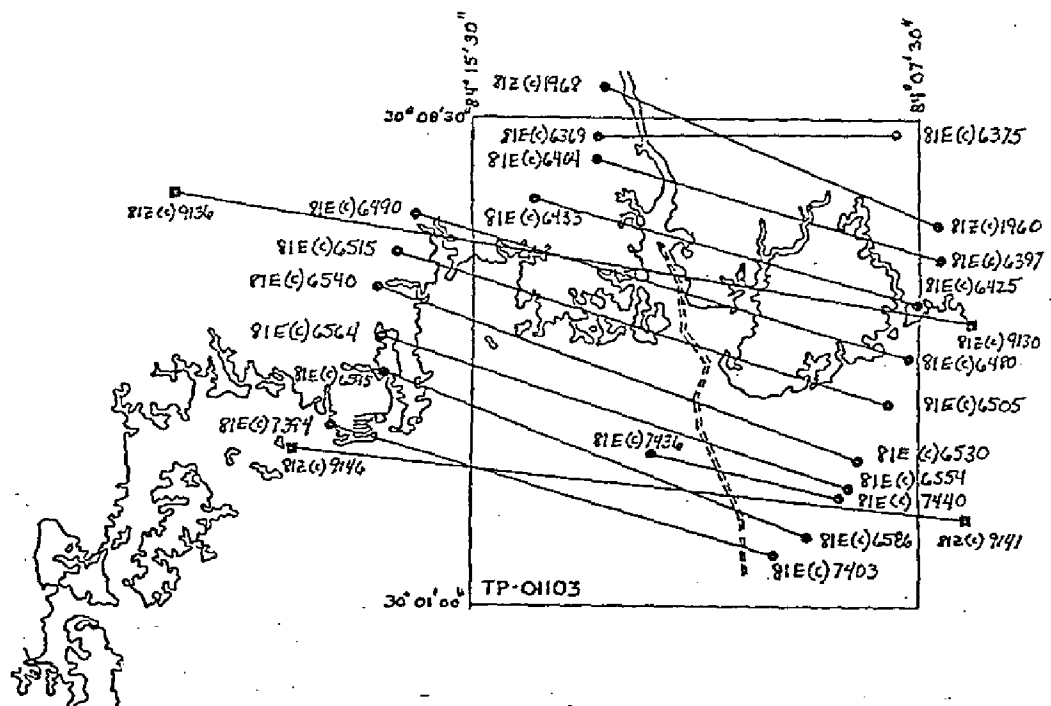
REPRODUCTION BRANCH, AERONAUTICAL CHARTING DIVISION

- 8X Reduction Negative of Map

All final project data and materials were forwarded to Mr. Gregory L. Fromm, Acting Chief of the Production Control Unit in January 1988 for registration and dissemination.

* - The field data binders contain NOAA forms, listings and computation sheets too numerous to itemize. A transmittal is bound in the Horizontal Panel Volume for reference.

ST. MARKS RIVER ENTRANCE
FLORIDA
PHOTOBATHYMETRY
CM-8011
BRIDGING PHOTOGRAPHS



- 1:40,000 Scale Photographs
- 1:15,000 Scale Photographs

FIGURE 3. Natural Color Photographs Selected for Project

ST MARKS RIVER TO ST JAMES ISLAND
 FLORIDA
 CM-8011
 BRIDGING PHOTOGRAPHY
 1:40000
 81Z(<)

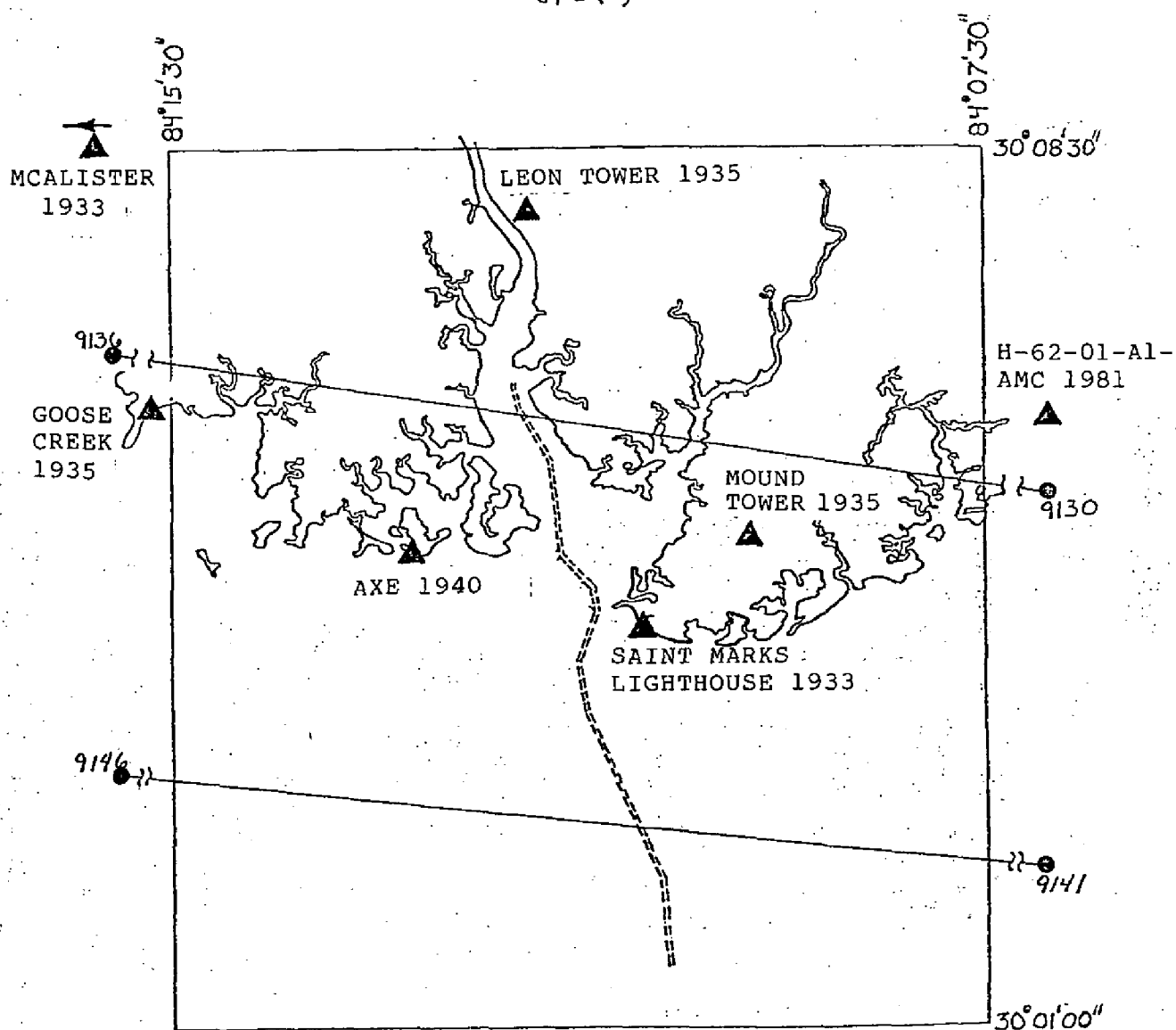


FIGURE 4. Selected Natural Color Bridging Photographs and Horizontal Control

ST MARKS RIVER TO ST JAMES ISLAND
FLORIDA
CM-8011

INFRARED PHOTOGRAPHY 81Z(R)

1:40000

○ M H W

■ M L L W

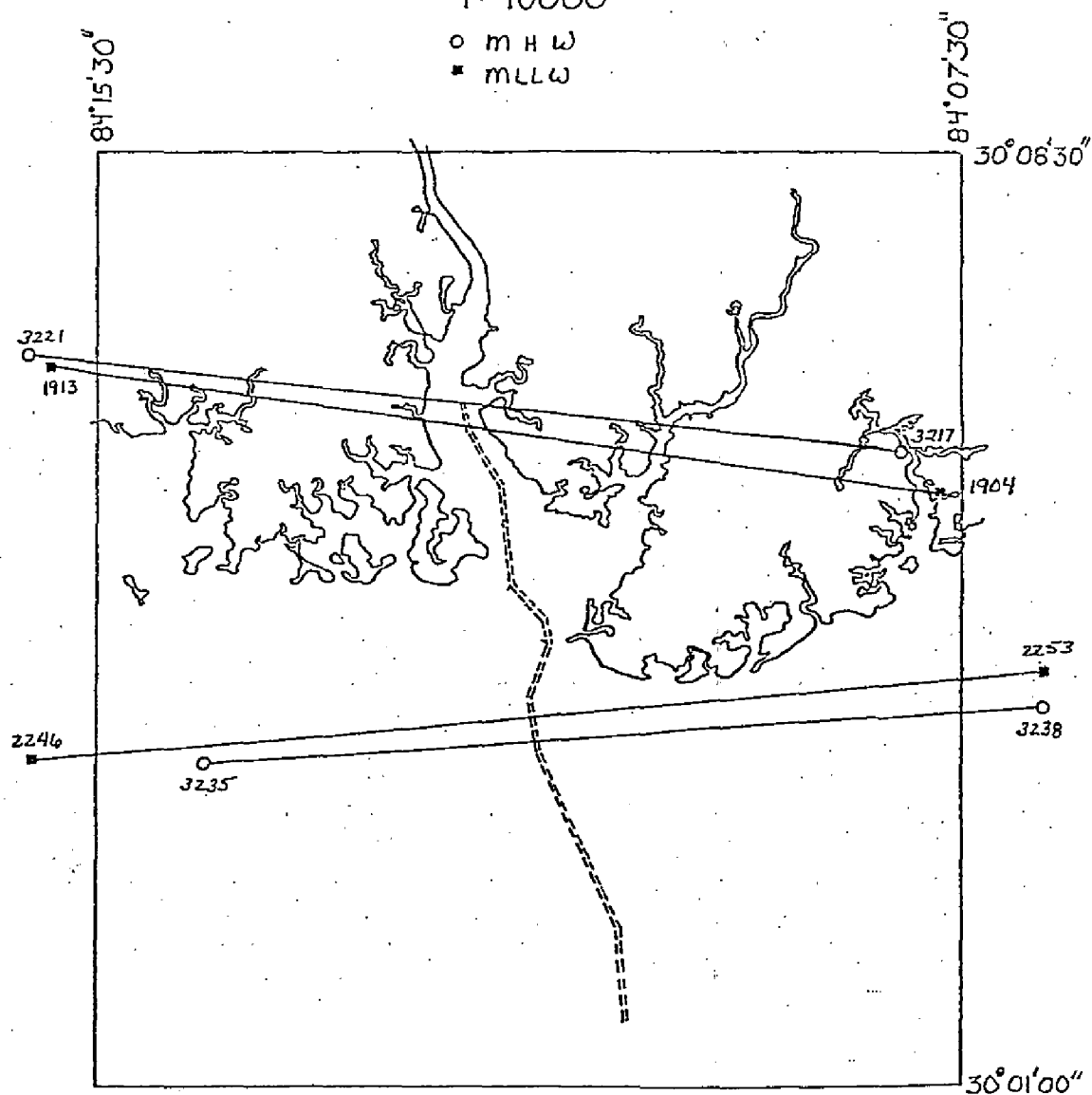


FIGURE 5. Tide Coordinated Infrared
Photographs Selected for Project

CARTOGRAPHIC FEATURES OF CHARTING INTEREST

Page 1 of 1

COASTAL MAPPING PROJECT: CM-8011; Saint Marks River Entrance, Apalachee Bay, Gulf Coast of Florida

NOS Nautical Charts Affected: 11405, 11406

GEODETTIC DATUM: North American Datum of 1927

The following charted cartographic features and newly identified cartographic features of possible landmark value have been identified and measured during photogrammetric operations. Refer to Nautical Charting Division Standard Digital Data Exchange Format documentation for quality code (QC) criteria and clarification of cartographic codes (CC). Please note that cartographic code 993 is a photogrammetric source code for cartographic features of possible landmark value.

FEATURE DESCRIPTION	NCD CC	GEOGRAPHIC POSITION(°-'-")		NCD QC	DATE OF LOCATION
		LATITUDE	LONGITUDE		
Charts 11405 and 11406:					
ST MARKS RGE FRONT LIGHT	208	30-02-25.96	084-10-37.51	4	321/1981
ST MARKS RGE REAR LIGHT	209	30-04-25.052	084-10-47.088	3	001/1933
ST MARKS R LIGHT 5	200	30-03-44.25	084-11-23.83	4	321/1981
ST MARKS R LIGHT 10	200	30-04-17.47	084-11-22.52	4	321/1981
ST MARKS R LIGHT 11	200	30-04-34.82	084-11-17.61	5	321/1981
LOOKOUT TOWER (LEON)	086	30-07-50.465	084-11-46.211	3	001/1935
LOOKOUT TOWER (MOUND)	086	30-05-16.124	084-09-46.424	3	001/1935
Chart 11405:					
ST MARKS R LIGHT 48	200	30-07-47.29	084-12-05.72	4	321/1981
ST MARKS R DAYBEACON 51	767	30-07-54.83	084-12-18.59	5	321/1981
ST MARKS R DAYBEACON 54	224	30-08-08.34	084-12-23.05	5	321/1981
ST MARKS R DAYBEACON 55	767	30-08-10.77	084-12-28.28	5	321/1981
- end -					

Listing approved by:

Final Reviewer

Date

LISTING 2. Cartographic Features of Charting Interest

APPENDIX A



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

January 29, 1981

OA/C3442:RWW

Chief, Coastal Mapping Division
Atlantic Marine Center

PROJECT INSTRUCTIONS: FIELD - Job CM-8011, St. Marks River to St. James Island, Florida, Shoreline Mapping and Photobathymetry

1.0. PURPOSE

These instructions provide specifications and a schedule for paneling horizontal and vertical control stations in advance of aerial photography, and for furnishing field support to obtain tide-coordinated infrared photography.

2.0. AREA

Shoreline mapping and photobathymetry work will cover the entire shoreline, including shoreline of adjacent inland waterways, from the St. Marks River to the southeast end of St. James Island. Limit of compilation will extend offshore to a depth of 12 feet. However, where practicable, areas of greater depths may be compiled.

3.0. PHOTOGRAPHY

Aerotriangulation photography will be obtained at 1:40,000 scale using color film. Supplemental aerotriangulation and compilation photography will be obtained at 1:15,000 scale using color film. In addition, 1:40,000 scale black-and-white infrared photography, tide coordinated at mean high and mean lower low water, will also be obtained. Air Photo Mission 1 is assigned the photography task.

4.0. ASSIGNMENT

You are assigned all field operations required to place targets on horizontal and vertical control points on land areas and to target or enhance fixed offshore objects required for vertical control; also, to provide support needed to obtain tide-coordinated photography. The Chief, Air Photo Mission 1, will be responsible for scheduling photography at the required times.

5.0. HORIZONTAL CONTROL

5.1. Horizontal control requirements for aerotriangulation have been furnished as part of the field data.



10TH ANNIVERSARY 1970-1980
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A young agency with a historic
tradition of service to the Nation

5.2. Limit recovery of horizontal control stations to those needed to meet aerotriangulation requirements. Prepare and submit recovery notes for each station for which a search was made.

5.3. New control stations, where needed, shall be established by triangulation, trilateration, traverse, or a combination of the three methods, in accordance with Third-order, Class I specifications provided in the Director's Instructions for Third-Order Surveys, dated October 31, 1974.

5.4. Notify the Chief, Coastal Surveys Section (OA/C3442), if recovery of existing control does not meet aerotriangulation requirements. An alternative will be selected, if possible, to avoid establishing new control.

6.0. VERTICAL CONTROL

6.1. Vertical control requirements for aerotriangulation have been indicated on a job diagram furnished as part of the field data.

6.2. Vertical control will be based on a network of six tide stations in the project area. Elevations of the required vertical control points will be related to the mean lower low water datum by direct paneling of tidal bench marks, spirit leveling from tidal bench marks, or water level transfer.

6.3. Five offshore vertical control points are indicated on the job diagram. A fixed structure such as a pile, a daybeacon, or a light is charted in each area. Panels may be attached to these structures and their elevations determined by water level transfer from the nearest tide station.

6.4. Water level transfer of elevation will also be required for some land panels. The preferred time to transfer elevation is at or near high water. At high water there is more water over shoal areas which will lessen their effect on the water surface.

6.4.1. On a calm day, observe the difference in elevation between the water surface and each vertical control panel located offshore. Simultaneously, observe the tide staff closest to each panel and record all measurements and tide staff readings in NOAA Form 76-77, Level Record--Tide Station.

6.4.2. Vertical control can be extended to panels on land in a similar manner. Transfer elevation to the area of each panel by water level and complete the connection by spirit leveling.

6.4.3. The accuracy desired in water level transfers of elevation is ± 0.10 ft., but it is not to exceed ± 0.25 ft.

7.0. PREMARKING OF CONTROL

7.1. HORIZONTAL

7.1.1. Panel each station selected to meet horizontal control requirements in accordance with specifications given on the attached sheet for 1:40,000 scale photography.

7.1.2. Use panel array No. 1 for targets with a normal background; it may be modified, as necessary, to conform with local terrain conditions. Any deviation from given panel and spacing dimensions should be indicated on the large-scale sketch on NOAA Form 76-53, Control Station Identification Card.

7.1.3. Panel array No. 3 shall be used in areas where the background offers poor contrast to the center panel, such as on sandy terrain.

7.1.4. The distance given for dimension "C" may be increased, but not decreased.

7.1.5. Panel substitute stations wherever shadows or relief displacement will obscure the home stations.

7.1.6. In cases where the target might be subject to vandalism, select two photoidentifiable objects. Observe directions and distances to them from the home station and record with sketch and description on separate NOAA form 76-53.

7.2. VERTICAL

7.2.1. Panel each land station selected to meet vertical control requirements using array No. 2 for 1:15,000 scale photography.

7.2.2. Vertical station panels at tide stations may be offset from the tidal bench marks.

7.2.3. It is critical that vertical station center panels be constructed so as to ensure that they are flat and lie in a horizontal plane.

7.2.4. Offshore panels may be affixed in any convenient manner to offshore structures, such as piling, lights, daybeacons, or stakes.

8.0. CONTROL STATION IDENTIFICATION CARD

Prepare and submit a NOAA form 76-53 for each paneled station. Observe Photogrammetric Instruction No. 22, Revised September 30, 1965, except as follows:

a. Record distances and directions in the usual manner to the center of the station panel of all targets used as substitutes for horizontal control stations.

b. In the space provided for the sketch of Substitute Station A, make a large-scale sketch of the immediate vicinity showing the array used.

c. In the space provided for a sketch of Substitute Station B, make a smaller scale sketch that shows the relationship of the target to the surrounding terrain. Include one or more salient features to assist office personnel in locating the target on the photographs.

d. Indicate on suitable chart bases the approximate locations of all targets placed.

9.0. TIDE OBSERVATIONS AND RECORDS

9.1. Three tide staffs will be monitored during tide-coordinated photography. Mean high and mean lower low water datums will be furnished in advance of the start of photography. Station 8229, Shell Point, is in operation and the staff is in place. Station 8237, Bald Point, and station 8311, St. Teresa Beach, will require installation of temporary tide staffs.

9.2. Tide-coordinated photography will be flown when the stage of tide is mean high water ± 0.3 ft. and mean lower low water ± 0.3 ft.

9.3. Favorable tides for the tide-coordinated photography are predicted for the periods of February 1-9 and 15-22, 1981, and again during the same periods in March. Daily predictions will be furnished to the field unit.

9.4. Photography for compilation of photobathymetry does not require tide coordination with a specific tidal datum. However, it is necessary to know the stage of tide at the time of photography. The three tide staffs used for tide-coordinated photography will also be monitored for the photobathymetry photography.

9.5. Staff readings are required at 15-minute intervals during all photographic flights except the 1:40,000 scale aerotriangulation photography. Use NOAA Form 77-53, Tides, to record staff observations.

9.9. After completion of photography, make a level connection to the tide staff from at least two tidal bench marks at each tide station monitored during photography. Use separate NOAA Form 76-77, Leveling Record--Tide Station, to record leveling data at each station.

10.0. REPORT

A field operations report covering all pertinent information as to field work performed, tide staffs monitored, etc., is required promptly upon completion of the field phase of the project.

11.0. RECORDS

All field records will be routed to OA/CAM513 for review prior to being forwarded to the Rockville Office, Attention: OA/C3415.

12.0. TIME

Coordinated Universal Time (CUT or Zulu, Z) shall be used for all tide staff observations for agreement with standard Air Photo Mission time-keeping procedures. Air Photo Mission 1 will provide CUT time checks before and after each session of photography.

13.0. COMMUNICATIONS

Radio transceivers operating on a frequency of 36.22 MHz shall be used for communications between tide observers, field support operations center, and the Air Photo Mission. On the day prior to initial photography, the field unit should confer with the Chief, Air Photo Mission 1, and make mutually satisfactory arrangements for regular contacts and/or conferences as appropriate. In addition, a dry run should be made to check out the communications system.

14.0. SCHEDULE

All stations shall be premarked and ready for photography by February 10, 1981. If premarking is not completed by this date, inform the Chief, Coastal Surveys Section (OA/C3442), so that this information can be relayed to the Air Photo Mission.

15.0. COSTS

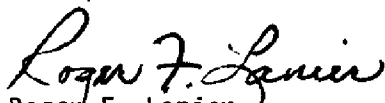
All costs incurred on this assignment shall be charged to Task 833201.

16.0. MODIFICATIONS OF INSTRUCTIONS

If changes in procedures and methods seem advisable, please make appropriate recommendations to this office.

17.0. RECEIPT

Receipt of these instructions shall be acknowledged.

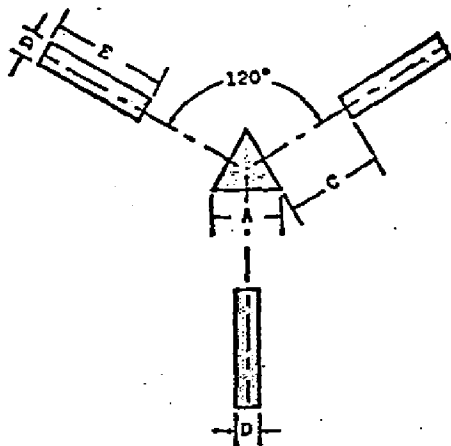

Roger F. Lanier
Associate Director
Marine Surveys and Maps

Richard H. Houlder
Director
Atlantic Marine Center

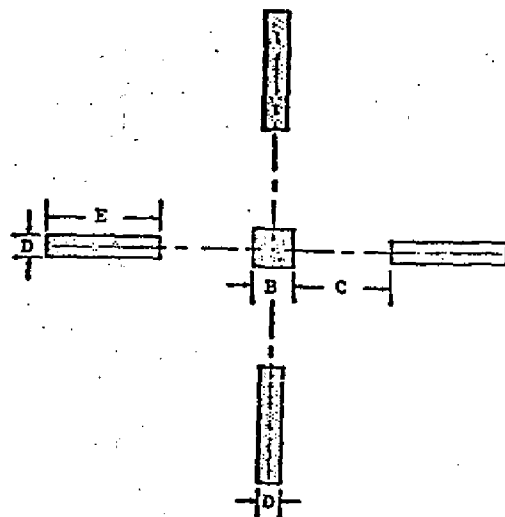
15

SPECIFICATIONS FOR PREMARKING CONTROL STATIONS
Revised November 23, 1976

ARRAY NO. 1



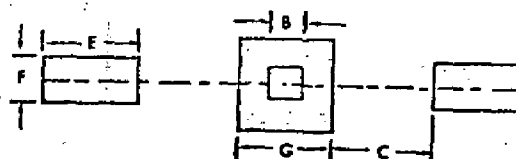
ARRAY NO. 2



NOTE:

1. The dimensions and centering of center panel over station or substitute station are critical.
2. Panel array No. 1 is preferred but No. 2 is acceptable.
3. Array No. 3 - for contrast in very light colored areas. The border surrounding center panel and the recognition panels shall be black.
4. Chief of party will select array that makes best application of field conditions and is authorized to adjust or omit one of the recognition panels if terrain is not suitable for placement of entire array.

ARRAY NO. 3



Photography
Scale

PANEL AND SPACING DIMENSIONS (IN METERS)

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>F</u>	<u>G</u>
1:10,000	0.5	0.3	1.3	0.2	0.9	0.9	1.5
1:20,000	1.1	0.7	2.6	0.4	1.8	0.9	1.9
1:30,000	1.6	1.0	3.9	0.5	2.7	0.9	2.2
1:40,000	2.2	1.3	5.2	0.7	3.6	0.9	2.5
1:50,000	3.2	2.0	7.8	1.1	5.4	1.8	3.8
1:60,000	3.8	2.3	9.1	1.3	6.3	1.8	4.1
1:70,000	4.4	2.6	10.4	1.4	7.2	1.8	4.4
1:80,000	5.0	3.0	11.7	1.5	8.0	1.8	4.8
1:100,000	6.4	4.0	18.2	2.2	10.8	3.6	7.6

APPENDIX B

CM-8011

ST. MARKS RIVER TO=ST. JAMES ISLAND

FLORIDA

PHOTO BATHYMETRY

PROJECT REPORT

1. Project

Premarking for CM-8011 was performed in accordance with Project Instructions submitted by OA/C3, Roger F. Lanier. The Project was completed in two phases: December 1980 thru May 1981 and October 1981 thru December 1981, which have been designated as Spring, 1981 and Fall, 1981 respectively. This method of operation was dictated by weather conditions which prevail during the summer months on the Gulf of Mexico which are prohibitive of Aerial Photography.

2. Horizontal Control

There were 12 horizontal control stations paneled and they are numbered 1 thru 12. Panels 5,6,7,8, and 9 were set direct on existing horizontal control stations. Substitute points were paneled and located for panels 1,2,3,4,10,11, and 12. It was necessary to establish a new station for panel 5: H-62-01-A1-AMC, 1981 which was located by triangulation methods (a copy of the computation is enclosed). A CSI, NOAA Form 76-53, card has been initiated for each horizontal point paneled. All horizontal control photography was completed during the Spring 1981 phase of field operations.

3. Vertical Control

Project Instructions called for 29 vertical panels. Two stations were added by Mr. Ron Brewer who visited the Project site in January 1981. Vertical panels have been designated by number; #1 thru #31. It was not possible to panel any vertical control station direct, all are sub points. The vertical control requirements were fulfilled in 2 phases and breaks down as follows:

Spring 1981

During this phase all 31 vertical panels were maintained. Panels 2,4,5,11,14, 29, 30 and 31 were water panels, panels 4,5,14,29, and 30 were 2 ft. square panels attached to the piling, No. 2 was a 2 ft. square panel attached to the top of a small wooden platform. No. 11 was a 2 ft. square panel attached to the railing around the platform of a Navigational Light, No. 31 was the corner of a platform of a Navigational Range Light. Horizontal Panel No. 3 was used for Vertical Panel #7. All other vertical panels used the standard or an adopted version of ARRAY No. 2.

Fall 1981

During this phase, panels #2,3,4,5,23,30 and 31 were used. All the panels except for #23 had to be rebuilt or moved for this phase. All data is appropriately indicated on respective NOAA Form 76-53 (CSI Card).

A CSI Card (NOAA Form 76-53) was initiated for each vertical control panel for both phases of the Field Operations. The elevation of the center of each panel as of the time of the photography is indicated on the front of each CSI card. Care should be taken to use the proper phase of the field data. Level ties and water transfers were recorded on the appropriate NOAA Forms 76-77 and 77-53, and where practicable were transferred to the backs of the CSI Cards (NOAA Form 76-53). All elevations of the vertical panels are referenced to MLLW.

4. Premarking of Control

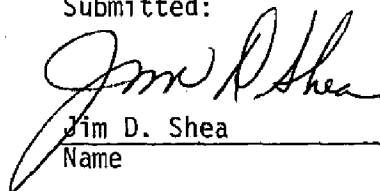
Horizontal - Horizontal control points were paneled with either a variation of standard version or ARRAY No. 1 for 1:40,000 scale photography. Panels were made of wooden frames with white plastic stapled to the frames. Descriptions, method of location, and any variation of the ARRAY are indicated on NOAA Form 76-53.

Vertical - Vertical Control points were paneled with either a variation of standard version of ARRAY No. 2 for 1:15,000 scale photography. Panels were made of wooden frames with white plastic stapled to the frame. Descriptions, variations, and other data pertaining to the panels are indicated on NOAA Form 76-53.

4. Tide Observations and Records

In the Spring 1981 phase of field operations, 3 tide staffs were used, the permanent tide staff at Shell Point (872-8229), a temporary staff was installed at Bald Point (872-8237) and St. Teresa Beach (872-8311). During the Fall 1981 phase of field operations, the permanent staff at Shell Point (872-8229) and the temporary staff at Bald Point (872-8237) were used. Level ties were made to the staffs at the beginning and end of each phase and are recorded on NOAA Forms 76-77. Tide staffs were monitored during tide controlled photography, and photobathymetry, observation are recorded in appropriate NOAA Form 77-53.

Submitted:



Jim D. Shea

Name

Date

APPENDIX C



21
UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Rockville, Md. 20852
July 20, 1982

C3421:RBK

TO: C342 - George M. Ball
FROM: C34 - John D. Perrow, Jr. *John D Perrow Jr*
SUBJECT: Instructions - AEROTRIANGULATION - Job CM-8011
Saint Marks River to Saint James Island, Florida

1.0. PURPOSE

This job is being done to provide chart topography and photobathymetry to be used for chart maintenance and to supplement future hydrographic surveys covering the area of this project.

2.0. GENERAL

Four sheets; TP-01100, TP-01101, TP-01102 and TP-01103 will be prepared at the scale of 1:15,000 covering the area of Saint Marks River to Saint James Island, Florida.

3.0. PHOTOGRAPHY

All photographs were taken in 1981. High altitude bridging photographs were taken at 1:40,000 scale with the Wild RC-10 (Z) camera using natural color film. Low altitude bridging photographs were taken at 1:15,000 scale with the Wild RC-8 (E) camera using natural color film. In addition, tide-coordinated photographs were taken at 1:40,000 scale with the Wild RC-10 (Z) camera using black-and-white infrared film, tide-coordinated at mean high and mean low water. The Special Project Section (Rockville, Maryland) will assist in the selection of the low altitude photographs for bridging.

4.0. DATA FURNISHED

- a. Control Data
- b. USGS quadrangles
- c. Project diagram
- d. 1:15,000, 1:40,000 scale natural color photographs (contacts and film positives)
- e. 1:40,000 scale black-and-white infrared photographs (contacts)
- f. Nautical Charts



5.0. AEROTRIANGULATION OPERATIONS

5.1. All horizontal and vertical control stations are paneled and NOAA Form 76-53 has been prepared for each station.

5.2. Analytic aerotriangulation is required for the 1:40,000 scale 81Z(C) high altitude photographs to establish horizontal control to control the analytic aerotriangulation of the 1:15,000 scale 81E(C) photographs. A block adjustment is required of the 1:15,000 scale photographs which will be necessary for the instrumentation of map compilation to be performed by assigned compilation unit. Drop common points from the bridging photographs onto the black-and-white infrared photographs for determining values for ratio photographs.

5.3. Locate all visible landmarks and fixed aids to navigation during bridging of the 1:40,000 scale photographs.

5.4. Determine ratio values of black-and-white infrared photographs and average the values. Include values as part of the Photogrammetric Plot Report.

5.5. All horizontal control data, positions of landmarks and fixed aids to navigation, shall be included in the master data deck for automatic plotting.

6.0. PROJECTIONS

6.1. Generate a magnetic plotting tape, using the Lambert Conformal State Plane Coordinate System Florida, North Zone for ruling of projections and points to be shown on the base sheets. Plot two base sheets for each map. On base sheet #1, plot the horizontal, vertical control, landmarks, fixed aids and pass points. On base sheet #2, plot the same points as on #1, except do not plot any pass points. Both sheets should be plotted on the same day.

6.2. See project diagram for sheet coordinate limits and flight lines of photograph taken.

7.0. ASSIGNMENT

7.1. Upon completion of aerotriangulation contact C342 for compilation assignment of job.

8.0 SCHEDULE

Schedule job on a routine bases. If changes in procedures and methods seem advisable, contact C342.

3

9.0. COST

Charge all cost to 833201.

cc:
C3421
C3422

APPENDIX D

Photogrammetric Plot Report

CM-8011

St. Marks River to St. James Island

Florida

TP-01103

Photobathymetry

Area Covered

This report pertains only to one portion of project CM-8011. It covers an area of approximately 56 square miles that includes the St. Marks River and its channel which extends three miles into Apalachee Bay. The shoreline extends from Wakulla Beach east to, and including, Stony Bayou.

One 1:15,000 scale manuscript (TP-01103) covers this area.

Method

Two strips of 1:40,000 scale color photographs were bridged by standard analytic aerotriangulation methods. Horizontal control was premarked. Tie points from strip one served as the horizontal control for the adjustment of strip two.

Once bridged, tie points from the two 1:40,000 scale bridging strips were used as the primary horizontal control for the 1:15,000 scale color photographs. Tie points between the 1:15,000 scale bridging strips provided supplementary control and were used to ensure that the strips junctioned properly during the strip adjustment process. Because a purpose of this project is to provide photobathymetric data, premarked vertical control was provided. Supplemental vertical control was transferred to these photos from 1:40,000 scale tide-coordinated black-and-white infrared photos. A block adjustment of the 1:15,000 scale bridging strips was used to provide the final ground coordinates for this portion of the project.

Ratio values have been determined.

Adequacy of Control

When the color bridging photographs used in this project were flown, the horizontal panels for the 1:40,000 scale and the vertical panels for the 1:15,000 scale no longer existed. The control had to be photogrammetrically transferred to the appropriate photos. 1:10,000 scale color photos flown in May 1981 provided the vertical control and 1:40,000 scale color photos flown in February 1981 provided the horizontal control.

Some error could have been introduced into the adjustments by this method, but the horizontal control was still held within National Standards of Map Accuracy. No vertical standards were set.

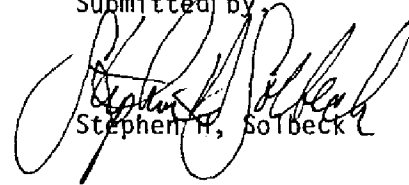
Supplemental Data

USGS quadrangles were used to provide additional vertical control. Nautical Charts were used to locate aids and landmarks.

Photography

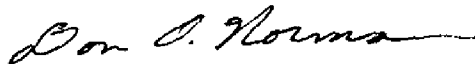
The coverage, overlap, and quality of the photography proved adequate for completion of the project.

Submitted by



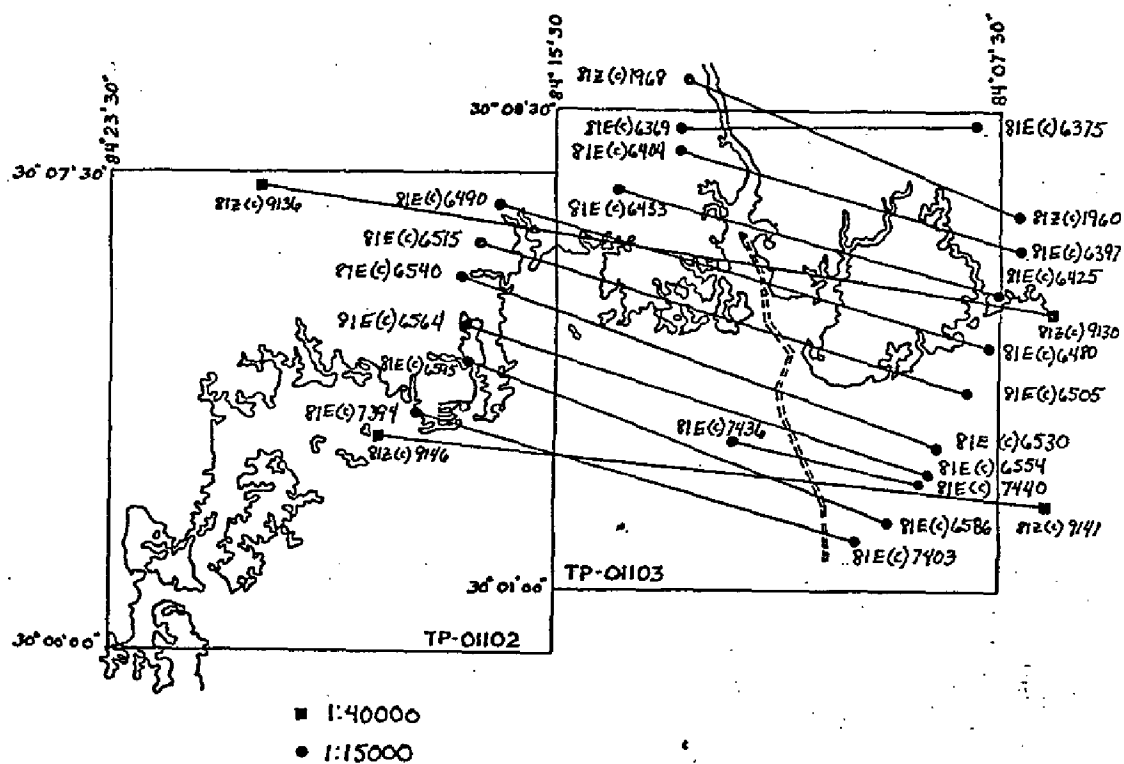
Stephen H. Solbeck

Approved and Forwarded:



Don O. Norman
Chief, Aerotriangulation Unit

ST. MARKS RIVER TO ST. JAMES ISLAND
 FLORIDA
 PHOTOBATHYMETRY
 CM-8011
 BRIDGING PHOTOGRAPHS



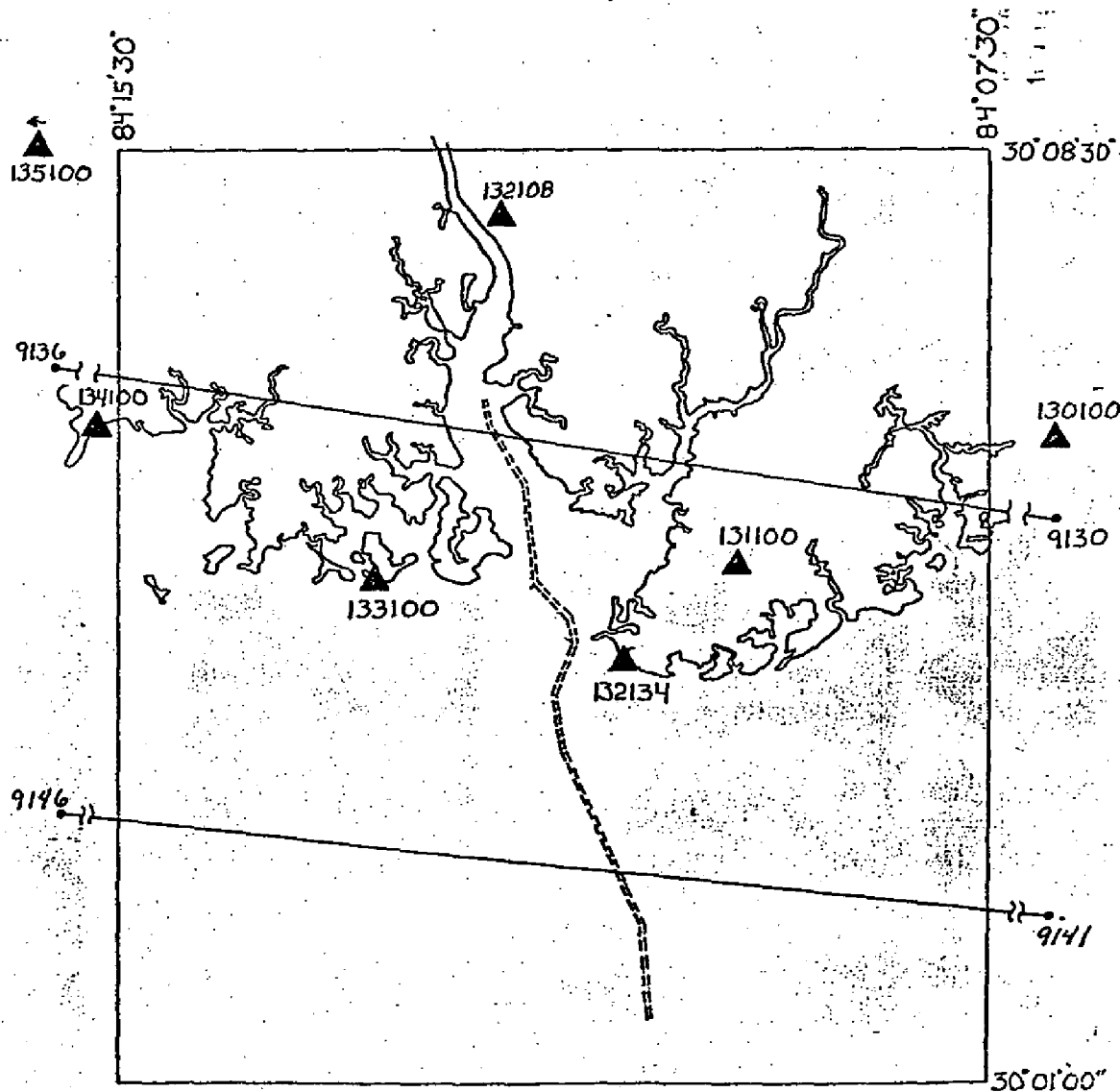
ST MARKS RIVER TO ST JAMES ISLAND FLORIDA

CM-8011

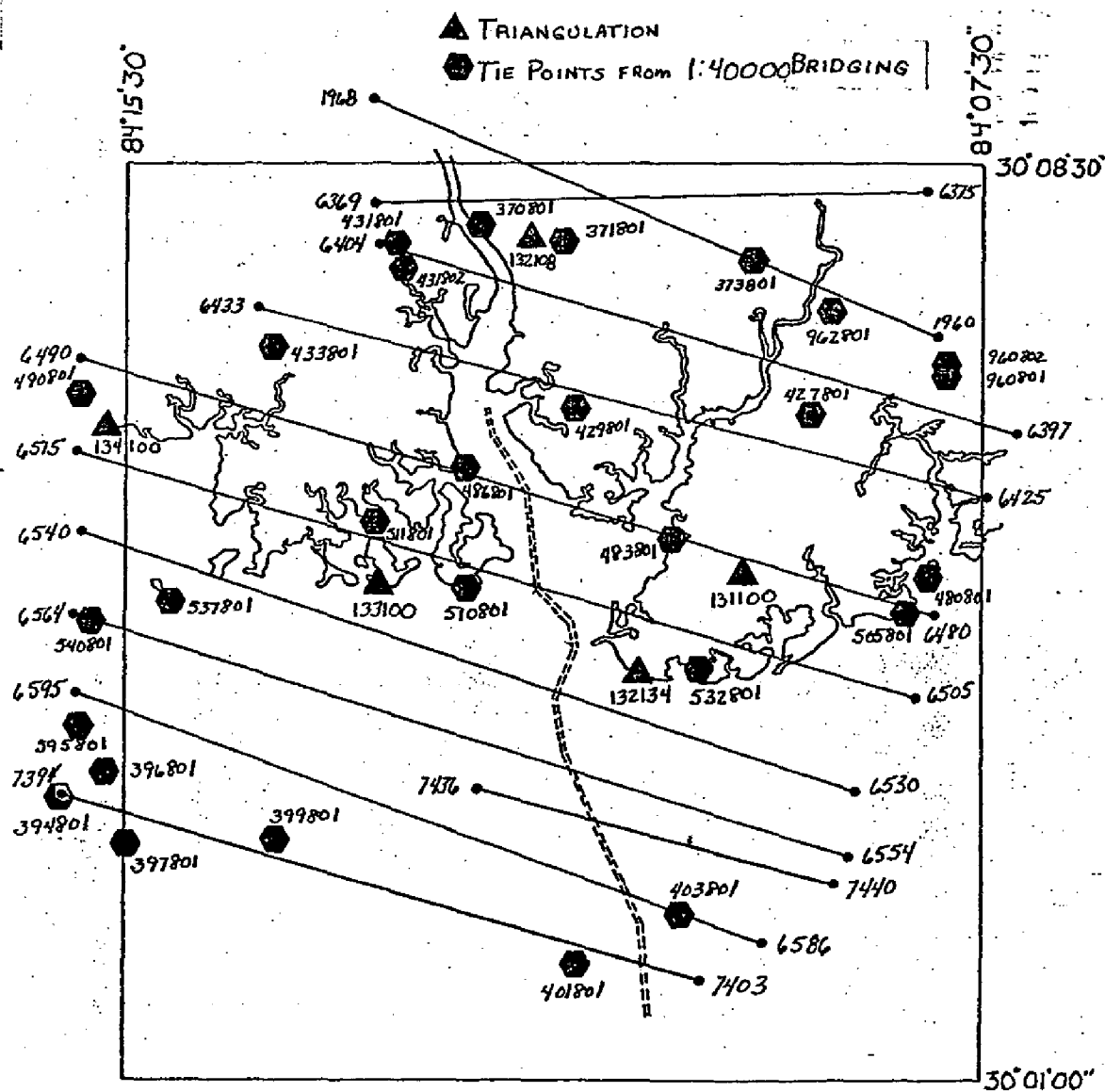
BRIDGING PHOTOGRAPHY

1:40000

81Z(<)

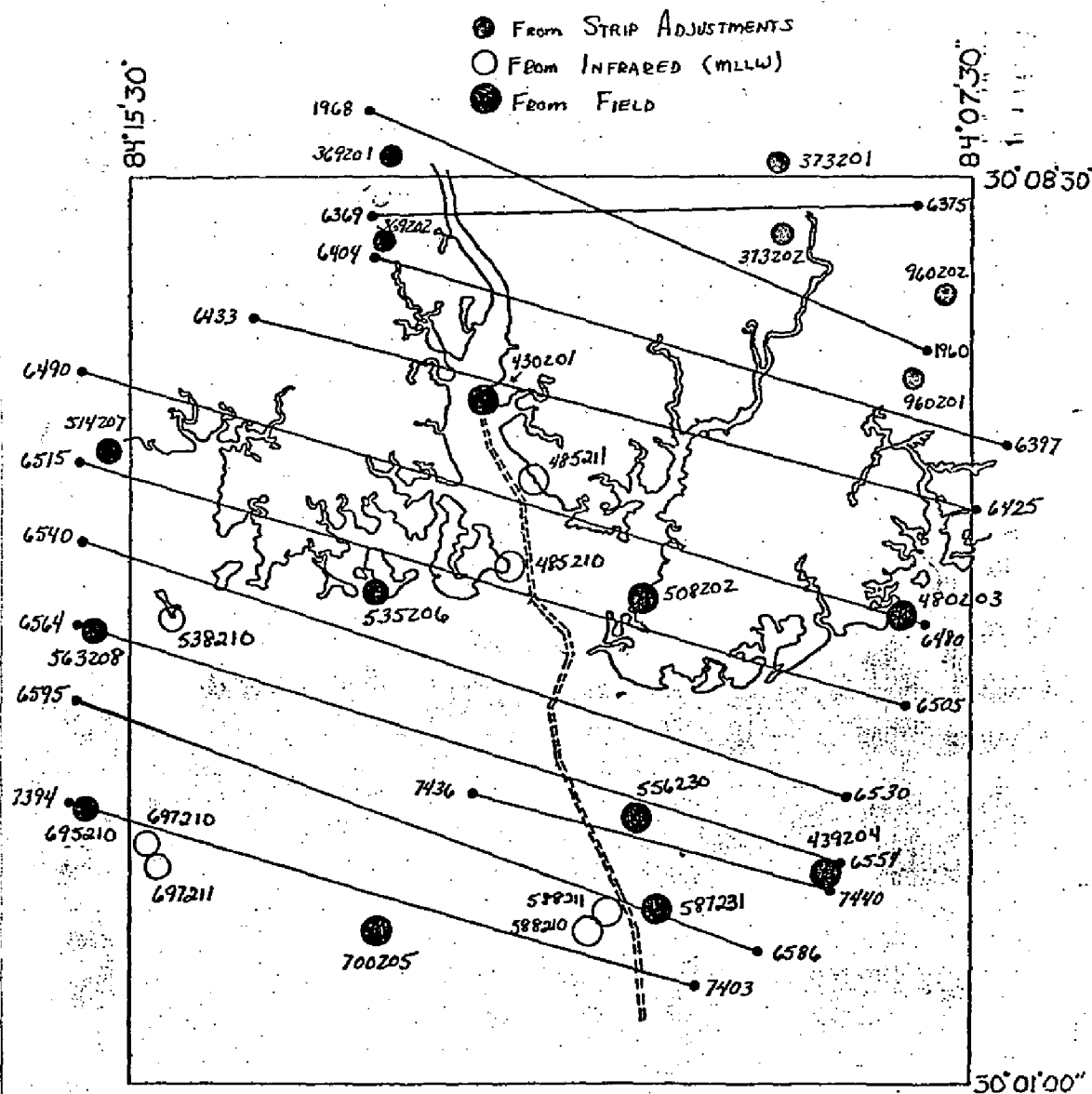


ST MARKS RIVER TO ST JAMES ISLAND
FLORIDA
CM-8011
HORIZONTAL CONTROL
1:15000



ST. MARKS RIVER TO ST JAMES ISLAND
FLORIDA
CM-8011

VERTICAL CONTROL
1:15000



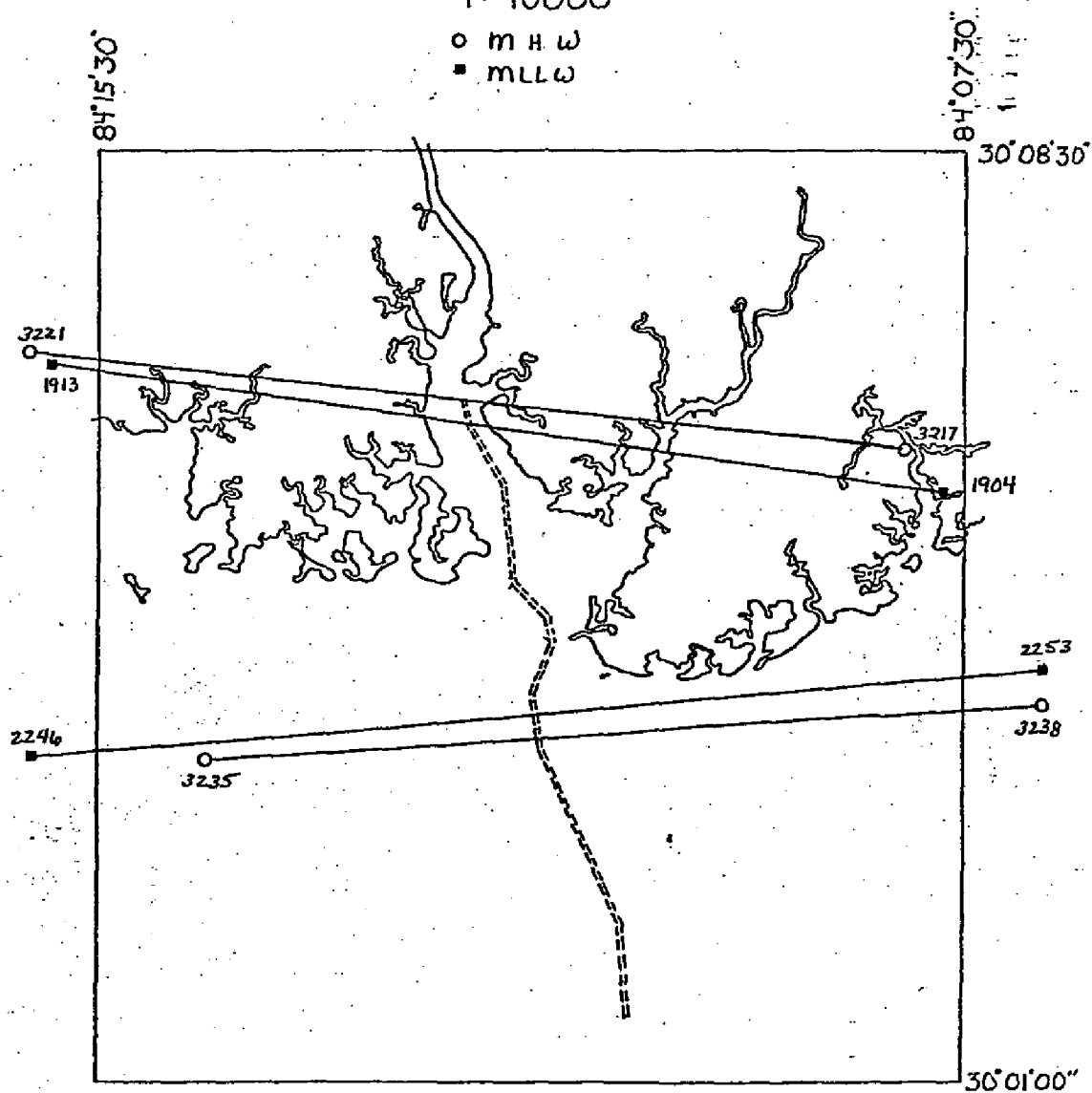
ST MARKS RIVER TO ST JAMES ISLAND
FLORIDA
CM-8011

INFRARED PHOTOGRAPHY 812(R)

1:40000

○ M H W

■ M L L W



CM-8011
 Fit To Control
 TP-01103
 From Strip Adjustments
 Values in Feet
 Block Adjustment

<u>Strip 1</u>			X	Y
H-62-01-A1-AMC, 1981	(130100)	▲	-.860	-.075
Mound Tower, 1935	(131100)		1.284	1.383
St. Marks Lighthouse, 1933	(132134)	▲	1.815	-1.973
Leon Tower, 1935	(132108)	▲	-1.577	.209
Axe, 1940, Sub Pt 3A	(133101)		-1.607	-2.012
Goose Creek, 1935, Sub Pt 2A	(134101)	▲	1.212	2.300
McAlister, 1933 Sub Pt 1A	(135101)	▲	-.590	-.461

<u>Strip 2</u>			X	Y
131801			1.231	-3.034
131802			.448	-2.044
131803	▲		-.105	-.209
132801	▲		.064	.775
132802			1.420	-.597
133801	▲		.550	-1.209
133802			.474	-.621
134801	▲		-1.013	.972
134802			-.454	-1.860
135801			.506	-.329
135802	▲		1.270	-1.964
135803			.346	-.468

▲ Control stations held in the strip adjustments

CM-8011
Fit to Control
TP-01103
Horizontal 1:15,000
(in feet)
Block Adjustment

		X	Y
Goose Creek, 1935, Sub Pt 2A	(134101)	.581	-.444
St. Marks Lighthouse, 1933	(132134) ▲	0	0
Mound Tower, 1935	(131100) ▲	-.003	-.002
Axe, 1940, Sub Pt 3A	(133101) ▲	.003	0
Leon Tower, 1935	(132108)	-.449	-.900
	370801	.005	-.394
	371801 ▲	0	-.002
	373801	.082	.796
	960801	.312	2.746
	960802	-1.792	1.456
	962801 ▲	-.001	-.002
	427801	-.047	.999
	429801	.173	-.020
	431801	-.003	-.340
	431802	.072	-.150
	433801	1.266	-.173
	480801	.414	-.134
	483801	-.019	.084
	486801	-.728	-.107
	490801 ▲	-.004	.002
	505801	1.793	-.005
	510801	-1.456	-.066
	511801	1.094	-1.196
	532801	-.222	1.969
	537801	-1.429	1.616
	540801	.305	-.157
	595801	-1.133	.073
	694801 ▲	.004	.001
	696801	-.822	3.704
	697801	.841	-.198
	699801 ▲	.003	.003
	701801	-.120	-.588
	703801 ▲	-.003	.007

▲ Control held in the Block Adjustment

CM-8011
 Fit to Control
 TP-01103
 Vertical 1:15,000
 (in feet)
 Block Adjustment

Z

485201	▲	.485
402201		.512
430201	▲	-.141
960201		-5.634
960202	▲	.157
373201		2.139
373202		-.102
369201	▲	-.154
369202		-.522
533202	▲	.489
508202	▲	.246
480203	▲	-.676
505203	▲	-.318
530204	▲	-.200
554204	▲	-.600
586204	▲	.748
439204	▲	-.289
700205	▲	-.640
535206	▲	.148
511206	▲	.659
489207	▲	-.210
514207	▲	-.312
539207	▲	-.548
594208	▲	-.213
539208	▲	-.564
563208	▲	-.371
695210	▲	.079
697210	▲	.210
697211	▲	.105
588210	▲	.653
700210		.056
588211		1.844
538210	▲	.600
561210	▲	.771
592210		1.932
485210		.797

2

		Z
509210		1.010
485211		3.222
509211		3.993
438230	▲	.617
588230		-.367
532230	▲	-.223
556230	▲	.292
438231	▲	-.630
587231	▲	-1.568
702231	▲	.856

▲ Held in the adjustment

RATIO VALUES

CM-8011

TP-01103

RATIO

1:40,000 Color Bridging

81Z(C) 9130 thru 9136

2.708

81Z(C) 9141 thru 9146

2.713

1:40,000 Black and White Bridging

81Z(R) 1904 thru 1913

2.64

81Z(R) 2246 thru 2254

2.60

81Z(R) 3216 thru 3222

2.66

81Z(R) 3232 thru 3238

2.66

1:15,000 Color Bridging

All Strips

1.00

APPENDIX E



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
 NATIONAL OCEAN SURVEY
 XXXXXXXXXXXXXXXXXXXXXXX
 Rockville, Md. 20852
 National Ocean Service
 CHARTING AND GEODETIC SERVICES
 Rockville, Md. 20852

March 21, 1983

N/CG2321:GF

TO: N/CG232 - George M. Ball

FROM: N/CG23 - Lawrence W. Fritz

Lawrence W. Fritz

SUBJECT: PROJECT INSTRUCTIONS: OFFICE - Job CM-8011, Part I, St. Marks River to St. James Island, Florida, Shoreline Mapping and Photobathymetry

1.0. PURPOSE

1.1. These instructions provide basic specifications for the compilation of data for use in the maintenance of nautical charts. Compilation shall be based on aerotriangulation that meets the requirements for the National Standards of Map Accuracy and an office interpretation of aerial photographs.

1.2. Unless otherwise specified in these instructions, compilation, processing, and dissemination of all data shall be in accordance with the C&GS Topographic Manual, Part II, and applicable amending NOS Photogrammetric Instructions.

2.0. GENERAL

2.1. Area. This job segment is planned to provide a 1:15,000 scale shoreline map (TP-01103) with an accompanying photobathymetric map overlay covering the St. Marks River Entrance and adjacent waterways.

2.2. Field Operations. Field work accomplished consisted of aerial photography, tidal observations, and the recovery, establishment, and identification (premarking) of horizontal and vertical control necessary for aerotriangulation. There was no field inspection performed.

2.3. Photography. High and low altitude natural color photographs have been obtained to complete this map. Color photographs required for basic aerotriangulation were taken with the Wild RC-10(Z) camera at 1:40,000 scale. Compilation photographs were exposed with the Wild RC-8(E) camera at 1:15,000 scale. In addition, support color photographs at 1:10,000 scale were secured using the Wild RC-10(Z) camera, providing the field identified (premarked) vertical control points required for aerotriangulation and compilation.

Supplemental tide-coordinated photographs (MHW and MLLW) were also obtained to complement the establishment of tidal datums/vertical control required for



compilation. These photographs were taken in February and March 1981 with the Wild RC-10(Z) camera at 1:40,000 scale.

2.4. Aerotriangulation. Thirteen strips of natural color photographs were bridged using analytic aerotriangulation methods; two strips 1:40,000 scale taken December 10, 1981, and eleven strips 1:15,000 scale taken November 25, 1981. The high altitude strips were bridged to provide horizontal control for the low altitude strips. Horizontal and vertical control points used to bridge these strips were field identified (premarked) and transferred photogrammetrically from support color photographs obtained earlier during the same year. Horizontal control points were transferred from 1:40,000 scale photographs taken in February 1981 and vertical control points were transferred from 1:10,000 scale photographs taken in May 1981. Aerotriangulated control proved adequate and meets the requirements according to National Standards of Map Accuracy.

Aerotriangulation operations also included ruling the manuscript base, determining ratio values for photographs, and locating visible navigation aids. The manuscript base was ruled with Lambert Conformal Conic Projection and 10,000 foot grid ticks based on the Florida State Plane Coordinate System (North Zone).

2.5. Previous Job Instructions. The following list of prior instructions, issued under Job CM-8011, is provided for inclusion in pertinent reports:

- a. AEROTRIANGULATION, 7/20/82
- b. FIELD, 1/29/81

2.6. Tidal Datums. Datums for this job are MHW and MLLW. Planes of reference for symbolization are MHW and MLLW.

2.7. Tide Data. Tidal stages concurrent with the photography required for compilation are provided. This information is based on reference station records furnished by N/OMS123 and field observation records provided to this office.

2.8. Charts Affected. Chart 11405 and 11406 will be affected by this survey.

2.9. Prior Surveys. The most recent photogrammetric survey covering this area is registered map TP-01033 (CM-7821).

3.0. ASSIGNMENT

Compilation is assigned to N/CG2323.

Final review is assigned to N/CG2321.

4.0. DATA FURNISHED

- a. Charts and quads
- b. Control and job diagrams
- c. Photogrammetric Plot Report
- d. Horizontal control data
- e. Field records
- f. Bridging photographs
- g. Ratio photographs
- h. Base sheet
- i. Computer listing
- j. Tide data

5.0. COMPILATION

5.1. Limits. Compile standard Class III shoreline manuscripts. The offshore limit of compilation is directly related to the extension, density, and placement of horizontal and vertical control provided. Use the large-scale chart as a guide for selection and limit of interior detail.

5.2. Delineation. Delineation will be accomplished using computer assisted instrument compilation methods and based on aerotriangulated control and tidal datums established by NOS.

Where selectivity is required because of density of detail, features that have landmark significance or of interest to a mariner are always retained. When features are too small or too numerous to show to scale, no attempt should be made to show all. Instead, a representative pattern of the symbol or area outline is shown, augmented by an explanatory note. Small features, especially when dangerous to navigation, may be slightly exaggerated in size, closely resembling their true shape; e.g., bare rock, islet.

5.3. Chart comparison. A comparison with the most recently published charts/prior survey shall be made during all compilation phases. This effort is particularly important to ensure charted alongshore and offshore features shown as bare or uncovering are investigated. Questionable differences between map detail and the charts/prior survey shall be noted and reported on map copies released; e.g., Chart Maintenance Print(s), Notes to Hydrographer.

5.4. Geodetic Control. Refer to memorandum instructions "Listing and Plotting of Control Stations on Shoreline Manuscripts," dated July 23, 1968, and "Labeling Triangulation Stations Field Positions on NOS Maps and in NOS Descriptive Reports," dated November 3, 1978.

5.5. Navigational Aids

5.5.1. Locate or verify aerotriangulated and geodetic positions of visible charted landmarks, fixed aids, and map features of possible landmark value.

The compilation office shall resolve discrepancies that occur between compilation and aerotriangulation identification of objects.

5.5.2. Refer to Photogrammetric Instruction No. 78 for symbolization and labeling. Map features of possible landmark value are to be symbolized the same as charted landmarks, however, label with upper and lower case letters; e.g., Tank.

5.5.3. Charted landmarks and aids identified shall be reported using NOAA form 76-40. When completing form, identify those objects positioned using aerotriangulation techniques by means of an asterisk and/or notation. The media for reporting information concerning charted navigational aids not compiled and map features of possible landmark value will be the Chart Maintenance Print.

5.6. Roads and Streets. Requirements for symbolization are outlined in Photogrammetric Instruction No. 56, Amendment 1.

5.7. Buildings. Buildings coinciding with the shoreline, marine service and port facilities, and buildings on coastal structures are to be shown. These conditions complement the general requirements for the selection of buildings outlined in Photogrammetric Instruction No. 54, Revision No. 2, Provisional.

5.8. Bridges and Cable Crossings. Procedures are outlined in Photogrammetric Instruction No. 27, Revision 1.

5.9. Rocks, Reefs, and Ledges. Refer to Photogrammetric Instruction No. 70. Photogrammetrically determined heights/depths of rocks are to be shown in feet.

5.10. Drafting. The base manuscript will be drafted in accordance with Photogrammetric Instruction No. 55, Revision 2. When drafting small features or related symbols, the minimum length/size shall be .7 mm.

5.11. Photobathymetry

5.11.1. Photobathymetric data will be compiled using computer assisted stereoplotter compilation methods. Depth correction(refraction), earth curvature correction, and tide correction factors are to be applied using standard operational procedures.

5.11.2. Discrete depths, depth curves at 6-foot intervals, and the approximate MLLW line shall be compiled over as much of the controlled area permitted by the water penetration qualities of the photographs. The MLLW line shall be compiled using the same procedure as for compiling depth curves.

5.11.3. Discrete depths shall be compiled using the spot profile and random spot methods. The maximum spacing/interval requirement for depth readings is 6 mm at map scale. However, the compilation office is required to secure sufficient depth measurements to develop the area adequately and to ensure

that least depths are identified. The spot profile method requires readings to be made along straight parallel lines. Spacing between the parallel lines should be no greater than 6 mm. If possible, spot profile lines should be run perpendicular to the shoreline. Run check lines, perpendicular to the spot profile lines, using a spacing of approximately 24 mm between lines. Check lines are required for use in the verification/review process. Use the random spot method to supplement spot profile and depth curve measurements, particularly to identify high points or the least depth of pinnacles.

5.11.4. Depths shall be compiled in feet.

5.11.5. The selection of depth measurements to be portrayed on the map overlay is to include the least depths or representative pattern thereof and should be such that a maximum pattern of approximate 6 mm x 6 mm is represented. The horizontal position of each depth delineated on the map overlay shall be the approximate center of the number or numbers representing the depth at that position. The size of the numbers shall be approximately 2.0 mm in height.

5.11.6. Prepare a duplicate tape of discrete depths using format 13. This data is required in support of charting and is to be routed through N/CG2321 to N/CG221.

5.12. Geographic and Object Names

5.12.1. Requirements for names, including their placement, are outlined in Photogrammetric Instruction No. 63.

5.12.2. Only names of major roads and highway route numbers on the quad(s) shall be shown.

5.12.3. Obtain final geographic names list using the procedures outlined in Photogrammetric Instruction No. 63, section 2.03.1, last paragraph.

5.13. Reports. When selectivity of detail is required, add a brief statement to the Compilation Report.

5.14. Chart Maintenance Print. Prepare a stable base copy of the office reviewed map and label Chart Maintenance Print. General requirements are specified in Photogrammetric Instruction No. 69 for completing this print. When preparing this print, keep in mind the objective is to provide comprehensive information about the adequacy, reliability, and completeness of map detail, as well as differences noted between the map and chart. This effort cannot be emphasized too strongly, because proper evaluation and usage of map detail will depend on this information.

5.15. Support Data. Data developed in support of N/CG221 and N/CG241 functions shall be routed through N/CG2321.

5.16. Communication. Forward a copy of each transmittal letter to N/CG2313.

6.0. SCHEDULE

Schedule compilation and final review on a routine basis. A production plan is to be developed and submitted to this office by April 1, 1983.

7.0. MODIFICATIONS

7.1. If changes in procedures and/or methods seem advisable, please make appropriate recommendations to this office.

7.2. Departures from basic specifications, as necessitated by unique characteristics and special requirements for this mapping project, shall be contained in supplementary instructions or described in the text of the Job Completion Report and each applicable Descriptive Report.

8.0. COSTS

All costs incurred on this assignment shall be charged to Task 8K6C01.

cc:
N/CG2321
N/CG2342
N/CG2324

APPENDIX F



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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
CHARTING AND GEODETIC SERVICES
Rockville, Md. 20852

August 30, 1984

N/CG2323:RWR

TO: N/CG232 - Gregory L. Fromm
FROM: *for Robert W. Williams*
N/CG23 - Ronald K. Brewer

SUBJECT: Cancellation of CM-8011, Parts II and III

All operations are hereby canceled for CM-8011, St. Marks River to St. James Island, Florida, Parts II and III. The cancellation pertains to maps TP-01100, TP-01101, and TP-01102.

Charting information acquired in the completion of Part I (TP-01103), which pertains to data outside the geographic limits of TP-01103 shall be coded and referenced to the project number, not the map number, and forwarded through N/CG2321.

cc:
N/CG231
N/CG2321
N/CG2322
N/CG2323
N/CG2342





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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

May 8, 1985

N/CG2321:GF

MEMORANDUM FOR THE RECORD

FROM: N/CG23 - *Ronald K. Brewer*
Ronald K. Brewer

SUBJECT: Photobathymetry Requirement for Jobs CM-8011, CM-8105, and CM-8106

Photobathymetry will be indefinitely postponed for the subject projects. Office difficulties have been encountered in meeting the strict vertical control requirements and problems have occurred in the operation of capital equipment and processing procedure/software. Further study regarding these interrupt factors will be undertaken and future action will be forthcoming based on the findings/recommendations resulting from the analysis. Until these matters are affirmatively addressed and/or unless amended by subsequent instructions, the following actions are to be taken for each of these projects.

1. Shoreline map production will continue to comply with photogrammetric schedules. Shoreline maps shall be registered and all associated support data sets will be disseminated through N/CG2321 to the appropriate offices.

2. All pertinent field records, project materials, and/or related data shall be archived at the completion of the map registration phase. However, if photobathymetry has not been reinstated and effected at this stage, duplicates of these records/data shall be processed before final deposition. These duplicates and all the bridged photographs shall be retained by N/CG232 until further notice.

The conclusion of any project without meeting the photobathymetry requirement will directly void segments of the basic office instructions already issued. Statements made under several sections relating to general requirements, methodology, and data processing will be invalid. If this is the case, this departure shall be properly documented by subsequent instructions and/or described in the text of the Job Completion Report.

CC:
N/CG232 - Rodkey



APPENDIX G

GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-8011 (St. Marks River, Florida)

TP-01103

Africa Bayou
Allround Point
Apalachee Bay
Big Cove
Big Pass
Big Pass Island
Big West Bayou
Boggy Bayou
Denham Bayou
East Goose Creek
East River
Flat Creek
Four Mile Bayou
Four Mile Point
Gibbs Island
~~Gibbs Pond~~ *EAR*
Goose Creek Bay
Graves Creek
Gulf of Mexico
Haulover Creek
Horns Creek
~~Indian Pass~~ *EAR*
Indian Point
Johns Cove
Johns Creek
Johns Island
Kitchen Cove
Lighthouse Pool
Little Pass
Little Pass Island
Little West Bayou

Middle Creek
Minnie Cove
Mounds Pool
Oliver Creek
Pattys Island
Pelican Point
Picnic Pond
Port Leon
Port Leon Creek
Register Bayou
Rock Creek
Saint Marks River
Sand Cove
Shine Creek
Slough Island
Spectacle Pond
Sprague Island
Steward Bayou
Stony Bayou
Wakulla Beach

Approved by:

Charles E. Harrington
Charles E. Harrington
Chief Geographer, N/CG2x5

APPENDIX H

Coastal Mapping Program Production Procedure Memo No. 1



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

December 10, 1986

MEMORANDUM FOR: Members of the Coastal Mapping Unit

FROM: Robert W. Rodkey, Jr. *Robert W. Rodkey, Jr.*
Chief, Coastal Mapping Unit
Photogrammetry Branch, NCD

SUBJECT: COASTAL MAPPING PROGRAM PRODUCTION PROCEDURE MEMO NO. 1 -
The Labeling of Fixed Aids to Navigation, Charted
Landmarks, Cartographic Features of Possible Landmark
Value and Geodetic Stations on Coastal Survey Maps

PURPOSE

The purpose of this Production Procedure Memo (PPM) is to establish a more contemporary method of annotating fixed aids to navigation, charted landmarks, cartographic features of possible landmark value and geodetic stations on shoreline maps. The procedures outlined in this memo have greater clarity and are more in concert with established charting practices than previous photogrammetric methods.

Authority for the establishment of this PPM is specified in Section 7.0., MODIFICATIONS of each project office instructions.

This memo supersedes the corresponding sections of Photogrammetric Instruction No. 78, Memorandum Instruction "Listing and Plotting of Control Stations on Shoreline Maps", dated July 23, 1968 and Memorandum Instruction "Labeling Triangulation Station Field Positions on NOS Maps and in NOS Descriptive Reports", dated November 3, 1978.

RULES OF COMPILATION

Lettering:

1. Lettering shall be applied using waxed back stripper film. Only in special cases or situations will lettering be applied via hand drafting.
2. The size of the lettering shall be no larger than 8 point. Usually 7 point presents the best image in contemporary size.



Fixed Aids to Navigation:

1. The designated charting name will comply with that specified in the United States Coast Guard Light List for the year of the photography.
2. The designated charting name shall be depicted in vertical capital letters. Refer to Figure 1 for an example.
3. The channel or range identifier shall be included with the fixed aid to navigation identifier, in vertical capital letters, for the first and last aid of said channel or range within the limits of the map. Refer to Figure 2 for an example.
4. If the fixed aid to navigation is also a geodetic station, the full National Geodetic Service(NGS) data base name shall be depicted under the charting name in vertical capital letters with the year of establishment, if known, enclosed in parenthesis. Refer to Figure 3 for an example.

Charted Landmarks:

1. The designated charted name must agree with that specified in the data base, AIS or DIP.FIL, and on the nautical chart.
2. The designated charting name shall be depicted in vertical capital letters. Refer to Figure 4 for an example.
3. If the charted landmark is also a geodetic station, the full NGS data base name shall be depicted under the charting name in vertical capital letters with the year of establishment, if known, enclosed in parenthesis. Refer to Figure 5 for an example.
4. Clarifying descriptions of landmarks, especially in congested areas, is encouraged and completed by adding a descriptive phrase depicted in vertical upper and lower case letters, enclosed in parenthesis. Refer to Figure 6 for an example.

Cartographic Features of Possible Landmark Value(PLM):

1. The designated charting name shall be clear and concise based on interpretation of mapping photography. The compiler and office reviewer must agree on the nomenclature.
2. The designation of a cartographic feature as a PLM shall be based on a stereographic analysis of the feature's prominence as perceived to be viewed from the area of nautical navigation.

3. The charting name shall be depicted in vertical upper and lower case letters. Refer to Figure 7 for an example.
4. If the PLM is a geodetic station, the full NGS data base name shall be depicted in vertical capital letters with the year of establishment, if known. The NGS name shall be enclosed in parenthesis and placed under the charting name. Refer to Figure 8 for an example.
5. Clarifying descriptions of PLMs shall be depicted in vertical upper and lower case letters enclosed in parenthesis. Refer to Figure 9 for an example.
6. In order to avoid confusion with abbreviated charted landmark names, the charting name for PLMs may not be abbreviated. If the charting name can not be fully displayed, the lettered objects option is automatically invoked.

Geodetic Stations:

1. All geodetic stations recovered during photogrammetric operations must be depicted on the appropriate shoreline maps as well as accounted for in the Descriptive Report documentation.
2. The designated NGS data base name shall be depicted in vertical capital letters with the year of establishment, if known. Refer to Figure 10 for an example.
3. Geodetic stations established during field operations, which have an unadjusted position at the time of report, shall have the descriptor "Field Position", enclosed in parenthesis, added to the proper name. "Field Position" will be depicted in vertical upper and lower case letters. Refer to Figure 11 for an example.

Cartographic Features Mapped But Not of PLM Value:

There are occasions when a compiler determines selected discrete point features should be mapped even though they may not be of PLM value. Examples of such features are transmission towers, telephone poles and light standards. The rule of compilation is "the charting name shall be depicted with vertical lower case letters". Refer to Figure 12 for an example.

DESCRIPTION OF SYMBOLS

A charted landmark, fixed aid to navigation or PLM confirmed and measured during the aerotriangulation or compilation phases shall be symbolized on shoreline maps with a 2.5 mm diameter circle with center dot. The line weight shall be equal to .13 mm. This is an established specification.

A charted landmark, fixed aid to navigation or PLM, which is a geodetic station, confirmed during any photogrammetric operational phase or established in the field, shall be symbolized on shoreline maps with an equilateral triangle with center dot. The sides of the triangle shall be equal to 4.5 mm in length and have a line weight equal to .13 mm. Within a reasonable tolerance, the center dot shall have a diameter equal to .13 mm. This is an established specification.

An elevated object mapped which does not meet the definition of charted landmark, fixed aid to navigation or PLM shall be symbolized on shoreline maps with a 1 mm diameter circle. The line weight shall be .13 mm. This is an established specification.

PROCEDURE IMPLEMENTATION

Production procedures specified in this memo shall be implemented as of the date of this memo and shall be applied to all projects in the compilation phase. Projects which are in the final review phase as of the date of this memo and older field edit projects are exempt from implementation.

Attachment

cc: Production Control Unit

Figure Reference	CASE	EXAMPLE OF SYMBOL AND NOMENCLATURE
1	Photogrammetrically Located Fixed Aid to Navigation	⊙ LIGHT 10
2	Fixed Aid to Navigation Nomenclature with Designated Range or Channel Name	⊙ NORFOLK SHIP CHANNEL LIGHT 10
3	Fixed Aid to Navigation which is also a geodetic station	△ NORFOLK SHIP CHANNEL LIGHT 10 (SHIP CHANNEL LIGHT 10 1984)
4	Photogrammetrically Located Charted Landmark	⊙ STACK
5	Charted Landmark which is also a geodetic station	△ STACK (NORFOLK BRICK CO STACK 1934)
6	Charted Landmark Nomenclature with Annotation	⊙ STACK (Most Northern of Six)
7	Photogrammetrically Located Cartographic Feature of Possible Landmark Value (PLM)	⊙ Stack
8	PLM which is also a geodetic station	△ Stack (NORTH SHORE REFINERY 1945)
9	PLM Nomenclature with Annotation	⊙ Stack (Northerly of Two)
10	Geodetic Station recovered during photogrammetric field operations (not an aid, landmark or PLM)	△ MARTIN 1947
11	Geodetic station established during operations; whose position is "unadjusted"	△ MARTIN 1986 (Field Position) or △ MARTIN 1986 (Field Position)
12	Elevated Cartographic Feature mapped which is not a charted landmark, aid or PLM	° light standard