

TP-00006

TP-00006

NOAA FORM 76-35

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

### DESCRIPTIVE REPORT

Type of Survey *Shoreline/Photobathymetry*

Job No. *CM-7718* Map No. *TP-00006*

Classification No. *Class III Map* Edition No. *1st.\**  
Two Parts

#### LOCALITY

State *Saint Croix, Virgin Islands*

General Locality *Southwest Coast*

Locality *Long Point to Frederiksted*

1977 TO 19

#### REGISTRY IN ARCHIVES

DATE .....

☆ U.S. GOVERNMENT PRINTING OFFICE: 1973-761-775

\* This map edition will not be field edited.

NOAA FORM 76-36A (3-72) <span style="float: right;">U. S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMIN.</span>		TYPE OF SURVEY <input checked="" type="checkbox"/> ORIGINAL <input type="checkbox"/> RESURVEY <input type="checkbox"/> REVISED	SURVEY TP. 00006 MAP EDITION NO. (2 Parts) (1) MAP CLASS III JOB PH. CM-7718
DESCRIPTIVE REPORT - DATA RECORD			
PHOTOGRAMMETRIC OFFICE Photogrammetry Division (Rockville)		LAST PRECEDING MAP EDITION	
OFFICER-IN-CHARGE Cdr. Walter S. Simmons		TYPE OF SURVEY <input type="checkbox"/> ORIGINAL <input type="checkbox"/> RESURVEY <input type="checkbox"/> REVISED	JOB PH. _____ MAP CLASS _____ SURVEY DATES: 19__ TO 19__
I. INSTRUCTIONS DATED			
1. OFFICE		2. FIELD	
Instructions-OFFICE-Job CM-7718, Chart Compilation and Photobathymetry, St. Croix, Virgin Islands, 8/21/78  Instructions-AEROTRIANGULATION-Job CM-7718 Chart Compilation and Photobathymetry, St. Croix, Virgin Islands, 8/3/78		Instructions-PHOTOGRAPHY-Job CM-7718 Shoreline Mapping and Photobathymetry, St. Croix, Virgin Islands, 10/26/77  Instructions-FIELD-Job CM-7718 Shoreline Mapping and Photobathymetry, St. Croix, Virgin Islands, 9/21/77	
II. DATUMS			
1. HORIZONTAL: <input type="checkbox"/> 1927 NORTH AMERICAN		OTHER (Specify) Puerto Rico Datum	
2. VERTICAL: <input checked="" type="checkbox"/> MEAN HIGH-WATER <input checked="" type="checkbox"/> MEAN LOW-WATER <input type="checkbox"/> MEAN LOWER LOW-WATER <input checked="" type="checkbox"/> MEAN SEA LEVEL		OTHER (Specify)	
3. MAP PROJECTION Lambert Conformal Conic		4. GRID(S)	
5. SCALE 1:10,000		STATE Virgin Islands	ZONE St. Croix
STATE _____		ZONE _____	
III. HISTORY OF OFFICE OPERATIONS			
OPERATIONS		NAME	DATE
1. AEROTRIANGULATION BY METHOD: Analytic Block LANDMARKS AND AIDS BY		Robert Kelly N/A	4/6/79 _____
2. CONTROL AND BRIDGE POINTS PLOTTED BY METHOD: Coradomat CHECKED BY		Henry Felices N/A	6/7/79 _____
3. STEREOSCOPIC INSTRUMENT PLANIMETRY BY COMPILATION CHECKED BY INSTRUMENT: B-8S/ALTEK Bathymetry <del>XXXXXXXXXX</del> BY SCALE: 1:10,000 CHECKED BY		H. Felices Robert W. Rodkey, Jr. " " " " G. Fromm	10/17/79 10/17/79 10/29/80 "
4. MANUSCRIPT DELINEATION PLANIMETRY BY CHECKED BY METHOD: Bathymetry <del>XXXXXXXXXX</del> BY Smooth Drafting & Scribing CHECKED BY SCALE: 1:10,000 HYDRO SUPPORT DATA BY CHECKED BY		H. Felices G. Fromm Robert Rodkey G. Fromm Robert Rodkey G. Fromm	10/23/79 3/12/80 10/29/80 11/24/80 10/29/80 11/24/80
5. OFFICE INSPECTION PRIOR TO FIELD EDIT BY		N/A	
6. APPLICATION OF FIELD EDIT DATA BY		Field Edit Canceled	
CHECKED BY		N/A	
7. COMPILATION SECTION REVIEW BY		G. Fromm	
8. FINAL REVIEW BY		Robert W. Rodkey, Jr.	
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH BY		Robert W. Rodkey, Jr.	
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH BY		G. Fromm	
11. MAP REGISTERED - COASTAL SURVEY SECTION BY		G. L. W. <i>W. W. W.</i>	

**COMPILATION SOURCES**

TP-00006 (2 Parts)

**1. COMPILATION PHOTOGRAPHY**

CAMERA(S) Wild RC-10(Z) Focal length=153.14mm		TYPES OF PHOTOGRAPHY LEGEND (C) COLOR (P) PANCHROMATIC (I) INFRARED	TIME REFERENCE	
TIDE STAGE REFERENCE <input type="checkbox"/> PREDICTED TIDES <input checked="" type="checkbox"/> REFERENCE STATION RECORDS <input type="checkbox"/> TIDE CONTROLLED PHOTOGRAPHY			ZONE Atlantic	<input checked="" type="checkbox"/> STANDARD
			MERIDIAN 60th	<input type="checkbox"/> DAYLIGHT

NUMBER AND TYPE	DATE	TIME	SCALE	STAGE OF TIDE
77 Z(C) 9344-9350	11/14/77	1005-1016	1:20,000	+ .42 Feet MHW
77 Z(C) 9152, 9153	11/14/77	0830-0844	1:20,000	+ .19 Feet MHW
77 Z(C) 9229, 9231	11/14/77	1313-1322	1:20,000	+ .37 Feet MHW
77 Z(C) 9277, 9278	11/14/77	0913-0922	1:20,000	+ .40 Feet MHW

REMARKS The stages of Tide listed above were determined from "Frederiksted" tide gage records.

**2. SOURCE OF MEAN HIGH-WATER LINE:**

The source of the mean high-water is the photography 77 Z(C)9344-9350 and 77 Z(C) 9152, 9153 listed above under Item 1. Refer to paragraph #35 of the Compilation Report bound with this Descriptive Report.

**3. SOURCE OF MEAN LOW-WATER OR MEAN LOWER LOW-WATER LINE:**

There is no mean low-water line depicted on this map.

**4. CONTEMPORARY HYDROGRAPHIC SURVEYS** (List only those surveys that are sources for photogrammetric survey information.)

SURVEY NUMBER	DATE(S)	SURVEY COPY USED	SURVEY NUMBER	DATE(S)	SURVEY COPY USED

**5. FINAL JUNCTIONS**

NORTH TP-00001 *	EAST TP-00007 *	SOUTH No Contemporary Surveys	WEST No Contemporary Surveys
---------------------	--------------------	----------------------------------	---------------------------------

REMARKS \* Consist of two parts - Shoreline Manuscript plus Photobathymetric overlay. Final junction was made to both parts.

HISTORY OF FIELD OPERATIONS

TP-00006

I.  FIELD INVESTIGATION OPERATION  FIELD EDIT OPERATION

OPERATION	NAME	DATE
1. CHIEF OF FIELD PARTY Photo Party 62	Robert S. Tibbetts	Oct-Nov 1977
2. HORIZONTAL CONTROL	RECOVERED BY R.E. Ledbetter	10/31/77
	ESTABLISHED BY N/A	
	PRE-MARKED OR IDENTIFIED BY R.E. Ledbetter	10/31/77
3. VERTICAL CONTROL	RECOVERED BY N/A	
	ESTABLISHED BY R.E. Ledbetter	10/31/77
	PRE-MARKED OR IDENTIFIED BY " "	11/2/77
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED (Triangulation Stations) BY N/A	
	LOCATED (Field Methods) BY N/A	
	IDENTIFIED BY N/A	
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION	
	<input type="checkbox"/> COMPLETE	
	<input type="checkbox"/> SPECIFIC NAMES ONLY	
	<input checked="" type="checkbox"/> NO INVESTIGATION	
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY	N/A
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY	N/A

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED		2. VERTICAL CONTROL IDENTIFIED	
Pre-marked			
PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION
77 Z(C) 9230	51197, 1977	77 Z(C) 9348	Vertical Panel #19
77 C(C) 9780		77 Z(C) 9230	(Identified 11/13/77)
		77 C(C) 9779	Vertical Panel #18
		77 Z(C) 9153	(Identified 11/2/77)
		77 Z(C) 9346	Vertical Panel #17
		77 C(C) 9779	(Pre-marked 10/21/77)

3. PHOTO NUMBERS (Clarification of details)  
None

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED  
None

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME

5. GEOGRAPHIC NAMES:  REPORT  NONE

6. BOUNDARY AND LIMITS:  REPORT  NONE

7. SUPPLEMENTAL MAPS AND PLANS  
Field Control Report

8. OTHER FIELD RECORDS (Sketch books, etc. DO NOT list data submitted to the Geodesy Division)  
Field Control Report Vols. I & II  
Control Identification Cards (Vertical and Horizontal) Horizontal Observations  
NOAA Form(s) 76-72 (List of Directions) Vol I WYE Leveling Book  
Photographs of Vertical Control Panels

RECORD OF SURVEY USE

TP-00006 (2 Parts)

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Shoreline Map plus Photobathymetry map overlay.	11/24/80	Class III Shoreline Map. Field edit canceled.		1/13/81
Shoreline/Photobathymetry Maps final reviewed prior to registration	11/20/81	Class III Shoreline Map. Field edit canceled.	3/22/82	

II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS
3 Pages		3/22/82	76-40 listing(s)

2.  REPORT TO MARINE CHART DIVISION, COAST PILOT BRANCH. DATE FORWARDED: \_\_\_\_\_  
 3.  REPORT TO AERONAUTICAL CHART DIVISION, AERONAUTICAL DATA SECTION. DATE FORWARDED: \_\_\_\_\_

III. FEDERAL RECORDS CENTER DATA

1.  BRIDGING PHOTOGRAPHS;  DUPLICATE BRIDGING REPORT;  COMPUTER READOUTS.  
 2.  CONTROL STATION IDENTIFICATION CARDS;  FORM NOS 567 SUBMITTED BY FIELD PARTIES.  
 3.  SOURCE DATA (except for Geographic Names Report) AS LISTED IN SECTION II, NOAA FORM 76-36C. ACCOUNT FOR EXCEPTIONS:  
 4.  DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: 3/26/82

IV. SURVEY EDITIONS (This section shall be completed each time a new map edition is registered)

SECOND EDITION	SURVEY NUMBER	JOB NUMBER	TYPE OF SURVEY	
	TP - _____ (2)	PH - _____	<input type="checkbox"/> REVISED	<input type="checkbox"/> RESURVEY
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	MAP CLASS	
			<input type="checkbox"/> II.	<input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL
THIRD EDITION	SURVEY NUMBER	JOB NUMBER	TYPE OF SURVEY	
	TP - _____ (3)	PH - _____	<input type="checkbox"/> REVISED	<input type="checkbox"/> RESURVEY
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	MAP CLASS	
			<input type="checkbox"/> II.	<input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL
FOURTH EDITION	SURVEY NUMBER	JOB NUMBER	TYPE OF SURVEY	
	TP - _____ (4)	PH - _____	<input type="checkbox"/> REVISED	<input type="checkbox"/> RESURVEY
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	MAP CLASS	
			<input type="checkbox"/> II.	<input type="checkbox"/> III. <input type="checkbox"/> IV. <input type="checkbox"/> V. <input type="checkbox"/> FINAL

TP-00006

## SUMMARY

This map is one of nine 1:10,000 scale shoreline/photobathymetric maps that comprise Job CM-7718. The map was compiled in two parts; part 1 is the base shoreline manuscript and part 2 is the photobathymetric overlay.

The project area encompasses the island of Saint Croix, U.S. V.I. and the Buck Island National Monument.

The purpose of this survey is to provide data for use in the maintenance of published charts and new chart construction.

Field operations began in October 1977. Operations generally consisted of aerial photography, tidal observations, and the recovery, establishment, and identification of horizontal and vertical control. Horizontal control was premarked (paneled), vertical control was premarked and photoidentified. There was no field inspection performed.

High and low altitude natural color photographs were furnished to complete this job. Basic aerotriangulation photography was flown at 1:50,000 scale, compilation photography at 1:20,000 scale. The high altitude photography was taken in November 1977 with the Wild RC-8(C) camera, the 1:20,000 scale photography in November/December 1977 with the RC-8(E).

Eight strips of color photography, two 1:50,000 scale and six 1:20,000 were bridged by analytic aerotriangulation methods and adjusted to ground on the Virgin Island State Plane Coordinate System. The two high altitude strips were bridged to provide control for bridging the lower altitude strips. Sixteen horizontal and seventeen vertical control stations were used in the block adjustments of the six 1:20,000 scale strips. This work provided the horizontal and vertical control for compilation.

Aerotriangulated control points from the two southern low altitude bridged strips were transferred to one adjacent 1:20,000 scale strip, 77-Z(C)9265-9280. This allowed densification and a seaward extension of photobathymetry compilation on TP-00006 through TP-00009.

Tidal data information for this job was furnished by the Tides and Water Level Division (OA/C23). This information consisted of reference station records for four tide gages and was used in determining the tidal stage at the time each compilation photography was taken.

Compilation was performed in the Special Projects Section (Rockville). Compilation was accomplished through standard photogrammetric methods utilizing the Wild B-8S stereoplotter interfaced

with an ALTEK digitizing system. This map is based on an office interpretation of the 1:20,000 scale photographs. The depths and six-foot interval depth curves depicted on the photobathymetric overlay are referred to the MLW datum established by NOS. A tide zone factor was applied to each photobathymetric model in order to reference all digital data to the MLW datum.

Basic map line work is smooth compilation drafted. Discrete depths were scribed using the Calcomp 718 flatbed plotter to produce a stable base scribecoat negative. The depth curves were then hand scribed on this scribecoat. Using photographic processes, the scribecoat negative was used to produce a stable base positive, the photobathymetric overlay.

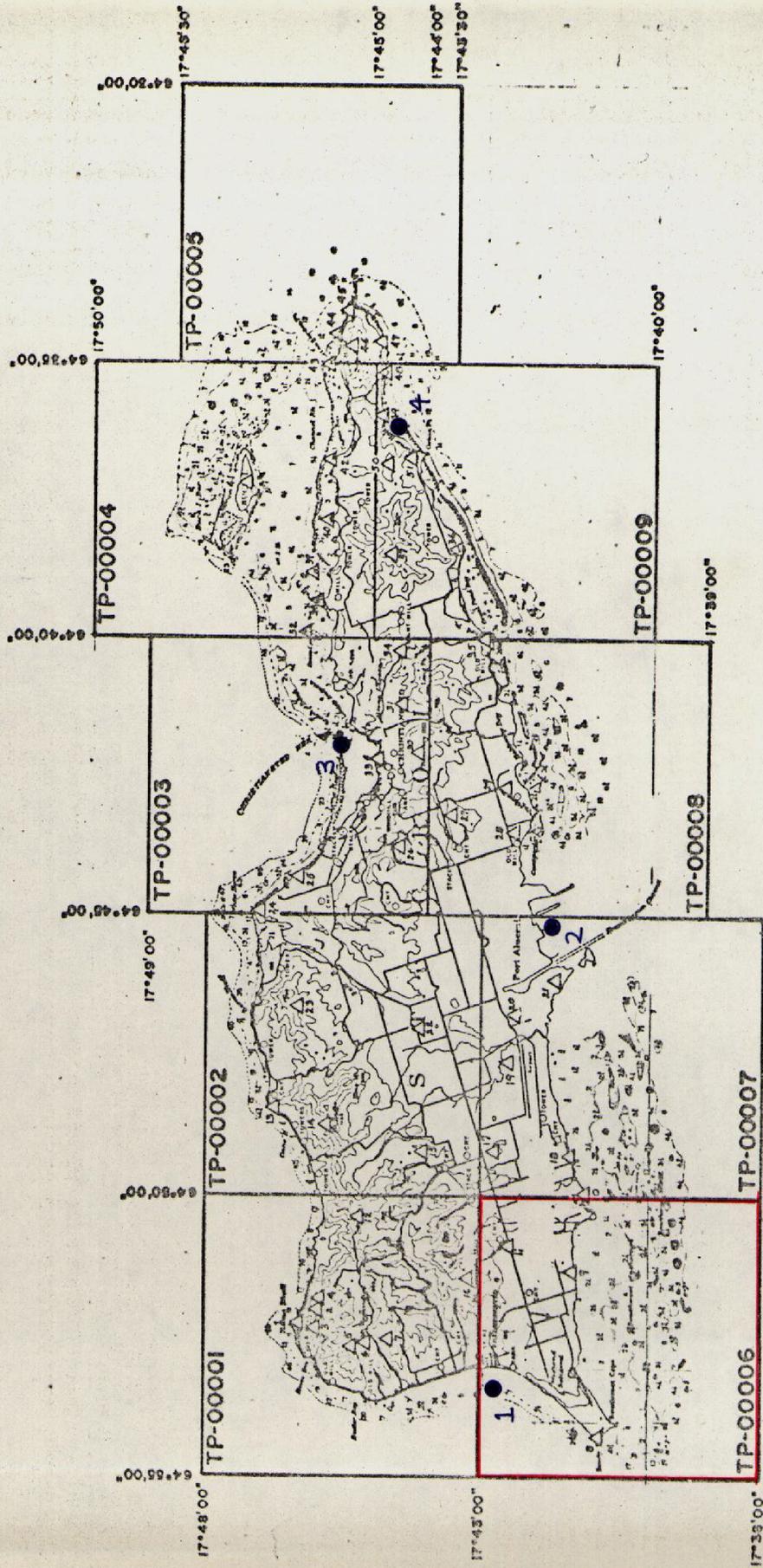
This map edition will not be upgraded. Post-compilation photogrammetric field operations were canceled July 2, 1980. Hydrographic surveying is scheduled in the area covered by this map. Field data developed to upgrade this map will be incorporated as part of the hydrographic survey and/or forwarded to the Marine Chart Division for blueprint.

Final review was performed by the Special Projects Section (Rockville). The map was found to be satisfactory and meets the requirements of Bureau Standards and the National Standards for Map Accuracy.

This Discreptive Report contains all pertinent reports and listings of data used to complete the map.

**JOB CM-7718**  
**ST. CROIX, VIRGIN ISLANDS**  
**SHORELINE MAPPING & PHOTOBATHYMETRY**  
**SCALE 1:10,000**

- **TIDE GAGES**
- 1 Frederiksted
  - 2 Limetree Bay
  - 3 Christiansted
  - 4 West Indies Lab



## FIELD INSPECTION

There was no field inspection prior to compilation. Field work accomplished was limited to the recovery and identification of the horizontal control necessary for aerotriangulation.

## CONTROL REPORT

Job CM-7718  
St. Croix, Virgin Islands

GENERAL STATEMENT:

In accordance with project instructions, circled stations were premarked as reported on NOAA Form 76-53. All triangulation stations were premarked with 1:50,000 scale arrays. Horizontal control was limited to stations that were needed to meet aerotriangulation requirements. No recovery notes were written because a Satellite Triangulation Party had recovered stations in the previous month. No new stations were established.

Substitutions were made for Panels No. 4 and No. 5. Permission to premark or photo identify BULOWS MINDE was refused by the property owner. A site, 736.392 meters north of station WORK, 1919, was premarked. Computations are enclosed. Station MOND, 1919 was premarked direct as an extra station. Station FANCY, 1919 was premarked in place of Station SEVEN, 1919.

In all cases Panel Array No. 1 was used. However, on several occasions the full array could not be placed. These deviations have been indicated on the Control Station Identification Card (NOAA Form 76-53).

VERTICAL CONTROL: Vertical Panels 1 thru 5, 8 thru 11, 13 thru 15, 17 and 18 were all premarked with Array No. 3. However, on several occasions the full array could not be placed. These deviations have been indicated on NOAA Form 76-53 (Control Station Identification Card). Elevations were determined from bench marks or by water transfers.

At Vertical Panel sites 6, 7, 12, 16 and 19, a boat was maneuvered into an area where bottom detail was abundant. At this time the depth of the water was taken from the bow of the boat. An aerial photograph of the boat position was then taken from a circling aircraft. These methods are noted in the following paragraphs.

## VERTICAL PANEL No. 1

The Panel was placed on the northwest side of St. Croix. The area is known as Hamns Buff. The Panel is approximately 75 feet south of the shoreline. The elevation of the water was determined by levels from Bench Mark "1 AZ 1957". The water elevation was transferred to a point close to the Panel. Levels were run from this point to the Panel. The Panel's elevation is 10.721 feet above mean sea level.

## VERTICAL PANEL No. 2

The Panel was placed in a grass field in an area known as North Star Estates. The elevation was determined by a water transfer, levels were run from the water level to the Panel. Panel is 22.738 feet above 1.75 feet on Christiansted Tide Staff.

## VERTICAL PANEL No. 3

The Panel was placed near the shoreline in an area known as Judith Fancy. The elevation was determined by a water transfer, levels were run from the water level to the Panel. Panel is 10.475 feet above 1.70 feet on Christiansted Tide Staff.

## VERTICAL PANEL No. 4

The Panel was placed on the south side of Green Cay, a small island off the northeast shoreline of St. Croix. The elevation was determined by a water transfer, levels were run from the water level to the Panel. Panel is 0.62 feet above 1.80 feet on Christiansted Tide Staff.

## VERTICAL PANEL No. 5

The Panel was placed near the shoreline on the northeast side of St. Croix in an area known as Mary's Fancy. The elevation was determined by a water transfer, levels were run from the water level to the Panel. Panel is 5.90 feet above 3.85 feet on West Indies Laboratory Tide Staff.

## VERTICAL PANELS No. 6 and No. 7

Vertical Panels No. 6 and No. 7 were boat stations off the northwest and northeast shoreline of Buck Island respectfully. At both stations, a photograph and a depth of water was taken on the inner and outer sides of the reef.

## VERTICAL PANEL No. 8

The Panel was placed on the east side of St. Croix. The elevation was determined from Bench Mark No. 1, 1975 located at the West Indies Laboratory. An elevation of 10.00 feet was assumed for the Bench Mark. Levels were run to the water, and then on to the Panel. Panel is 7.24 feet above the assumed elevation of BM No. 1, 1975.  $BM\ No.\ 1\ 1975 = 3.05$

## VERTICAL PANEL No. 9

This is an orange colored Panel placed on a wreck that is grounded on the reef just south of Great Pond Bay. The elevation was determined by a direct water transfer from the water level to the Panel. Panel is 7.5 feet above the water level, 1015 AST 3 Nov. 1977.

## VERTICAL PANEL No. 10

The Panel was placed in a boat yard east of the town of Christiansted; approximately 200 feet south of the bulkhead and piers. The elevation was determined by levels from Bench Mark "9 CES 1957 4". The elevation of the Panel is 2.038 feet above mean sea level.

## VERTICAL PANEL No. 11

The Panel was placed in an open parking lot approximately 150 feet west of Centerline Road in an area known as Peter's Rest. The elevation was determined by levels from Bench Mark "7 CES 1957-207". The elevation of the Panel is 190.750 feet above mean sea level.

## VERTICAL PANEL No. 12

Vertical Panel No. 12 was a boat station off the southeast shore of St. Croix near Half Penny Bay. A photograph of the boat and depth of the water was taken simultaneously.

## VERTICAL PANEL No. 13

The Panel was placed on an island southwest of Hess Oil Company Refinery. The elevation was determined by levels from Bench Mark "1401 C 1977". An assumed elevation of 30.00 feet was used. The difference in elevation between the Bench Mark and Panel is -11.584 feet. *Lime Tree*

"1401 C 1977" = 14.77 MSL

## VERTICAL PANEL No. 14

The Panel was placed in an empty lot located approximately 1/4 mile north of Centerline Road in the central part of the island. The elevation was determined by levels from Bench Mark "5 CES 1957 188". The elevation of the panel is 147.502 feet above mean sea level.

## VERTICAL PANEL No. 15

The Panel was placed at "T" intersection along Centerline Road in the central part of the island. The elevation was determined by levels from Bench Mark "3 CES 1957 127". The elevation of the panel is 109.405 feet above mean sea level.

## VERTICAL PANEL No. 16

Vertical Panel No. 16 was south of the airport and south of an ship wreck. A photograph of the boat and a depth of the water was taken simultaneously.

## VERTICAL PANEL No. 17

The Panel was placed north of the Wind Mill located at the Whim Great House Estates. The elevation was determined by levels from Bench Mark "3 CES 1957 127". The elevation of the panel is 92.155 feet above mean sea level.

## VERTICAL PANEL No. 18

An area at the west end of the pier at Fredricksted is to be used as the Panel. Several points in this area were leveled to from Bench Mark "1 AZ 1957". This was done to verify that the area of the pier was level. The elevation of the area varies from 7.626 feet to 7.566 feet above mean sea level. See NOAA Form 76-53 for detailed sketch of area leveled.

## VERTICAL PANEL No. 19

Vertical Panel No. 19 has 4 different intersection positions and 1 boat

position off the shoreline at the southwest cape of St. Croix. Positions 1 thru 4 are located by a baseline from Triangulation Station 51197. Computations enclosed. Position 5 is a photograph of a boat with a depth observed at the time of photography. Positions along the shoreline of the southwest cape are as follows:

10 Nov 1977	Intersection Position No. 1	Depth 13.0 ft	Time 11:10 AST
10 Nov 1977	Intersection Position No. 2	Depth 13.5 ft	Time 11:19 AST
10 Nov 1977	Intersection Position No. 3	Depth 58.0 ft	Time 11:54 AST
10 Nov 1977	Intersection Position No. 4	Depth 8.6 ft	Time 12:45 AST
13 Nov 1977	Boat Position No. 5	Depth 7.5 ft	Time 9:19 EST

22. Extra Vertical Panel

The panel was placed on a wrecked landing craft that is approximately due south of the Alexander Hamilton Airport. The panel was 3.75 feet above the water level at 1005 AST 11/7/77. *Lime Tree*

Respectfully Submitted,

Approved and Forwarded:

*Robert S. Tibbetts*  
 Robert S. Tibbetts  
 Chief, Photo Party 62

*Ronald E. Ledbetter*  
 Ronald E. Ledbetter

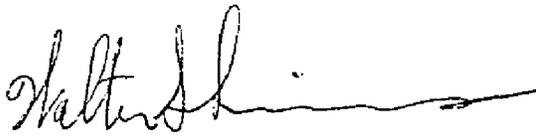


07701  
UNITED STATES DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
NATIONAL OCEAN SURVEY  
Rockville, Md. 20852

13

July 2, 1980

OA/C3442:LVS

TO: OA/C342 - John D. Perrow  
FROM: OA/C34 - Walter S. Simmons   
SUBJECT: Registration of Maps for Job CM-7718  
St. Croix, Virgin Islands

Request for field edit has been canceled for all maps in Job CM-7718.

You are hereby instructed to complete final review and register maps TP-00001 through TP-00009 as Class III.

cc:  
C3442  
C3424  
C3421  
CAM52



10TH ANNIVERSARY 1970-1980  
National Oceanic and Atmospheric Administration  
A young agency with a historic

Photogrammetric Plot Report  
St. Croix, Virgin Islands  
CM-7718 March 1979

21. Area Covered

This report covers nine 1:20,000 sheets, TP-00001 thru TP-00009 of Saint Croix, Virgin Islands.

22. Two strips of 1:50,000 scale photography were bridged by analytic aerotriangulation methods to establish control for bridging 1:20,000 scale compilation photography and adjusted to ground on the Virgin Islands State Plane Coordinate system using the block adjustment program. Six strips of 1:20,000 scale compilation photography were bridged by analytic aerotriangulation methods. In using the 185 photo block program to adjust the six strips it was found that this program could not handle 109 photographs, however using the same block program it was determined that the 185 block program would handle 100 photographs. Two blocks were run to adjust the six strips to ground on the Virgin Islands State Plane Coordinate system. One block used strips one through five and the other block used strips two through six. Visible landmarks and fixed aids to navigation were located during bridging of the 1:20,000 scale photography.

Ratio values were determined on the 1:20,000 bridging photography and provided along with other bridging data to compilation.

23. Adequacy of Control

The horizontal control provided was adequate except for Work, 1919 (panel) which proved to be in error in the 1:50,000 scale strip and block adjustments. No apparent reason was found to justify error. All other control held within the accuracy required by National Standards of Maps at 1:50,000 and 1:20,000 scale.

24. Supplemental Data

Local shoreline and U.S. Geological Survey quadrangles were used to provide vertical elevations for preliminary strip adjustments.

25. Photography

RC-8 color film positives were adequate as to coverage, overlap and definition.

Submitted by,

*Robert B. Kelly*  
Robert B. Kelly

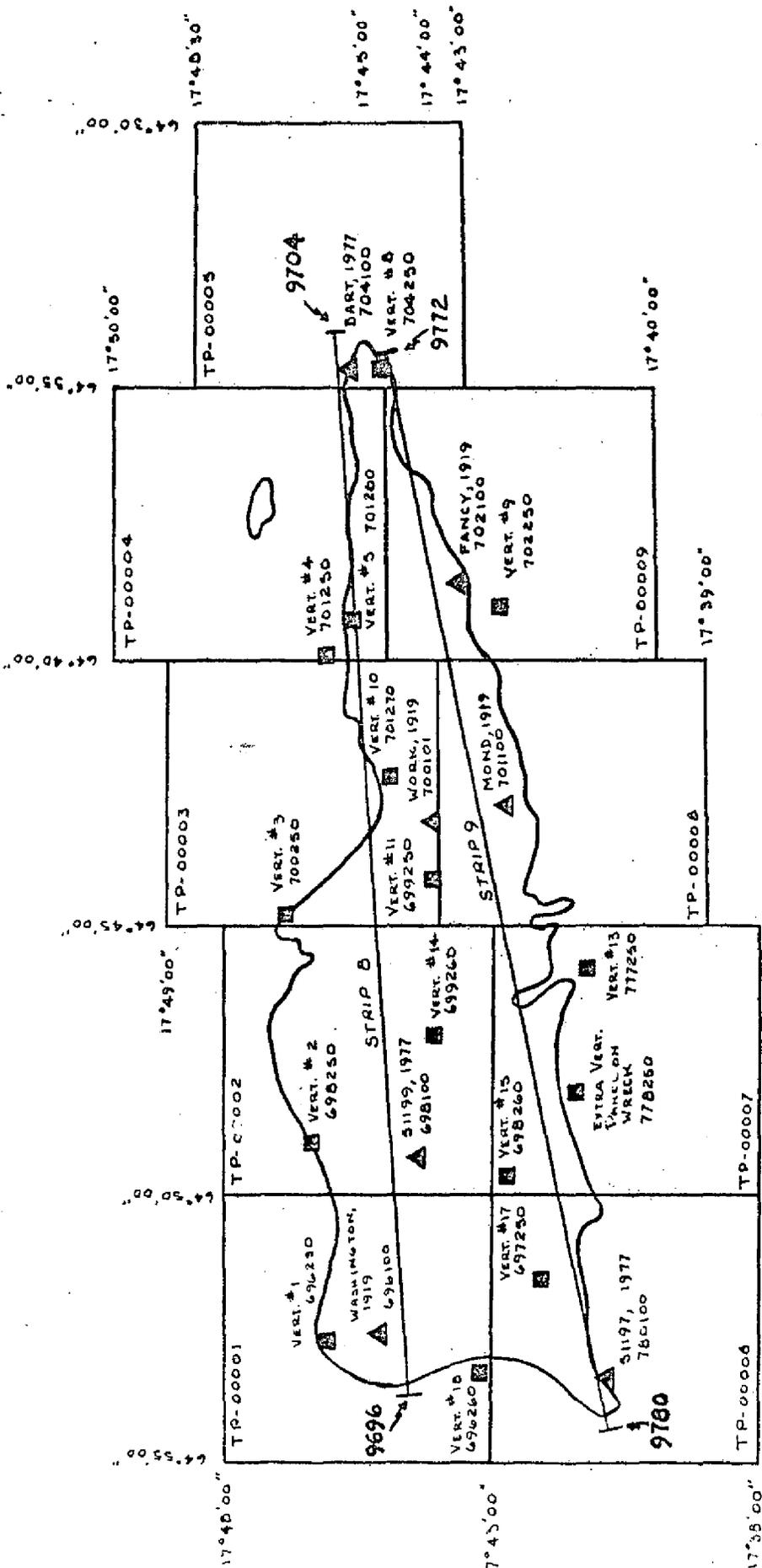
Approved and forwarded:

*Don O. Norman*

Don O. Norman  
Chief, Aerotriangulation Section

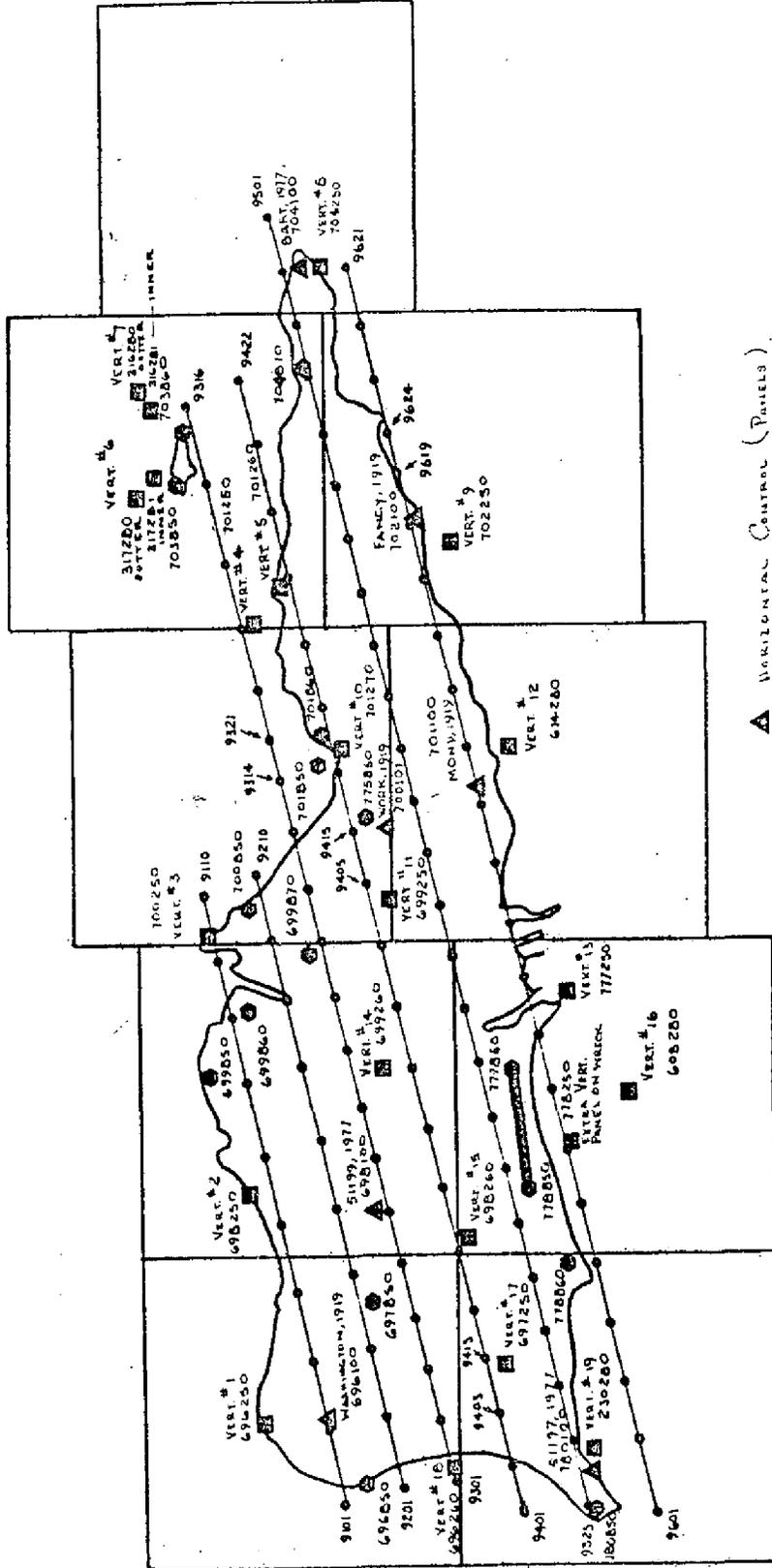
SAINT CROIX, VIRGIN ISLANDS  
 SHORELINE MAPPING  
 SCALE 1:50,000

JOB CM-7718



▲ HORIZONTAL CONTROL  
 ■ VERTICAL CONTROL

JOB CM-7718  
 SAINT CROIX, VIRGIN ISLANDS  
 SHORELINE MAPPING  
 SCALE 1:20,000



- ▲ HORIZONTAL CONTROL (PANELS)
- VERTICAL CONTROL (PANELS)
- ⊠ VERTICAL CONTROL (UNDERWATCH)
- ⊙ CONTROL POINTS FROM 1:50,000 SCALE

ST. CROIX BLOCK STRIPS 1-5

		.997	2.815	
	696100	1041446.517	72289.765	314.779
		- 1.139	1.296	
	698100	1063453.939	68106.923	252.785
		- .191	- .405	
	700101	1096636.121	66247.038	164.488
		- .413	- .506	
△	701100	1099155.587	57744.474	97.348
		- .099	.367	
△	704100	1149132.554	75898.178	224.647
		- .080	- .361	
△	730100	1036597.741	47727.177	3.507
				- .658
□	230220	1057835.244	47434.682	-5.342
	230220	1037935.220	47434.493	-3.657
				- .905
□	316220	1132925.320	83111.322	-13.695
				.095
	316221	1132690.376	87741.250	-7.795
	316220	1132925.413	83111.773	-9.617
	316221	1132690.407	87741.592	-5.498
				1.693
	317220	1127333.814	29807.280	-12.693
	317221	1126908.075	29853.375	-9.834
	317220	1127638.817	39307.135	+13.162
	317221	1126983.065	39253.322	-6.780
				.123
	318220	1065994.072	55981.401	60.923
				- 2.116
	318221	1072621.038	55947.160	23.504
		.280	.445	- .404
△ □	696250	1039963.265	79110.146	10.317
		.371	.007	.139
△ □	696260	1037635.121	59513.124	7.457
		- 3.652	- 1.441	.101
	697250	1047295.491	54833.788	92.256
		- .009	.280	- .139
△ □	698250	1062034.736	70692.574	23.099
		- .429	.135	- .111
△ □	698260	1059231.380	59378.303	109.294
		.325	.053	- .138
△ □	699250	1090260.642	65846.566	190.612
		.177	1.352	- 2.880
	699260	1075332.125	66270.776	144.622
		.119	- .031	.318
△ □	700250	1086738.332	83995.660	11.243
		- .011	- .165	.038
△ □	701250	1114681.858	76844.112	1.268
		- 1.615	.208	- .653
	701260	1118973.147	77741.317	8.507
		- .029	.280	- .126
△ □	701270	1103292.061	72353.391	1.912

		.045	- .336	- .985
△ □	704250	1149094.636	75967.192	14.305
		- 1.827	- .249	- 1.740
	778250	1067233.315	51480.005	2.760
	696850	1036302.220	69419.714	28.222
	697850	1052332.525	69544.308	528.718
	699850	1071973.676	84955.702	6.458
	699860	1076209.586	80536.579	869.863
	699870	1084531.749	73684.116	493.606
	700850	1069481.060	80918.623	32.273
	701850	1102127.830	73141.771	38.993
	701860	1105201.610	74053.706	12.920
	703850	1128032.932	87209.859	4.583
		.068	.065	
△	703860	1133980.507	86765.851	-2.151
	704870	1139363.611	75727.153	72.430
	775850	1098421.958	67835.508	254.501
	777850	1072800.380	58879.157	21.140
	778850	1065294.530	55702.655	60.712
	730850	1032592.315	47878.005	7.900

CAPD COUNT= 00047

## ST. CROIX BLOCK STRIPS 2-6

		+ .267	+ .777	
△	696100	1041445.787	72296.727	814.779
		- .884	+ .238	
△	698100	1063454.194	63105.270	252.849
		- .039	- .450	
	700101	1096686.273	66246.993	163.136
		- .289	- .089	
△	701100	1099155.711	57744.911	97.357
		- .165	+ 2.382	
	702100	1124017.685	63720.752	245.739
		- .128	+ .407	
△	704100	1149182.525	75898.18	225.162
		- .196	- .220	
△	730100	1036597.625	47727.315	8.396
				+ .264
□	230220	1037855.188	47434.722	-6.236
	230280	1037855.146	47434.742	-3.903
				+ 1.899
	316220	1132925.395	88111.746	-11.901
				+ 1.706
	316221	1132690.464	87741.487	-5.994
	316230	1132925.485	88111.706	-7.823
	316281	1132690.488	87741.549	-3.697
				- 1.849
	317220	1127639.132	89307.327	-18.849
				+ .178
□	317221	1128468.422	89253.352	-9.522
	317280	1127639.135	89307.185	-13.315
	317281	1128468.410	89253.297	-6.464
				+ .141
	518290	1065062.962	55078.400	60.941
				- 2.313
	518291	1072621.216	55944.896	20.307
				+ .576
□	608220	1069695.773	46442.589	-11.224
	608280	1069695.752	46442.602	-7.743
				- .041
□	614220	1103112.779	55645.407	-5.141
	614280	1103112.781	55645.419	-3.392
		+ .407	- .051	- .277
△ □	696260	1037685.157	59513.066	7.319
		- 4.460	- 1.307	+ .080
	697250	1047294.683	54538.932	92.235
		+ .226	- .096	+ .164
△ □	698250	1062035.021	79692.390	23.402
		- 1.916	- 1.518	+ .068
□	698260	1059279.893	59376.920	109.473
		+ .602	- .150	- 1.789
□	699250	1090260.919	65646.363	188.961
		+ .711	+ .220	- 4.041
□	699260	1075362.659	65269.644	143.461

		- .086	+ .077	- .413
△ □	700250	1086788.128	83998.188	10.512
△ □	701250	1114691.957	73844.794	- .008
	701260	1118873.491	77741.276	1.162
		- 1.271	+ .167	- .296
△	701270	1103892.079	72853.331	5.964
		+ .031	+ .230	- 1.354
△ □	702250	1122402.658	61410.138	.684
		- .281	+ .191	+ .083
□	704250	1149094.745	75067.359	8.483
		+ .104	- .169	- .272
□	777250	1080994.736	49930.826	15.018
		- .100	- .114	- .381
□	778250	1067232.554	51176.912	2.909
		- 2.584	- 3.342	- .313
	696850	1036002.131	69418.130	4.187
		1.453	2.687	27.227
	697850	1052331.097	69544.203	528.264
		.611	2.516	
	699860	1076210.180	80534.719	870.781
		5.003	1.563	
	699870	1084531.948	73683.222	492.462
		3.322	1.54	
	700850	1089481.416	80918.237	38.123
		1.167	.979	
	701850	1102127.615	73141.142	37.615
		.700	.156	
	701860	1105291.635	74453.669	-11.784
		.274	1.073	
	703850	1128033.252	87209.693	4.915
		2.262	.229	
△	703860	1133960.531	86765.519	- .055
		.092	.053	
	704801	1143164.015	76530.799	22.196
	704802	1145038.727	72954.481	41.698
	704870	1139568.385	75727.809	76.252
		5.020	1.750	
	775850	1098422.015	67833.459	253.228
		.287	1.060	
	777850	1072608.389	55867.614	20.555
		1.724	3.149	
	778850	1065293.613	55099.804	60.753
		2.224	.876	
	778860	1055636.967	49679.867	20.135
		2.812	1.312	
	780850	1032591.908	47076.127	8.561
		1.702	2.825	

CARD COUNT= 00055

LISTING OF RATIO VALUES  
CM7718  
St. Croix, USVI

Ratio Values for natural color photography to acheive 1:10,000 -

77Z(C)9812 thru 9830 - 2.04X  
77Z(C)9865 thru 9885 - 2.03X  
77Z(C)9893 thru 9897 - 2.02X  
77Z(C)9152 thru 9165 - 2.02X  
77Z(C)9916 thru 9926 - 2.03X  
77Z(C)9372 thru 9374 - 2.02X  
77Z(C)0074 thru 0090 - 2.01X  
77Z(C)0101 thru 0115 - 1.98X  
77Z(C)9325 thru 9349 - 2.01X  
77Z(C)9229 thru 9247 - 2.03X  
77Z(C)9405 thru 9408 - 2.03X  
77Z(C)9263 thru 9281 - 2.02X

Page 1 of 1

NOAA FORM 76-41  
(6-75)

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

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	STATION NAME	JOB NO.	SOURCE OF INFORMATION (Index)	AEROTRI- ANGULATION POINT NUMBER	GEODETIC DATUM		GEOGRAPHIC POSITION		ORIGINATING ACTIVITY	REMARKS
					COORDINATES IN FEET	STATE	ZONE	φ LATITUDE		
TP-00006		CM-7718								
	HOGENSEBERG CHIMNEY, 1919	G.P. P105	(N.F. INDEX)		X=			φ 17-42-38.453	Special Projects Section Photogrammetry Div. (Rockville)	
	CARLTON MILL, 1919	G.P. P105			Y=			λ 64-50-46.995		
	WYM CHIMNEY, 1919	G.P. P105			X=			φ 17-42-12.915		Appears to be partly destroyed.
	51197, 1977	REPORT ON DUPPLER STATIONS 5/15/78		780100	Y=			λ 64-50-56.916		
	RED CHURCH STEEPLE 1919	G.P. P. 104		202401	X=			φ 17-42-05.437		
					Y=			λ 64-51-41.506		
					X=			φ 17-40-59.353		
					Y=			λ 64-53-30.368		
					X=			φ 17-42-53.228		
					Y=			λ 64-52-48.94		
					X=			φ		
					Y=			λ		
					X=			φ		
					Y=			λ		
					X=			φ		
					Y=			λ		
					X=			φ		
					Y=			λ		
					X=			φ		
					Y=			λ		
					X=			φ		
					Y=			λ		
COMPUTED BY				DATE					COMPUTATION CHECKED BY	DATE
LISTED BY				DATE					LISTING CHECKED BY	DATE
HAND PLOTTING BY				DATE					HAND PLOTTING CHECKED BY	DATE

Bob Rodkey  
4/13/79

SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.

## Compilation Report

TP-00006

Reference is made to the Photogrammetric Plot Report bound with this Descriptive Report. In addition to the six strips of 1:20,000 scale photography bridged to compile the nine maps covering this survey area, one more strip was used. This strip 77 Z(C)9265-9280, also 1:20,000, was used to compile portions of the photobathymetric data (depths and depth curves) shown on maps TP-00006 through TP-00009. Control for this strip was transferred by means of the Wild PUG instrument from two of the adjacent strips bridged.

31. Delineation

This survey was accomplished in two parts. Part 1 is the base shoreline map and Part 2 is the photobathymetric overlay. This entire survey was compiled at 1:10,000 scale using the Wild B-8S stereoplotter interfaced with an ALTEK digitizing unit. The base shoreline map was compiled using the B-8S stereoplotter. The detail shown on the photobathymetric overlay was compiled using the B-8S/ALTEK system. Photography used for compilation is the 1:20,000 scaled natural color taken in 1977.

32. Control

Refer to the Photogrammetric Plot Report bound with this Descriptive Report.

The identification, density, and placement of horizontal and vertical control was adequate.

33. Supplemental Data

Tidal data information for this job was furnished by the Tides and Water Level Division (OA/C23). This information consisted of reference station records for four tide gages and was used to determine the stage of tide for each frame of the photography used in the compilation phase.

34. Contours and Drainage

All drainage is from office interpretation of the natural color photography.

35. Shoreline and Alongshore Details

The mean high-water line and shoreline structures were compiled by office interpretation of the natural color photography.

There is no mean low-water line depicted on this map.

There was no preliminary field inspection of the shoreline.

### 36. Offshore Details and Photobathymetry

No unusual problems were encountered compiling the offshore detail depicted on the shoreline base map (Part 1).

Submerged coral and rock formations shown on the base shoreline map indicate the characteristics of the seabed and do not necessarily represent a hazard to navigation.

Photobathymetric discrete depths and depth curves (underwater contours) were compiled using the B-8S/ALTEK system. The depth curves were compiled using conventional underwater contouring methods. The discrete depths were compiled in digital form and then processed through a series of computer software routines to provide the depths as shown on the photobathymetric overlay (Part 2).

The photobathymetric data compiled is referenced to the mean low-water datum established by NOS.

Suspended silt and sun spots restricted the placement and density of discrete depths in some areas.

### 37. Landmarks and Aids

Refer to the 76-40 listing(s) bound with this Descriptive Report for those charted landmarks and non-floating aids identifiable on the compilation photography.

The landmarks and fixed aids shown on the base map were not investigated by field personnel.

### 38. Control for Future Surveys

No Form 524 was submitted.

### 39. Junctions

Refer to Form 76-36B, Item 5, bound with this Descriptive Report.

### 40. Horizontal and Vertical Accuracy

This map complies with the National Map Accuracy Standards.

41. thru. 45. Inapplicable

46. Comparison with Existing Maps

A comparison was made with the following USGS quadrangle(s):

Frederiksted, V.I., scale 1:24,000, 1958 Edition

No significant differences were noted.

47. Comparison with Nautical Charts

A comparison was made with the following charts:

25640, scale 1:326,856, 26th Edition, dated 7/29/78

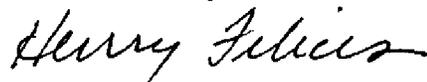
25641, scale 1:100,000, 16th Edition, dated 5/20/78

25644, scale 1:20,000, 8th Edition, dated 5/6/78

Items to be applied to Nautical Charts immediately - None

Items to be carried forward - None

Submitted by,



Henry Felices

Approved and Forwarded:



John A. Mooney, Jr.  
Chief, Special Projects Section  
(Rockville)  
Photogrammetry Division

TP-00006  
 REVIEW REPORT  
 SHORELINE/PHOTOBATHYMETRY (PHOTOGRAMMETRIC)

61. GENERAL STATEMENT

Refer to "Summary to Accompany Descriptive Report" for general information in regards to the completion of this map.

62. COMPARISON WITH REGISTERED TOPOGRAPHIC SURVEYS

The geographic area covered by this map was mapped in 1919 at a scale of 1:10,000. Since nearly sixty (60) years have lapsed, no comparison between this map and those prior surveys was made.

63. COMPARISON WITH MAPS OF OTHER AGENCIES

Refer to the Compilation Report, Item 46, for information on this subject.

64. COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS

The latest hydrographic surveys of this geographic area were conducted in the 1924 thru 1926 field seasons. The photobathymetric data was compared to the forementioned hydrographic surveys.

65. COMPARISON WITH NAUTICAL CHARTS

Refer to the Compilation Report, Item 47, for information on this subject.

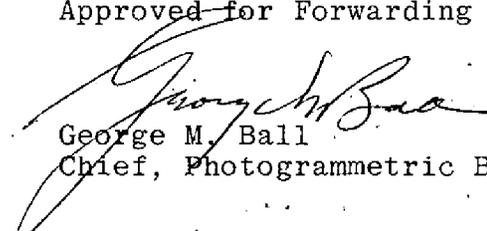
66. ADEQUACY OF RESULTS AND FUTURE SURVEYS

This map complies with the project instructions and meets the requirements for Bureau Standards and the National Standards of Map Accuracy.

Submitted:

  
 Robert W. Rodkey, Jr.  
 Final Reviewer

Approved for Forwarding by:

  
 George M. Ball  
 Chief, Photogrammetric Branch

Approved by:

  
 Walter S. Simmons  
 Chief, Photogrammetry Division

5/1/80

GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-7718 (St. Croix, Virgin Islands)

TP-00002

Baron Bluff

Belvedere

Canebay

Caribbean Sea

Davis Beach

LaVallee

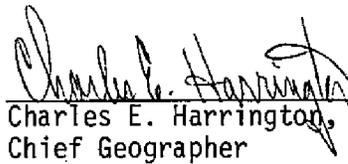
North Star

Rust Up Twist

Salt River Bay

Sugar Bay

Approved By:

  
Charles E. Harrington, C3x5  
Chief Geographer

INFORMATION ON DISSEMINATION OF PROJECT MATERIAL

CM-7718  
St. Croix, U.S., V.I.

NATIONAL ARCHIVES/FEDERAL RECORDS CENTER

Brown Jacket

Aerotriangulation Photographs  
Plot Report  
Computer printouts  
Tide computations and data  
Field Control Report  
Control Identification Cards (Vertical & Horizontal)  
NOAA Form(s) 76-72 (List of Directions)  
Photographs of Vertical Control Panels  
Horizontal Observations, Vol. I and II  
Wye Level Book, Vol. I  
NOAA Form 76-40 (duplicate copies)  
Listing of Ratio Values

Project Completion Report

BUREAU ARCHIVES

Registered Maps  
Descriptive Reports

REPRODUCTION DIVISION

Reduction negative of each map

OFFICE OF STAFF GEOGRAPHER

Geographic Names Standard

MARINE CHART DIVISION

Chart Maintenance Prints







RWR  
8/81

MAP FEATURES OF POSSIBLE LANDMARK VALUE

MAP NO. TP-00006	JOB NO. CM7718	GEOGRAPHIC AREA St. Croix, USVI	GEODETTIC DATUM Puerto Rico	PLANE COOR. (FT) STATE ZONE	PHOTO NUMBER	GEOGRAPHIC POSITION		ORIGINATING ACTIVITY Photogr. Div., Rockville SPS - Compilation	CHARTS AFFECTED
						φ LATITUDE	λ LONGITUDE		
				X 1,039,969.557 Y 57,070.930	77Z(C) 9152		φ 17-42-31.70 λ 064-52-54.68		25641 25644
				X 1,041,564.599 Y 56,117.148	77Z(C) 9374		φ 17-42-22.11 λ 064-52-38.27		ditto
				X 1,043,726.930 Y 55,146.294	77Z(C) 9374		φ 17-42-12.30 λ 064-52-15.99		ditto
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		
				X Y			φ λ		

POSITIONS FURNISHED ARE PHOTOGRAMMETRIC POSITIONS - MAP FEATURES HAVE NOT BEEN INSPECTED

LISTED BY Robert W. Rodkey, Jr.	DATE 9/3/81	LISTING CHECKED BY Robert W. Rodkey, Jr.	DATE 9/10/81
------------------------------------	----------------	---	-----------------

SUPPLEMENTAL DATA

LISTING OF "OBSTRUCTIONS"

The position for all obstructions listed is a photogrammetric position. Information as to the probable identity and other pertinent facts are furnished for each obstruction.

The listing is organized according to pertinent TP sheet.

<u>TP SHEET</u>	<u>GEOGRAPHIC POSITION</u>		<u>PROBABLE IDENTITY</u>	<u>REMARKS</u>
TP-00001	17-43-34.29	64-53-18.46	buoy	above MLW
TP-00001	17-46-18.82	64-52-34.43	(manmade object)	6-12 ft. of water
TP-00002	17-45-57.85	64-49-51.43	(manmade object)	@ MLW
TP-00002	17-47-13.21	64-47-18.12	buoy	above MLW
TP-00002	17-46-32.72	64-45-35.94	none available	@ MLW
TP-00002	17-46-31.56	64-45-36.03	none available	@ MLW
TP-00002	17-46-57.40	64-45-25.27	buoy	above MLW
TP-00002	17-46-57.45	64-45-24.15	buoy	above MLW
TP-00002	17-46-53.04	64-45-09.90	buoy	above MLW
TP-00002	17-46-42.39	64-45-09.08	buoy	above MLW
TP-00002	17-46-41.99	64-45-09.00	buoy	above MLW
TP-00005	17-44-53.60	64-34-13.43	buoy	above MLW
TP-00005	17-44-58.60	64-34-23.97	buoy	above MLW
TP-00006	17-42-12.24	64-53-12.59	(object on bottom-less than six ft. of water)	
TP-00006	17-41-15.06	64-51-46.07	(manmade object)	@ MLW
TP-00007	17-40-37.35	64-47-41.56	buoy	above MLW
TP-00007	17-41-49.84	64-47-17.35	snag	@ MLW
TP-00007	17-41-47.37	64-47-14.55	snag	@ MLW
TP-00007	17-41-46.75	64-47-14.46	snag	@ MLW
TP-00007	17-41-47.33	64-47-13.82	snag	@ MLW
TP-00007	17-41-51.02	64-47-09.30	snag	@ MLW
TP-00007	17-41-47.72	64-47-08.87	snag	@ MLW
TP-00007	17-41-48.13	64-47-07.27	snag	@ MLW
TP-00007	17-41-51.47	64-47-00.77	snag	@ MLW
TP-00007	17-41-50.32	64-46-43.82	pile	above MLW
TP-00007	17-41-49.70	64-46-43.11	pile	above MLW
TP-00007	17-41-09.11	64-46-32.28	buoy	above MLW

SUPPLEMENTAL DATA

LISTING OF "OBSTRUCTIONS"  
(continued)

<u>TP SHEET</u>	<u>GEOGRAPHIC POSITION</u>		<u>PROBABLE IDENTITY</u>	<u>REMARKS</u>
TP-00007	17-42-33.13	64-46-15.28	pile	above MLW
TP-00007	17-42-26.41	64-46-12.55	buoy or pile	above MLW
TP-00007	17-42-25.47	64-46-10.67	buoy or pile	above MLW
TP-00007	17-41-53.27	64-45-21.39	buoy	above MLW
TP-00007	17-41-51.50	64-45-21.18	buoy	above MLW
TP-00007	17-41-52.61	64-45-20.62	buoy	above MLW
TP-00007	17-41-50.45	64-45-19.80	buoy	above MLW
TP-00008	17-42-10.05	64-42-07.96	buoy	above MLW
TP-00008	17-42-12.40	64-42-06.76	buoy	above MLW
TP-00008	17-42-14.53	64-42-00.17	buoy	above MLW
TP-00008	17-42-24.93	64-41-31.51	buoy or marker	above MLW
TP-00008	17-42-15.33	64-41-30.09	buoy	above MLW
TP-00008	17-42-25.22	64-41-30.22	buoy or marker	above MLW
TP-00008	17-42-46.26	64-40-11.15	buoy	above MLW
TP-00008	17-42-48.97	64-40-08.82	buoy	above MLW
TP-00009	17-42-49.89	64-39-53.81	buoy	above MLW
TP-00009	17-42-51.79	64-39-48.90	buoy	above MLW
TP-00009	17-42-48.94	64-39-47.60	buoy	above MLW
TP-00009	17-42-56.29	64-39-47.23	buoy or marker	above MLW
TP-00009	17-42-49.99	64-39-44.33	buoy	above MLW
TP-00009	17-42-57.73	64-39-43.45	buoy or marker	above MLW
TP-00009	17-43-12.73	64-37-57.63	buoy	above MLW
TP-00009	17-44-25.54	64-35-26.12	buoy	above MLW