

9929

Diagram No. 905-2

NOAA FORM 76-35A

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

## DESCRIPTIVE REPORT

Type of Survey ..... Hydrographic  
Field No. .... MI-5-1-81  
Office No..... H-9929

### LOCALITY

State ..... U.S. Virgin Islands  
General Locality ..... St. Croix  
Locality ..... Christiansted Harbor

19 81

CHIEF OF PARTY  
CAPT R.A. Trauschke

### LIBRARY & ARCHIVES

DATE ..... March 5, 1986

9929

WACPC

CHTS

- 25645
- 25641
- 25634
- 25632

to sign off see  
Record of Application

**HYDROGRAPHIC TITLE SHEET**

H-9929

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

FIELD NO.

MI-5-1-81

State UNITED STATES VIRGIN ISLANDS

General locality ST CROIX

Locality CHRISTIANSTED HARBOR

Scale 1:5,000 Date of survey 25 February 1981 - 15 April 1981

Instructions dated 13 November 1980 Project No. OPR-1149-MI, PE-80

Vessel NOAA SHIP MT. MITCHELL - Launches (VESNO 2224, 2227)

Chief of party Captain Robert A. Trauschke, NOAA

Surveyed by Ship's personnel

Soundings taken by echo sounder, hand lead, pole Echo sounder, leadlines, pole

Graphic record scaled by MM, RW, UG, FS, EM, WZ, GC, FR, RC

Graphic record checked by MM, RW, UG, FS, EM, WZ, GC, FR

Protracted by \_\_\_\_\_ Automated plot by Xynetics 1201 (AMC)

Verification by AMC Verification Branch - F.L. Saunders

Soundings in ~~fathoms~~ feet at <sup>MLLW</sup> ~~MLW~~ ~~MLW~~ Feet at ~~MLW~~ (Gulf Coast Datum)

REMARKS: Miscellaneous pages have been removed and filed with the survey records

STANDARDS CK'D 3-6-86

C. Loy

Avois / Surf M.S.M. 5/22/86

A. PROJECT

This survey was carried out in accordance with Project Instructions OPR-1149-MI, PE-81 issued 13 November 1980 and amended by change 1 dated 24 November 1980.

B. AREA SURVEYED

This survey was conducted in the Christiansted Harbor area between the western limit of Long Reef and Shoy Point, St. Croix, U.S. Virgin Islands.

The survey was conducted between 25 February 1981 (Julian Day 056) and 15 April 1981 (Julian Day 105), and its limits are roughly described by lines connecting the following points in a clockwise manner:

17°47'00"N 64°40'00"W  
17°44'36"N 64°40'00W

Christiansted Harbor is used not only by pleasure craft but also by commercial vessels. Two dredged channels are cut through the harbor for safe navigation. The composition of the bottom is mostly fine white sand, broken shells and coral. Long Reef protects the harbor area as it acts as a buffer against swells and high seas. The north side of Long Reef has a very steep sloping irregular bottom.

C. SOUNDING VESSELS

Soundings for the survey were obtained by launch 1012 (VESNO 2224) and the Monark (VESNO 2227) from the NOAA Ship MT. MITCHELL (S222). Both vessels were also utilized for Presurvey Review Item investigations.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

The following equipment was aboard the respective vessels during this survey:

<u>VESNO</u>	<u>EQUIPMENT</u>	<u>SERIAL NUMBER</u>
2224	Raytheon 723 Depth Recorder	1278
	Ross 5000 Fineline Depth Recorder	1050
2227	Raytheon DE719-B Depth Recorder	3947

Soundings from all launches were taken with a hull-mounted transducer (antenna distance: 0.0m for both vessels).

Survey records were scanned and checked by trained survey department personnel and checked by the officer in charge. Peaks and deeps considered significant that occurred between soundings were inserted. Numerous coral heads were encountered along the north side of Long Reef and some of these peaks were inserted on the master data tapes to show the irregular bottom of that particular area.

Phase calibration checks were made at frequent intervals. Any necessary adjustments were made and noted in the sounding volumes and on the fathograms. Any departures from the calibrations due to phase differences were corrected during the scanning process.

Velocity corrections were obtained from two Nansen casts taken 19 February 1981 (JD 050) and 19 March 1981 (JD 078) at 17°48'40"N, 64°40'00"W and 17°49'12"N, 64°41'35"W respectively. Because the results of the second Nansen cast agreed excellently with those from the first, the data from the first cast was used to make velocity correction tapes. Daily bar checks (taken in fair to good conditions) agreed with the Nansen cast velocities to within 0.6 feet of correction. Due to the poor agreement between the bar check data and Nansen cast data, the Nansen cast data was assumed to have greater accuracy and hence was used for all velocity correctors. Sound velocity tables and printouts of velocity tapes are included in Appendix D. Velocity correctors were applied to all soundings less than 278 feet. Depths which exceeded 278 feet did not have the proper velocity correctors applied because of the limitations on the length of a range/azimuth velocity tape (the tape format will hold a maximum of 31 records). A second velocity tape was not made for these deep depths as it would not be time efficient to plot with two velocity corrector tapes and very few soundings would be effected.

Transducer drafts of 1.9 feet (VESNO 2224) and 1.1 feet (VESNO 2227) were applied to all soundings. Settlement and squat correctors for the launches were determined on 10 February 1981 (JD 041) at the Municipal Pier, Fredricksted, St. Croix, U.S. Virgin Islands. A copy of the field data and settlement and squat correctors versus launch rpms is included in the survey support data. Settlement and squat correctors for all survey vessels are incorporated into TC/TI tapes. A printout of this tape is included in Appendix D.

This survey was conducted using predicted tides based on daily predictions at Charlotte Amalie, St. Thomas, U.S.V.I. (station #975-1639) with the reference station located at Galveston Channel, Texas (#3277). Tide correctors were applied to off-line data using ASCII predicted tide tapes. Tide time and range corrections used for predicted tide tapes were applied as follows: -8.12 and -8.16 were added to high and low tides, respectively, along with a multiplicative factor of 0.57. Data acquired from tide gages at West Indies Laboratory and Christiansted (both on St. Croix) will be used when smooth tides are applied to field data at the Atlantic Marine Center.

No on-line tide correctors were applied to data as neither launch contains electronic data acquisition equipment.

#### E. HYDROGRAPHIC SHEETS

This survey was plotted on two (2) Mylar plotter sheets by the MT. MITCHELL HYDROPLOT System with a skew of 0,21,54; PSR items were plotted on two (2) Mylar sheets at a 1:1500 scale for a better resolution of acquired depths. The survey was plotted off-line using electronic corrector tapes. Corrections for velocity, draft and predicted tides were applied to the soundings on the field sheets. The final smooth sheet will be plotted at the Atlantic Marine Center, Norfolk, Virginia.

All field records and the following tapes have been forwarded to the Atlantic Marine Center:

- Master Range-Azimuth Data Tapes (generated off-line)
- Electronic Corrector Tapes
- ASCII Predicted Tide Tapes
- Velocity Correction Tapes
- Parameter Tapes
- Signal Tapes
- TC/TI Tapes

#### F. CONTROL STATIONS

Electronic control stations used for this survey are as follows:

<u>Number</u>	<u>Signal Station Name</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
400	Christiansted Front Range Light	17°45'25.424"	64°41'41.593"
405	US Army Corps of Engineers Disk "CHVI-3 1962"	17°45'25.751"	64°41'41.712"
440	Christiansted Daymarker "16"	17°44'57.329"	64°42'05.848"
535	"Cement 81"	17°45'11.759"	64°42'52.613"

All the above stations were located by personnel from the Operations Division of the Atlantic Marine Center and the NOAA Ship MT. MITCHELL.

#### G. HYDROGRAPHIC POSITION CONTROL

Range-azimuth positioning for both vessels was accomplished with a DEL NORTE used in conjunction with a Wild-T2 Theodolite.

The following equipment was used in the launches:

<u>Equipment</u>	<u>Serial Number</u>	<u>Dates</u>
DMU Master	173 187	25 Feb - 05 Mar (JD 056 - 064)
DMU Master	162 281	10 Mar - 27 Mar (JD 069 - 086)
DMU Master	181 250	28 Mar - 02 Apr (JD 087 - 092)

G. (Hydrographic Position Control - continued)

<u>Equipment</u>	<u>Serial Number</u>	<u>Dates</u>
DMU Master	162 250	07 Apr (JD 097)
DMU Master	181 250	08 Apr (JD 098)
DMU Master	162 181	9-15 Apr (JD 099 -105)

The locations of the various DEL NORTE remote units used for this survey were:

	<u>Remote 72 (SN 1065)</u>	<u>Remote 74 (SN 1134)</u>	<u>Remote 76 (SN 216)</u>	<u>Remote 78 (SN 252)</u>	<u>Remote 78 (SN 264)</u>
Station Number:	400	400 405	405	400 405	400 405 535

Each DEL NORTE DMU/Master pair used in this survey was calibrated with each remote over 7 baselines. Baseline calibration information is as follows:

<u>Date</u>	<u>DMU/Master</u>	<u>Location</u>	<u>Station Names</u>	<u>Inverse Distance (meters)</u>
20 Feb	173/187	Roosevelt Roads Puerto Rico	Calib 1 - Calib. 2	643.04
28 Feb	173/187	St Croix	Cement 81 - Christiansted Front Range Light	2132.51
06 Mar	162/281	St. Croix	Cement 81 - CHV 1-3	2132.49
20 Mar	181/250	Roosevelt Roads	Calib 3 - Calib 4	1625.04
31 Mar	181/250	St. Croix	Cement 81 - CHV 1-3	2132.49
03 Apr	162/281	Roosevelt Roads	Pier - South Point	3952.00
16 Apr	162/281 162/250	St. Croix	Station 1 - Station 2	2507.36

The stations at which calibrations took place are located at the following geographic positions:

<u>Station</u>	<u>Latitude</u>	<u>Longitude</u>
"Cement 81"	17°45'11.759"N	64°42'52.613"W
Christiansted Front Range Light	17°45'25.424"N	64°42'41.593"W
"CHVI-3 1962"	17°45'25.751"N	64°41'41.712"W

## G. (continued)

All calibrations were done over all-water paths except for the calibration 20 February. Stations used for calibrations performed on 20 February, 20 March, 3 April and 16 April have no position control. Baseline distances were derived from repetitive observations made with an LSE Ranger-1 EDM. The results of all calibrations are included in appendix E. No parital correctors were applied to the corrector tapes as any drift in the electronic equipment between two consecutive baseline calibrations was within the limits of accuracy of the equipment (three meters).

Calibration checks were performed twice daily (before and after hydrography). Calibrations were accomplished by maneuvering the launch alongside a daybeacon (whose distance from the position of the DEL NORTE remote unit was known) and averaging ten consecutive DEL NORTE rates to insure the average of the rates was within  $\pm 3$  meters of the known distance. The initial and final daily calibrations were entered in the sounding volumes.

No electronic or visual control was used 12 April (JD 102) in the areas of the Cement Co. and Port Authority Piers. Leadline soundings were taken every ten to twenty feet along the piers and surrounding areas, and were also noted in the sounding volume. Approximately half of the leadline soundings were plotted on the field sheet sent to the Atlantic Marine Center (see boat sheet and sounding volume for further information pertaining to the aforementioned areas).

Position control inside the Port Authority Pier area was a problem due to numerous ships alongside. As a result, sounding lines were begun in areas where control was possible and the ends of these lines were interpolated by time and course (see boat sheet methods - a discription of the ends of these lines in relation to the Port Authority Pier appears in the appropriate sounding volume).

## H. SHORELINE

Sounding lines were run perpendicular to the shore at the innermost limit of safe navigation of the sounding vessels; pole soundings were taken along the shoreline to obtain the 0-foot curve.

Shoreline was inked in blue following the photobathymetry since the shoreline was not verified. Significant shoreline changes were inked in red.

## I. CROSSLINES

Crosslines were run 45 to 90 degrees to the main scheme sounding lines. Crossline mileage amounted to 16.0% of the total sounding line mileage. Crossline soundings agree well with 90% of the soundings agreeing to within  $\pm 1$  foot of the regular sounding lines. One area north of Long Reef (between the  $64^{\circ}43'10''$  -  $64^{\circ}43'14''$ W meridians) shows a difference of 2-8 feet between crossline and mainscheme soundings; this discrepancy is believed to be caused by th steep irregualr bottom gradient north of the reefline.

J. JUNCTIONS

This survey junctions with the following surveys:

<u>Area of Junction</u>	<u>Field No.</u>	<u>Reg. No.</u>	<u>Scale</u>	<u>Date</u>	<u>Ship</u>
West	MI-10-1-81	H-9935	1:10000	1981	MT. MITCHELL
East	MI-5-2-81	H-9930	1:5000	1981	MT. MITCHELL

All junction data was field data.

The soundings of this survey generally agree well with both junction surveys; 90% and 99% of the soundings agree to within ±2 feet with H-9935 and H-9930 respectively. Two areas of this survey showed a discrepancy in depth with H-9935. The two areas (17°46'02"N, 64°43'36"W and 17°46'08"N, 64°43'33"W) showed a difference in depth of nine feet and ten feet respectively. In both cases H-9935 had shoaler depths. The differences are possibly due to the steep gradient of the irregular bottom in those areas.

K. COMPARISON WITH PRIOR SURVEYS

The following prior surveys were conducted within the area of this survey:

<u>Survey</u>	<u>Scale of Survey</u>	<u>Date</u>
4629a	1:10000	1924 - 1926
4629b W.D	1:10000	1924 - 1926S

Survey 4629a agrees with the present survey to within ±2 feet, with 90% of the soundings being within ±1 foot of the prior survey. Some discrepancies were noted during this comparison. The Cement Company pier and bulkhead (17°45'12"N, 64°42'53"W) had not been constructed at the time of the prior survey. The channel leading to the Cement Company Pier had not been dredged at the time of the prior survey and depths are presently 12 feet deeper than in 1926. A shoal area at 17°45'30"N, 64°41'36"W is no longer present and no evidence of a rock in the shoal area was found. *Do not concur. no investigation conducted. Carried forward to present survey.* A 9 foot depth charted at 17°45.7'N, 64°41.7'W was not found during this survey. *It is recommended that the present survey data be used in lieu of the charted sounding.* *not charted*

The pier charted at 17°45'10"N, 64°42'50"W on the prior survey is ~~in~~ considered to be *no longer exist.* *NC* ruins; outfall lights <sup>PIERS</sup> and pipe from the Cement Company are now in that area. *water intake* *\*not located*

The seaplane ramp and outfall pipe now located at 17°44'57"N, 64°42'31"W was not constructed at the time of the prior survey. *outfall previously chart*

The ~~Port Authority Pier~~ and Gallows Bay Marina located at 17°45'02"N, 64°41'54"W was not constructed in 1926. The area around the Port Authority Pier (17°45'05"N, 64°42'09"W) is approximately 10 feet deeper now than in 1926. *4 57* *41 57*



K. (Comparison with Prior Surveys - continued)

The entrance to Altona Lagoon has been filled and only a drainpipe flushes the area; depths west of the lagoon agree well with those from the prior survey.

The front and rear range beacons located on the eastern edge of Long Reef (17°45'33"N between 64°42'00"-64°42'10"W) are no longer used; only the bases of these lights remain on the reef. *Revised to ruins*  
*Front Range base shown as ruins on present survey.*  
*Rear Range base carried forward as ruins*

~~The area labeled "Protestant Cay" on the prior survey is now the area of the Port Authority Pier. Protestant Cay is a small island located approximately 17°45'05"N, 64°42'12"W.~~

Survey 4629b wire drag depths are less than sounding data gathered from the present survey. It is assumed no remarkable changes have occurred in the area.  
*See Eval. Rpt. Sec. 6*

L. COMPARISON WITH THE CHART

This area is covered by the following NOAA charts:

<u>Chart Number</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
25641	17	Sept 1979	1:100,000
25645	9	April 1980	1:10000

In general, depths from chart 25641 agree well with the depths of the present survey. The 1/4 fm depth charted north of Fort Louise Augusta Light (17°45'30"N, 64°41'36"W) was found to be in error; there is no shoal present at that location (see Section K of this report) and the depth in that area was found to be 1 1/4 fm. It is recommended that the depth in this area be changed to coincide with the sounding data of the present survey. *Do not concur, Sec Sec. K.*

Another area north of Fort Louise Augusta Light (17°45'42"N, 64°41'42"W) shows a charted depth of 1-3/4 fm. During the course of this survey, that area showed a depth of 3 fm. It is recommended that this area be charted as per depths from the present survey. *GM*

An area north-northeast of Fort Louise Augusta Light (17°46'06"N, 64°41'30"W) has a charted depth of 1/4 fm. Soundings from this survey show the area to have an average depth of 1 1/2 fm. It is therefore recommended that this area be charted with depths found in the present survey. *GM*

*2 ft sdg at lat. 17°46'06"N, long 64°41'28" carried forward from H-4629b*

In comparing chart 25645 with the present survey, soundings are in good agreement with 90% of the soundings agreeing from 0-2 feet. Discrepancies in depths are as follows:

A channel appears to be developing south of Long Reef west of the Cement Company pier (between 64°43'15"W and 64°42'54"W) as depths from this survey are 4-6 feet deeper than charted.

L. (continued - page 2 of)

Depths north of the Cement Company channel between the Cement Company pier and buoy "8" (17°45'10"N - 17°45'20"N) are 5 to 8 feet deeper than charted.

Depths differ from 5 to 7 feet in the area of the Cement Company channel along the 64°42'25"W meridian between 17°45'05"N and 17°45'15"N. The soundings from the present survey are 5 feet shallower than those north of the channel and 7 feet deeper than those charted south of that section of the channel.

The area between Protestant Cay and Christiansted (approximately 17°45'00"N, 64°42'10"W) is now 3 feet deeper than charted.

Two shoal areas (a 1-6 ft <sup>Rk</sup> shoal charted at 17°45'30"N, 64°41'37"W and a 12-ft shoal charted at 17°45'40"N, 64°41'37"W) were not evident in the sounding data or on the photobathymetry sheets. It is recommended that the present survey data be used in lieu of the charted soundings. <sup>App'd</sup> Do not concur, See Sec. K.   
 Retain 12 ft sdg, not disproved. Retain rock as shown on present survey. ✓

In the area of Sctoch Bnak, depths show good agreement with those charted with 85% of the depths agreeing to within ±2 feet. A shoal appears to be developing at 17°45'55"N, 64°41'42"W as depths in that area are 2-4 feet shoaler than those charted. The relative shallowness of this area of Scotch Bank combined with the steep gradient of the bottom in close proximity to the Bank may be the cause of significant sediment transport in this area.

The 120-foot contour differs from that charted between 17°45'54"N, 64°43'00"W and 17°45'47"N, 64°42'10"W, with 120-ft soundings occurring further in shore on the present survey. Do not concur, 120 ft curve is in general agreement between chart and present survey. ✓

The application of smooth tides may change some of these differences. It is therefore recommended that the aforementioned differences in depth be carefully re-evaluated and charted as found in this survey.

The shoreline ~~derived from photobathymetry~~ and sounding data inside Long Reef between the Cement Company pier (17°45'12"N, 64°42'53"W) and the area southwest of Protestant Cay (17°45'57"N, 64°42'20"W) is in great disagreement with the charted shoreline of the same area. Local knowledge report a filling-in this area. It is recommended that the shoreline be re-evaluated and charted as found. See Eval. Rpt., Sec. 6. <sup>App'd</sup>

Buoy C"11" located east of the Cement Company pier (charted location: 17°45'13"N, 64°42'52"W) no longer exists. It is recommended that this buoy be removed from the chart. <sup>DC Buoy relocated LNM 4/1/82 subsequent to survey</sup> concur.

<sup>dashed</sup> The piers labelled "under construction" charted at 17°45'05"N, 64°41'55"W have been completed. The <sup>shoreline map</sup> photobathymetric sheets show the orientation and positions of these piers. It is recommended that the piers be charted as located on the <sup>present survey</sup> photobathymetry and the note and dashed piers be deleted. <sup>App'd</sup>   
 (piers under construction originate w/ CL 1320 of 1972, Coast Pilot Rpt.) ✓

L. (continued - page 3 of

The obstruction <sup>from TP-00003</sup> charted west of Protestant Cay (17°45'06"N, 64°42'20"W) was not found during the course of this survey. Due to a time factor, the obstruction was not investigated. The obstruction was not seen visually or on the fathogram. It is recommended that the obstruction remain as charted. *be revised to subm. as indicated on the present survey.* NC

An obstruction charted northwest of the Cement Company pier (17°45'15"N, 64°42'51"W) was not seen visually or during the course of the survey. The obstruction was not investigated due to time restraints, and it is recommended the obstruction remain as charted. *Do not concur, revise to subm.* App'd

An obstruction north of Long Reef (17°45'52"N, 64°43'20"W) <sup>from TP-00003</sup> was not seen visually or on the fathogram. The area was not developed due to a limited amount of time, and it is recommended that the obstruction remain as charted. *nor shown on the present survey. Photogrammetry Br. indicated obstruction was probably a buoy and should be considered not to exist, if not visually verified.* NC Not charted

An obstruction <sup>from TP-00003</sup> reportedly located inside Long Reef in the area covered by the photobathymetry sheet at approximately 17°45'30"N, 64°42'21"W was not seen visually, and limited survey time negated the attempt to find the obstruction. The obstruction was not seen visually but it is recommended that it be charted. *as subm as indicated on the present survey.* NC

The area labelled as "pier construction" on the Notes to Hydrographer at approximately 17°45'03"N, 64°41'41"W is not under construction. A visual inspection of the area finds the area littered with 2 beached cranes and the Captain of the Port Authority reports no construction is underway at this time nor is any expected in the near future. It is recommended that this annotation be deleted from the chart. *Concur, chart as indicated and the dashed piers on present survey.* App'd

The area south of Fort Louise Augusta Light (17°45'15"N, 64°41'44"W) is labelled as "wrecks" on the Notes to Hydrographer. These three areas in question are the beginnings of a coral reef which is submerged in approximately 8 feet of water. It is recommended this area be charted as found on the photobathymetry and labelled as "coral reef" as it is a hazard to navigation for shallow-draft vessels. *Disregard, T-sheet indicates these are islets. Chart present survey info.* NC

Presurvey Review Items for this survey are as follows:

Presurvey Review Item #6 located 17°45'17.5"N, 64°42'14.8"W is reported as a dangerous sunken wreck, 35 feet reported, existence doubtful. The item was investigated on Julian Day 91 by VESNO 2227, and JD 92 and 97 by VESNO 2224 using 10-meter line spacing and XL's. There was no indication of the wreck on any of the fathograms (Pos #1350-1359, 1386-1419, and 1426-1447). It is recommended that PSR Item #6 be removed from the chart. *Concur* App'd Lic 25/04/11

Presurvey Review Item #7 at 17°45'02.8"N, 64°41'59.0"W reported as shoaling in 1979 was investigated on JD 86 and 91 by VESNO 2227. The shoaling is reported to occur in the vicinity of black buoy "15" which marks the edge of the navigable waters about the Port Authority Pier. NC 25/04/11

The U.S. Coast Guard in the area reported the buoy out of position; however, the position of the buoy determined during the course of the survey and the charted position agree very well. If the buoy is indeed in place, shoaling is evident in this area as witnessed on the fathograms (Pos #1239-1265, 1362-1381), with the shoalest soundings in the immediate area of buoy "15" being 10-12 feet. It is recommended this particular area be charted as found.

Do not Concur, buoy located 25m east of charted position. See Eval. Rpt. Sec 7.c.

Concur, shoaling verified along edge of channel.

Presurvey Review Item #8 at 17°45'07.0"N, 64°41'56.0"W reported as a dangerous sunken wreck, position approximate, and Presurvey Review Item #9 at 17°45'09.2"N, 64°41'56.2"W reported as a submerged obstruction, position approximate (6 feet reported 1977 were investigated in conjunction with each other due to their close proximity. On JD 87 VESNO 2225 developed the area with ten-meter line spacing 20m XL's. There was no indication of either obstruction on the fathogram (Pos #1268-1341). The Captain of the Port Authority revealed that most of the wreck mentioned in PSR #8 had been removed and the sunken crane reported in PSR#9 was a crane cab which, to his knowledge, had not been removed. The new owner of the Gallows Bay Marina had no knowledge of the crane cab. It is therefore recommended that PSR#8 be removed from the chart as it is no longer a hazard to navigation, and PSR #9 be retained on the chart as its existence was not disproven during the development of that area.

Retained both Auvio WMSM 5/21/86

concur with recommendation for PSR #9, do not concur with recommendation for PSR #8, See Eval. Rpt. Sec 7.a(1)

Presurvey Review Item #10 located approximately 17°45'13.7"N, 64°41'45.0"W is a dangerous sunken wreck which was investigated by VESNO 2227 on JD 105. Ten-meter line spacing and XL's were used over the area in question (Pos #1717-1768) and a sounding four feet shoaler than the surrounding area was observed (Pos #1721+3). It is recommended that this obstruction be charted as plotted on the 1:1500 scale field sheet.

Retained WMSM 5/21/86 Ref CL 1162/79 CL 897/74 Case Authority to V.I. regulatory agency documents 5/22/86 msm

See Eval Rpt. sec 7, item a (2)

Presurvey Review Item #11 located approximately 17°45'15.0"N, 64°41'44.5"W is a dangerous sunken wreck. On JD 85 VESNO 2227 developed the area with five-meter line spacing (Pos #1218-1236), and soundings 5 feet shoaler than the surrounding area were observed on the fathogram. Further investigation of the submerged object was conducted on JD 86. Detached positions (Pos#1266-1267) were taken over the shoalest areas of the obstruction by 2 divers using a sounding pole. The positions of the detached positions were obtained by maneuvering the Monark (VESNO 2227) alongside the sounding pole and recording ten (10) consecutive DEL NORTE rates; angles were turned to the sounding pole. The geographic positions were determined by Program RK 300. The object was described as a large metal piece of framework, approximately 20 ft wide and over 30 ft long) possibly the remains of a crane barge. This obstruction poses a serious hazard to navigation and it is recommended that the item be charted as a dangerous submerged obstruction as plotted on the field sheet. Delete charted dangerous

not plotted

Auvio WMSM 5/21/86

Delete wreck. Obstr previously charted

plotted as sub m, debris, L.D. 6-ft, lat 17°45'15.8"N, long 64°41'46.0"W

WIS P.A. and chart present survey INTO.

Numerous detached positions were taken on objects along the shoreline on JD 99. Positions for the objects were determined by the following method: an angle was turned from the azimuth station to the object while VESNO 2227 came alongside the object and the average of five DEL NORTE rates was used to determined its range from the remote station (Station 405).

L. (continued - page 5 of)

Positions #1532 located at 17°45'19"N, 64°43'01"W is the offshore end of a submerged pipe leading from shore. The pipe is one foot in diameter, rests on the bottom and is approximately 15 feet from shore. The pipe is in 2-4 feet of water with a least depth of 0.6 feet.

DC  
currently  
charted  
as outfall  
DC  
25641

Position #1542 located west of the Cement Company pier at 17°45'17"N, 64°42'58.5"W is a single one-inch diameter pipe which is approximately eight (8) inches out of the water. It is in 1-2 feet of water.

DC  
Previously  
charted  
DC  
25641

Position #1547 is also located west of the Cement Company pier at 17°45'16.6"N, 64°42'56.8"W. It is a two-inch diameter pipe exposed one foot out of the water and is located against the offshore end of a concrete culvert.

App'd  
DC  
25641

Position #1554 is located west of the Cement Company pier at 17°45'15"N, 64°42'55.5"W. This pipe appears to be a construction rebar which is 0.5 foot out of the water and 35 feet from shore. It is in 2-4 feet of water.

DC  
Previously  
charted  
DC  
25641

Position #1562 is located east of the Cement Company pier at 17°45'10"N, 64°42'49.6"W. This detached position is a concreted piling, possibly the offshore end of a pier in ruins. The piling is approximately 3 ft in diameter, exposed one foot out of the water, and is in 3-4 feet of water.

App'd  
DC  
25641

Position #1591 is located west of the seaplane ramp at 17°45'00"N, 64°42'39"W. This object is a very large submerged ship's anchor, possibly used as a mooring anchor. It rests on one side approximately 20 feet from shore in 2-3 feet of water.

DC  
Obstr  
charted  
DC  
25641

All the aforementioned detached positions are considered hazards to navigation even though they appear in shallow water. It is therefore recommended that these objects appear on the chart at the positions determined during the course of this survey.

More detached positions on objects were taken in the area between Fort Louise Augusta and the Port Authority Pier. On JD 085, two detached positions (Pos #1216-1217) were taken on a partially submerged A-frame boat crane by VESNO 2227. The crane is in approximately 10-12 feet of water and the base of the crane has a least depth of one foot. (A sketch of the boat crane is located in the appropriate sounding volume.) The Captain of the Port Authority reported the boat crane is privately owned and authorities are attempting to have the crane removed but attempts to date have failed. It is located at 17°45'13"N, 64°41'45.5"W. This position is very close to the approximate position of PSR #190. It is recommended that the crane not be charted as it is thought to be a temporary object. *Do not concur, chart wk as indicated on present survey.*

Telegram to Mr. Owen  
Bollow, U.S.V.I.  
for present status  
CMBM 5/27/86  
will call back

DC  
25641

Two detached positions were taken on a barge that was beached on JD 091 by VESNO 2227 (Pos #1348-1349). The barge is grounded in water 0 to 9 feet in depth. Detached positions were taken on its bow and stern to show its relative position to the beach. Its geographic position (admships) is 17°45'05"N, 64°41'53"W. This barge has been in this position for some time, according to local officials.

Alorio  
CMBM  
5/27/86  
DC  
25641

L. (continued - page 6 of)

Position #1705 is a detached position taken by VESNO 2227 on JD 104. The object is a partially submerged wreck of a sailboat. The hull has split in half along the centerline and now forms a "V"-shaped wreck. One of the wreck's beams is exposed one-two feet out of the water in 5-6 feet of water. The position of the exposed beam is 17°45'07"N, 64° 41'49"W. It is recommended this ~~partially submerged~~ wreck be charted in the above location as it could be a hazard to navigation for shallow-draft vessels. *concur*

*Return*  
*uncorrected, tide data unavailable*  
*visible*  
*NC. Previously charted*  
*✓ NC 25641*

A sunken wreck was located north of the Cement Company channel at 17°45'28"N, 64°42'12"W (JD 85, VESNO 2227). The geographic position was determined by averaging ten consecutive DEL NORTE rates along with an angle from the azimuth station to a sounding pole placed over the bow and stern of the wreck (Pos #1237-1238). The average range and azimuth were then converted to Latitude and Longitude via Program RK 300. The wreck is a concrete hull of a boat approximately 10 feet long and 4 feet wide. It rests on its port side in the sand in 4-5 feet of water with a least depth of 0.56 feet over its starboard quarter. The Captain of the Port Authority revealed that shallow-draft vessels habitually traverse this area, and therefore it is recommended that the hull be charted, as a dangerous ~~submerged~~ wreck, at the above position.

*ok*  
*allow*  
*MSM*  
*5/22/86*  
*Add depth to existing wreck*  
*✓ NC 25641*

*enlargements of bathymetry.*  
Two photogrammetric sheets (TP-00003, *part 2 of 2* east and west) were available for comparison with this survey. The two sheets encompassed a majority of the survey area with the exception of the two channels, deeper depths north of Long Reef, and shallower areas near the shore in the vicinity of Fort Louise Augusta Light. In general depths agreed well with this survey, with most depths agreeing within ±2 feet. On JD 056, lines were run in the area south of Long Reef for comparison with the photobathymetry; depths agreed to within ±1 ft of those determined on the photobathymetric sheets. Three discrepancies were observed during the comparison:

*NC*  
*✓ NC 25641*

An area east of Long Reef (17°45'40"N, 64°41'50"W) differs in depth from 0-4 feet between the photobathymetry and the current survey, with 90% of the soundings being 2-3 feet deeper in the photobathymetry than the survey. It is possible that depths in this area differ slightly because of the steep gradient of the area (as it approaches in the main channel) or because of active sediment transport in this area.

*NC*  
*✓ NC 25641*

East of Fort Louise Augusta Light is an area along the shore that is 2-4 feet shoaler than what the photobathymetry shows. The 12-foot curve is approximately 300 feet further offshore in this survey within an 0.1 mile either side of the 64°41'30"W meridian at 17°45'30"N. It is recommended that this area be re-evaluated once smooth tides are applied to the soundings from the current survey. *concur w/above comparison.*

*NC*  
*✓*

A shoal located approximately 17°45'55"N, 64°41'42"W is smaller on this survey than on the photobathymetry in that it doesn't appear to extend as far north as in the photobathymetry: This survey is 4-6 feet deeper in the area north of the shoal area. *inadequate comparison, area not developed.*

*NC*  
*✓*  
*NC 25641*

M. ADEQUACY OF THE SURVEY

This survey is considered complete and adequate to supercede prior surveys.

N. AIDS TO NAVIGATION

There are twenty (20) floating aids to navigation and eight (8) fixed aids to navigation in the survey area. Eleven floating aids and eight fixed aids mark the Christiansted Harbor Channel. Nine floating aids mark the channel leading from Christiansted Harbor Channel to the Cement Company Pier. Each floating aid was located by maneuvering the launch alongside (within 2 meters) and recording ten (10) consecutive DEL NORTE rates; angles were turned to the top of each buoy. The averages of these rates and the respective angles were converted to geographic positions using Program RK 300. The fixed aids were located by spur traverse methods using third order class one procedures for obtaining the angles but due to logistic and weather constraints the distance measurements could only be obtained by recording ten (10) consecutive DEL NORTE rates. The results are contained in the Horizontal Control report for OPR-II49-MI,PE-81.

The observed and charted positions of these floating and fixed aids to navigation are as follows:

<u>Aids to Navigation</u>	<u>Charted Latitude(N)</u>	<u>Charted Longitude(W)</u>	<u>Observed Latitude(N)</u>	<u>Observed Longitude(W)</u>
Black "1" F. 2.5 sec	17°45'54"	64°41'48"	17°45'54.94"	64°41'47.88"
Nun "2", red	17°45'44"	64°41'49"	17°45'43.89"	64°41'48.87"
Black can "3"	17°45'43"	64°41'45"	17°45'4 <sup>3</sup> <del>2</del> . <sup>51</sup> <del>35</del> "	64°41'44. <sup>34</sup> <del>16</del> "
Red "4" QK F1 R	17°45'38"	64°41'46.5"	17°45'38.24"	64°41'46.61"
Black can "5"	17°45'36"	64°41'39"	17°45'36.39"	64°41'39.48"
Red nun "6"	17°45'35"	64°41'49"	17°45'35.23"	64°41'48.81"
Light "7" F1 G 4 sec 16 ft 4M	17°45'33.5"	64°41'42"	17°45'32.99"	64°41'41.6 <sup>0</sup> <del>1</del> "
Can R B	17°45'31"	64°41'46.4"	17°45'30.64"	64°41'46.28"

N. (continued)

<u>Aids to Navigation</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
Red nun "8"	17°45'33"	64°41'59"	17°45'32.6 <sup>1</sup> "	64°41'59.68"
Light "9" Fl G 2.5 sec 16 sec	17°45'30"	64°41'55.5"	17°45'29.59"	64°41'55.92"
Day Beacon "10"	17°45'32.5"	64°42'02.5"	17°45'32.0 <sup>8</sup> "	64°42'02.36"
Light "11" QK Fl G 16 ft	17°45'27.5"	64°41'58.5"	17°45'26.85"	64°41'58.17"
B/W marker "CH"	17°45'24.5"	64°42'03"	17°45'23.9 <sup>6</sup> "	64°42'04.26"
Red nun "12"	17°45'23.5"	64°42'03"	17°45'22.8 <sup>9</sup> "	64°42'02.90"
Light "13" Fl 4 sec 16 ft	17°45'08"	64°42'01"	17°45'07.1 <sup>3</sup> "	64°42'01.06"
Black can "15"	17°45'03"	64°41'59.4"	17°45'02.84"	64°41'58.53"
Daymark "16"	17°44'58"	64°42'06"	17°44'57.3 <sup>2</sup> "	64°42'05.8 <sup>4</sup> "

Between Christiansted Channel and Christiansted Light:

Day Beacon red "2"	17°45'24"	64°41'49"	17°45'23.03"	64°41'48.93"
Black can "3"	17°45'18"	64°41'54.5"	17°45'17.67"	64°41'54.66"
Christiansted Cement Company Channel Markers:				
Black can "1"	17°45'18.5"	64°42'13"	17°45'18.23"	64°42'12.36"
Black can "3"	17°45'11.5"	64°42'19"	17°45'11.16"	64°42'18.59"
Red nun "4"	17°45'10"	64°42'23.5"	17°45'09.04"	64°42'23.85"
Black can "5"	17°45'08"	64°42'24.5"	17°45'07.49"	64°42'24.3 <sup>3</sup> "
Red nun "6"	17°45'09"	64°42'26"	17°45'08.3 <sup>6</sup> "	64°42'26.24"
Black can "7"	17°45'07"	64°42'28.5"	17°45'05.50"	64°42'29.07"
Red nun "8"	17°45'10"	64°42'33"	17°45'08.87"	64°42'33.08"
Black can "9"	17°45'11"	64°42'40.5"	17°45'08.59"	64°42'37.27"
Red nun "10"	17°45'13"	64°42'42"	17°45'12.20"	64°42'42.68"

*Painting finished to O & for publication in sec. 7105 to be painted for 8/28/86*

Submerged intake pipe lights: ----- 17°45'10.61"N 64°42'48.04"W

The position of black can "11" was not determined as the buoy has been removed



O. STATISTICS

Linear nautical miles of hydrography-----	57.4
Linear nautical miles of crosslines-----	13.1
Linear nautical miles of developments-----	13.4
Total linear miles of hydrography-----	83.9
Total "to and from" miles-----	294.8
Total miscellaneous miles-----	126.5
Total miles run-----	506.2
Square miles of hydrography-----	9.16
Nansen casts-----	2
Bottom samples-----	50

P. MISCELLANEOUS

Depths south of Long Reef may have to be re-evaluated due to the wind conditions on this shallow area. The wind shifted to the east and south during the first half of the survey, whereas it is predominantly from the north-northeast; this may have caused unusually low tides within the reef.

Bottom samples were not taken north of the reef because of the swell action along the reef line. No bottom samples were attained farther north of the reef due to the sudden great increase in depth of that area.

Q. RECOMMENDATIONS

None

R. AUTOMATED DATA PROCESSING

The following HYDROPLOT Programs were used to acquire and process the survey data:

RK 201	Grid, Signal and Lattice Plot	4/18/75
RK 212	Visual Station Table Load and Plot	4/01/74

R. (continued)

RK 216	Range-Azimuth Plot	2/05/76
RK 300	Utility Computations	2/05/76
RK 330	Data Reformat and Check	5/04/76
RK 407	Geodetic Inverse Direct Computation	10/23/75
AM 500	Predicted Tides	11/10/72
RK 530	Velocity Corrections Computations	5/10/76
RK 561	H/R Geodetic Calibration	5/19/75
RK 602	Extended Line Oriented Editor	5/20/75

S. REFERENCE TO REPORTS

Horizontal Control Report for fixed aids to navigation.

Respectfully submitted,

*Kenneth W. Perin, LT, NOAA*

*for*  
Marlene Mozgala  
LT(jg), NOAA

APPROVAL SHEET

The field work on this Hydrographic Survey was under my daily supervision. The boat sheet and records have been reviewed and approved by me.

  
Commanding Officer

APPENDIX "J"

SIGNAL NAMES/SOURCE TAPE PRINTOUT

400	CHRISTIANSTED RANGE LIGHT	AMC OPS
405	US ARMY CORP OF ENG DISK "CHV1-3 1962"	
440	CHRISTIANSTED DAYMARK "16"	AMC OPS
535	CEMENT 81	MT. M

SIGNAL TAPE PRINTOUT

400	4	17	45	25424	064	41	41593	250	0014	000000
405	4	17	45	25751	064	41	41712	250	0011	000000
440	4	17	44	57329	064	42	05848	139	0004	000000
535	4	17	45	11759	064	42	52613	250	0001	000000

Replaces C&GS Form 567.

- TO BE CHARTED
- TO BE REVISED
- TO BE DELETED

REPORTING UNIT  
(Field Party, Ship or Office)

NOAA Ship Mt. Mitchell

STATE

St. Croix,  
U.S.V.I.

LOCALITY

Christiansted Harbor

DATE

03/30/81

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

**NONFLOATING AID TO NAVIGATION FOR CHARTS**

- ORIGINATING ACTIVITY
- HYDROGRAPHIC PARTY
  - GEODETIC PARTY
  - PHOTO FIELD PARTY
  - COMPILATION ACTIVITY
  - FINAL REVIEWER
  - QUALITY CONTROL & REVIEW
  - COAST PILOT BRANCH
- (See reverse for responsible person)

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	DATUM		POSITION		LONGITUDE // D.P. Meters	OFFICE	FIELD	AFFECTE
		LATITUDE		LONGITUDE					
		° /	//	° /	//				
OPR PROJECT NO. I1149-MI-81, PE-81	JOB NUMBER MI-5-1-81	NAD-27							
LIGHT	LIGHT #9 - FI G 2.5 sec. 16ft. <i>Christiansted Harbor Channel</i>	17	45	064	41	55.92345		F-2-6-L 3/30/81	25645
DYBN	DAYBEACON #10 - R <i>Christiansted Harbor Channel</i>	17	45	064	42	02.36482		F-2-6-L 3/30/81	25645
LIGHT	LIGHT #11 - Qk FI G 16 ft. <i>Christiansted Harbor Channel</i>	17	45	064	41	58.17519		F-2-6-L 3/30/81	25645
DYBN	DAYBEACON #2 - Sign Missing <i>Round Rock southwest</i>	17	45	064	41	48.93284		F-2-6-L 3/30/81	25645
DYBN	DAYBEACON <i>Christiansted Harbor Channel</i>	17	45	064	42	04.26288		F-2-6-L 3/30/81	25645
LIGHT	LIGHT #13 - Lt. FI G 4sec. 16ft. <i>Christiansted Harbor Channel</i>	17	45	064	42	01.06280		F-2-6-L 3/30/81	25645
DYBN	DAYBEACON #16 <i>Christiansted Harbor Channel</i>	17	44	064	42	05.84810		F-2-6-L 3/30/81	25645
LIGHT	LIGHT #7 - FI G 4sec. 16ft. 4M <i>Christiansted Harbor Channel</i>	17	45	064	41	41.607682		F-2-6-L 11/18/80	25645
FRONT RANGE LIGHT	Christiansted Harbor Channel Entrance Range Front Light <i>(CHRISTIANSTED RANGE LT, 1980)</i>	17	45	064	41	41.59346		F-2-6-L 11/18/80	25641 25645
Rear Range Light	(Two, 1924) - Entrance Range Rear Lt.) <i>Christiansted Harbor Channel</i>	17	45	064	41	35.484 <del>582</del>	P-L	2/26/81 F-5-Vis	25641 25645

NC  
2-890 (81)



Replaces C&GS Form 567.

TO BE CHARTED  
 TO BE REVISED  
 TO BE DELETED

REPORTING UNIT  
(Field Party, Ship or Office)

NOAA Ship Mt. Mitchell

STATE

St. Croix,  
U.S.V.I.

LOCALITY

Christiansted Harbor

DATE

2/26/81

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

LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY

- HYDROGRAPHIC PARTY
- GEODETIC PARTY
- PHOTO FIELD PARTY
- COMPILATION ACTIVITY
- FINAL REVIEWER
- QUALITY CONTROL & REVIE
- COAST PILOT BRANCH

(See reverse for responsible person)

The following objects HAVE  BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.

OPR PROJECT NO.

I149-MI-81, PE-81

JOB NUMBER

MI-5-1-81

DATUM

NAD-27

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION		METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHART AFFECTE
		LATITUDE	LONGITUDE	OFFICE	FIELD	
Tank		17 44	064 42	P-L 77Z(C)0103 12/17/77	2/26/81 F-5-Vis	25641 25645
Tank		17 44	064 42	P-L 77Z(C)0103 12/17/77	2/26/81 F-5-Vis	25641 25645
Tank	Not identified visually	17 44	064 42	P-L 77Z(C)0103 12/17/77	2/26/81 F-Vis	25641 25645
Mill	* Charted as stack, should be mill (Little Princess Mill)	17 45	064 43		2/26/81 F-5-Vis	25641 25645
Mill	* Charted as stack, should be mill (Little Princess Mill, South)	17 45	064 43		2/26/81 F-5-Vis	25641 25645
Chimney	Charted as stack, should be chimney (La Grande Princess Chimney - S.)	17 45	064 44	P-L 77Z(C)9164 11/14/77	2/26/81 F-5-Vis	25641 25645
Mill	Charted as stack, should be mill (La Grande Princess Mill-N.)	17 45	064 44	P-L	2/26/81 F-5-Vis	25641 25645
	* retain as charted					

20  
1-89(8)

Replaces C&GS Form 567.

TO BE CHARTED  
 TO BE REVISED  
 TO BE DELETED

REPORTING UNIT  
(Field Party, Ship or Office)  
NOAA Ship Mt. Mitchell

STATE  
St. Croix,  
U.S.V.I.

LOCALITY  
Christiansted Harbor

DATE  
2/26/81

ORIGINATING ACTIVITY  
 HYDROGRAPHIC PARTY  
 GEODETIC PARTY  
 PHOTO FIELD PARTY  
 COMPILATION ACTIVITY  
 FINAL REVIEWER  
 QUALITY CONTROL & REVIE  
 COAST PILOT BRANCH  
(See reverse for responsible perso.

The following objects HAVE  BEEN INSPECTED FROM SEAWARD TO DETERMINE THEIR VALUE AS LANDMARKS.

OPR PROJECT NO. I149-MI-81, PE-81  
JOB NUMBER MI-5-1-81  
SURVEY NUMBER  
DATUM NAD-27

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION		METHOD AND DATE OF LOCATION (See instructions on reverse side)	CHART AFFECT
		LATITUDE D.M. Meters	LONGITUDE D.P. Meters		
Church Spire	Charted as stack, should be church spire (Lutheran Church Spire 1919) <i>ON 25641</i>	17 44	064 42	2/26/81 F-5-Vis	25641 25645
Church Spire	Charted as stack, should be church spire (Episcopal Church Spire 1919) <i>ON 25641</i>	17 44	064 42	2/26/81 F-5-Vis	25641 25645
Chimney	(Little Princess Chimney 1919)	17 45	064 43	2/26/81 F-5-Vis	25641 25645
R TR	(Radio Tower WESTX) <i>(CHRISTIANSTED RAD. MAJST 1980)</i>	17 45	064 41	2/26/81 F-5-Vis	25641 25645
Clock	(Clock Steeple 1919)	17 44	064 42	2/26/81 F-5-Vis	25641 25645
Stack	Charted as one of twin chimneys, should be stack	17 45	064 42	P-L 77Z(C)9164 11/11/77	25641
Stack	Charted as one of twin chimneys, should be stack	17 45	064 42	P-L 77Z(C)9164 11/11/77	25641
Monument	(Recovery Hill)	17 44	064 42	04.34331	25645
Windmill	Not Visible from Seaward-obsured by boat anchorage (Windmill)	17 44	064 42	P-L 77Z(C)0103 12/17/77	25645
Windmill	Not Identified Visually (Orange Grove Mill 1919)	17 44	064 43	04.67949	25641 25645

NC  
1-890(81)



11-21

r  
m

June 24, 1981

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 975-1224, West Indies Lab, St. Croix, VI  
975-1364, Christiansted, St. Croix, VI

17° 45' 18", 64° 34' 06"  
17° 45' 00", 64° 42' 18"

Period: February 25, 1981 - April 15, 1981

HYDROGRAPHIC SHEET: H-9929

OPR: I-149

Locality: North shore of St. Croix, VI

Plane of reference (mean lower low water): 975-1224 = 3.28 ft.  
975-1364 = 3.42 ft.

Height of Mean High Water above Plane of Reference is 975-1224 = 0.84 ft.  
975-1364 = 0.78 ft.

REMARKS: Recommended zoning:

Zone direct on 975-1364 Christiansted.

From J-day 55 at 1800 to J-day 57 at 1400 when the gage at Christiansted was inoperative; zone direct on 975-1224 West Indies Lab.

From J-day 104 at 0600 to J-day 105 at 2359, smooth tides will not be available. All tide gages in the area were inoperative during periods of hydrography.

for Donald Carrier  
Chief, Datums and Information Branch

H-9929

GEOGRAPHIC NAMES

H-9929

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
	<small>           A ON CHART NO.            B ON PREVIOUS SURVEY NO.            C ON U.S. QUADRANGLE MAPS            D FROM LOCAL INFORMATION            E ON LOCAL MAPS            F P.O. GUIDE OR MAP            G RAND McNALLY ATLAS            H U.S. LIGHT LIST            K         </small>											
BARRACUDA GROUND												1
BEAUREGARD BAY												2
CARIBBEAN SEA												3
CHRISTIANSTED												4
CHRISTIANSTED HARBOR (title)												5
FORT LOUISE AUGUSTA												6
GALLOWS BAY												7
GOLDEN ROCK (locality)												8
<del>GREAT MIDDLE GROUND</del>												9
LITTLE MIDDLE GROUND												10
LITTLE PRINCESS (locality)												11
LONG REEF												12
PROTESTANT CAY												13
RICHMOND												14
SAINT CROIX (title)												15
SCOTCH BANK												16
SHOY WASHER POINT												17
SORENSEN GROUND												18
U.S. VIRGIN ISLANDS (title)												19
ROUND REEF												20
												21
												22
												23
												24
												25

Approved:

*Charles E. Harrington*  
Chief Geographer - N/C6273

OCT 16 1985

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NO.: H-9929

Number of positions	1409
Number of soundings	7962
Number of control stations	25

	<u>TIME-HOURS</u>	<u>DATE COMPLETED</u>
Preprocessing Examination	34	22 AUG 1981
Verification of Field Data	610	24 JUN 1985
Quality Control Checks	121	
Evaluation and Analysis	220	17 OCT 1985
Final Inspection		07 NOV 1985
TOTAL TIME	1035	
Marine Center Approval		24 DEC 1985

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

MOA23-17-86

LETTER TRANSMITTING DATA

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

- ORDINARY MAIL
- AIR MAIL
- REGISTERED MAIL
- EXPRESS
- GBL (Give number) \_\_\_\_\_

TO:

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

DATE FORWARDED

7 FEB 86

NUMBER OF PACKAGES

(2) 1 TUBE, 1 BOX

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

H-9929 (OPR I 149-MI, PE-80 MI-5-1-81)  
VIRGIN ISLANDS

PKG 1 (TUBE)

- + Smooth SHEET
- + Smooth POSITION OVERLAY
- 2 Smooth EXCESS OVERLAYS

PKG 2 (BOX)

- + DESCRIPTIVE REPORT
- + ENVELOPE CONTAINING SUPPLEMENTAL DATA FROM PRINTOUTS
- + ENVELOPE CONTAINING DATA REMOVED FROM D. R.
- + CARRIER CONTAINING POSITION PRINTOUT
- + CARRIER CONTAINING SOUNDING PRINTOUT & L FILE PRINTOUT

FROM: (Signature)

Thomas A. White

for CDR DAVID B. MACFARLAND, NOAA

Return receipted copy to:

ATLANTIC MARINE CENTER  
HYDROGRAPHIC SURVEYS BRANCH (N/CG243)  
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(Name, Division, Date)

Dwayne S. Clark  
March 5, 1986  
NICG243

ATLANTIC MARINE CENTER  
EVALUATION REPORT

REGISTRY NO.: H-9929

FIELD NO.: MI-5-1-81

U.S. Virgin Islands, St. Croix, Christiansted Harbor

SURVEYED: February 25 through April 15, 1981

SCALE: 1:5,000

PROJECT NO.: OPR-I149-MI-81

SOUNDINGS: Ross 5000 Echo Sounder  
Raytheon 723 Echo Sounding  
Raytheon 719-B Echo Sounder  
Lead Line, Sounding Pole

CONTROL: Range/Azimuth  
Del Norte/Theodolite  
See Field Sheet

Chief of Party ..... R. A. Trauschke  
Surveyed by ..... Ships Personnel  
Automated Plot by ..... Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. Changes in the Descriptive Report were made in red during office processing.

b. The sounding data for the three subplans located on the smooth sheet are not entered into the digital record.

2. CONTROL AND SHORELINE

a. Control is adequately addressed in sections F and G of the Descriptive Report.

b. Shoreline originates with Class III registered shoreline map TP-00003 of 1977. The map consists of two parts, the shoreline map and a photobathymetric overlay. Soundings in red were determined by photobathymetric methods using photographs of 1977. These soundings were transferred from the overlay and provide supplemental information for unsurveyed areas and areas not adequately surveyed by the hydrographer. Revisions to the shoreline in red are by the hydrographer.

Differences exist between the photobathymetric survey and the shoreline map with respect to the location of ledges and reefs. Where reef and, in some cases, ledge are shown on the shoreline map, depths of 1 to 3 feet are found on the photobathymetric survey. In these areas the ledges and reefs from the shoreline map are shown on the smooth sheet. Most of the reef symbols

depicted along Long Reef on the smooth sheet originate with zero or negative soundings from the photobathymetric survey.

### 3. HYDROGRAPHY

a. Depths at crossings are generally in good agreement, except in some places where hydrographic and bathymetric data differ about 1 to 2 feet.

b. The standard depth curves were adequately delineated, except for portions of the 0-, 6-, 12-, and 18-foot depth curves. These could not be drawn completely due to a lack of soundings in inshore areas. Some 3-foot depth curves were added to emphasize shoal features.

c. The development of the bottom configuration and the determination of least depths are considered adequate except for the areas listed below which were not adequately sounded.

(1) The inshore areas from longitude  $64^{\circ}42'15''\text{W}$  to longitude  $64^{\circ}42'38''\text{W}$ .

(2) The vicinity of the 17-foot shoal located in latitude  $17^{\circ}45'34''\text{N}$ , longitude  $64^{\circ}41'48''\text{W}$ . *2.58m*

(3) The area in the vicinity of latitude  $17^{\circ}45'06''\text{N}$ , longitude  $64^{\circ}41'55''\text{W}$ .

### 4. CONDITION OF SURVEY

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

a. Bottom samples were not obtained north of Long Reef as required. The hydrographer states they were not obtained because of sudden increases in depth. (See section P of the Descriptive Report.)

b. Presurvey Review instructions for the disapproval of items were disregarded with no explanation by the hydrographer. This resulted in three of the six Presurvey Review items being recommended for retention on the chart.

c. The information contained in sections K and L of the Descriptive Report was not clearly presented. The evaluator made corrections in the text where source information was addressed in error.

d. No recommendation was made regarding the discontinued disposal area as required in section 10.4 of the project instructions.

e. A general lack of development is noted on the smooth sheet. Shoal indications on the chart, prior survey, photobathymetric overlay, and the field sheets were not developed as required.

This deficiency resulted in many photobathymetric soundings being transferred to the smooth sheet which were not in complete agreement with the surrounding hydrography.

f. NOAA Forms 76-40, "Nonfloating Aids or Landmarks for Charts," were incomplete and not in compliance with section 5.5 of the Hydrographic Manual.

g. Several items assigned to be investigated on the Notes to the Hydrographer overlay, prepared by the Photogrammetry Branch, were not accomplished.

h. Several manmade structures extending from shore were not identified by the hydrographer.

## 5. JUNCTIONS

An adequate junction was effected with H-9930 (1981) on the northeast. The junction with H-9935 (1982) on the north will be completed during verification of that survey.

## 6. COMPARISON WITH PRIOR SURVEYS

### a. H-4629a (1924-26) 1:10,000

This survey covers the area common to the present survey. Many changes have occurred mainly due to dredging.

With the exception of an 8-foot sounding at latitude  $17^{\circ}45'20''N$ , longitude  $64^{\circ}41'58''W$ , which has been carried forward to the present survey, the charted information in the eastern portion of Christiansted Harbor originates with miscellaneous sources subsequent to the prior survey. Here, no comparison was made. A chart section of this area is attached. Soundings in the remaining area differ 1 to 2 feet, except at a privately maintained channel located south of Long Reef which was dredged subsequent to 1926.

Marked changes of the shoreline have occurred in the area due to erosion and the construction of manmade features alongshore. The shoreline between longitude  $64^{\circ}42'21''W$  and longitude  $64^{\circ}43'10''W$  has been filled in to as much as 150 meters from shore; while erosion has occurred to an extent of 50 meters in the vicinity of latitude  $17^{\circ}45'21''N$ , longitude  $64^{\circ}41'40''W$ . The west side of the island, Protestant Cay, has extended as much as 100 meters.

Present depths of 1 to 5 feet are now shown in the area of Long Reef when previously a low water reef was shown on the prior survey. These soundings were acquired from 1977 bathymetric data and supersede the representation of the reef as characterized in 1926.

Soundings, bottom characteristics, ruins, and several rocks have been carried forward to supplement the present survey. With these additions, the present survey is adequate to supersede the prior survey within the common area.

b. H-4629b (1924-25) W.D. 1:10,000

This wire-drag survey covers portions of the present survey. Several detached soundings and bottom characteristics have been carried forward to supplement the present survey.

The prior Review states that there were numerous problems with the wire-drag work. No area and depth sheet was prepared and little processing was accomplished.

Due to the above statement, no comparison has been made with the effective drag depths.

7. COMPARISON WITH CHART 25645 (7th Edition, April 26, 1980)a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration, supplemented by numerous U.S. Corps of Engineers surveys and other miscellaneous sources.

Attention is directed to the following items:

(1) Presurvey Review Item 8, a dangerous submerged wreck PA, charted in latitude 17°45'07"N, longitude 64°41'56"W, and originating with Local Note to Mariners 14 of 1979, was not verified or disproved as required and should be retained as charted. ✓ PC 25645

The hydrographer was required to verify or disprove the wreck by obtaining local documentation of removal or by conducting a bottom drag for a radius of 100 meters. Neither of these requirements were accomplished.

(2) Presurvey Review Item 10, a dangerous sunken wreck PA, charted in latitude 17°45'13"N, longitude 64°41'45"W, and originating with Chart letters 1162 of 1970 and 897 of 1974, was not verified or disproved as required, and should be retained as charted. The disproof requirements, which are the same as for Presurvey Review Item 8, were not accomplished. ✓ PC 25645

✓ The development referred to in the Descriptive Report for this item located an uncorrected least depth of 6.7 feet. A corrected depth could not be computed as the tide gage was inoperative during this period. No further investigation of this sounding was conducted. As a result, a 6-foot obstruction was added to the smooth sheet in latitude 17°45'12.1"N, longitude 64°41'46.1"W. Chart this item as a dangerous obstruction and label, 6 feet reported 1981.

(3) The limits of the charted privately maintained channel and associated floating aids to navigation, located west of Christiansted, are in conflict with their counterpart positions depicted on the present survey. The aids are identified in the 1981 and 1984 U.S. Coast Guard Light Lists as Puerto Rican Cement Company Channel Buoys. U.S. Coast Pilot No. 5 of 1984 makes a statement to the effect that a depth of 17 feet was reported in the channel in 1981.



This information is referred to the chart compiler for consideration in ascertaining the present positions of the buoys and, if necessary, subsequent revision of the channel limits.

The charted 7-foot sounding at latitude 17°45'09"N, longitude 64°42'29"W from a miscellaneous source presently falls in depths of 22 feet. Final disposition of the 7-foot sounding is deferred to the compiler.

(4) The following charted items, which originate with miscellaneous sources, were neither verified nor disproved, and are deferred to the compiler for final disposition.

<u>Item</u>	<u>Latitude (N)</u>	<u>Longitude (W)</u>
subm intake pipes and obstrs	17°45'09"	64°42'50"
sewer	17°45'30"	64°42'55" (vicinity of)
two piers	17°44'53"	64°42'03"
pier	17°45'02"	64°42'10"
discontinued Disposal Area	17°45'53"	64°42'05"

(5) The 9-foot sounding, charted in latitude 17°45'20"W, longitude 64°41'51"W, from a miscellaneous source, was neither verified nor disproved by the present survey and should be retained as charted.

(6) The ruins, charted in latitude 17°45'13"N, longitude 64°42'52"W, from a miscellaneous source, are considered to no longer exist. Chart area as shown on the present survey.

Except as noted above the present survey is adequate to supersede the charted hydrography within the common area.

b. Controlling Depths

(1) The charted controlling depth note--17 ft. June 1978-- in the Christiansted Harbor Federal Project Channel located in Gallows Bay originates with a U.S. Corps of Engineers survey of 1978. Present depths are as much as 4 feet shoaler than the charted controlling depth note. The charted soundings plotted within this area from miscellaneous sources are referred to the nautical compiler for final disposition.

(2) The charted controlling depth note--17 ft reported 1972--at the marked privately maintained channel in latitude 17°45'10"N, longitude 64°42'35"W is based on information from a miscellaneous source.

No comparison of survey depths with charted controlling depths is made as portions of the channel are no longer located at their charted positions.

c. Aids to Navigation

The aids to navigation on the present survey are in substantial agreement with their charted positions and adequately mark the features intended, except for the buoys discussed in section 7.a.3 of this report. Also, the present survey position of black can buoy "15" charted in latitude 17°45'03"N, longitude 64°41'59"W falls about 25 meters east of its charted

position. The buoy no longer marks the edge of the project channel. Christiansted Water Intake Light (PA) charted in latitude 17°45'10"N, longitude 64°42'49"W is located about 40 meters north of its charted position on the present survey. Black can buoy "11" charted at latitude 17°45'14"N, longitude 64°42'51"W was reported by the hydrographer to have been removed.

8. COMPLIANCE WITH INSTRUCTIONS

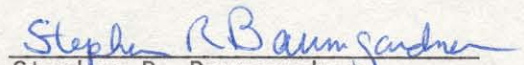
This survey adequately complies with the project instructions, except as noted in sections 3 and 4 of this report.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey and no additional field work is recommended.



F. L. Saunders  
Cartographic Technician  
Verification of Field Data



Stephen R. Baumgardner  
Cartographer  
Standards Section (N/CG242)  
Evaluation and Analysis



Guy F. Trefethen  
Senior Cartographic Technician  
Verification Check

Certification of Digital Data  
H-9929

The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, sounding and digitized data printouts of the survey have been made.

Certified: 24 December 1985



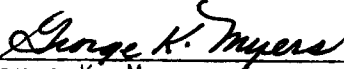
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Robert G. Roberson  
Chief, Evaluation and Analysis Group

Inspection Report  
H-9929

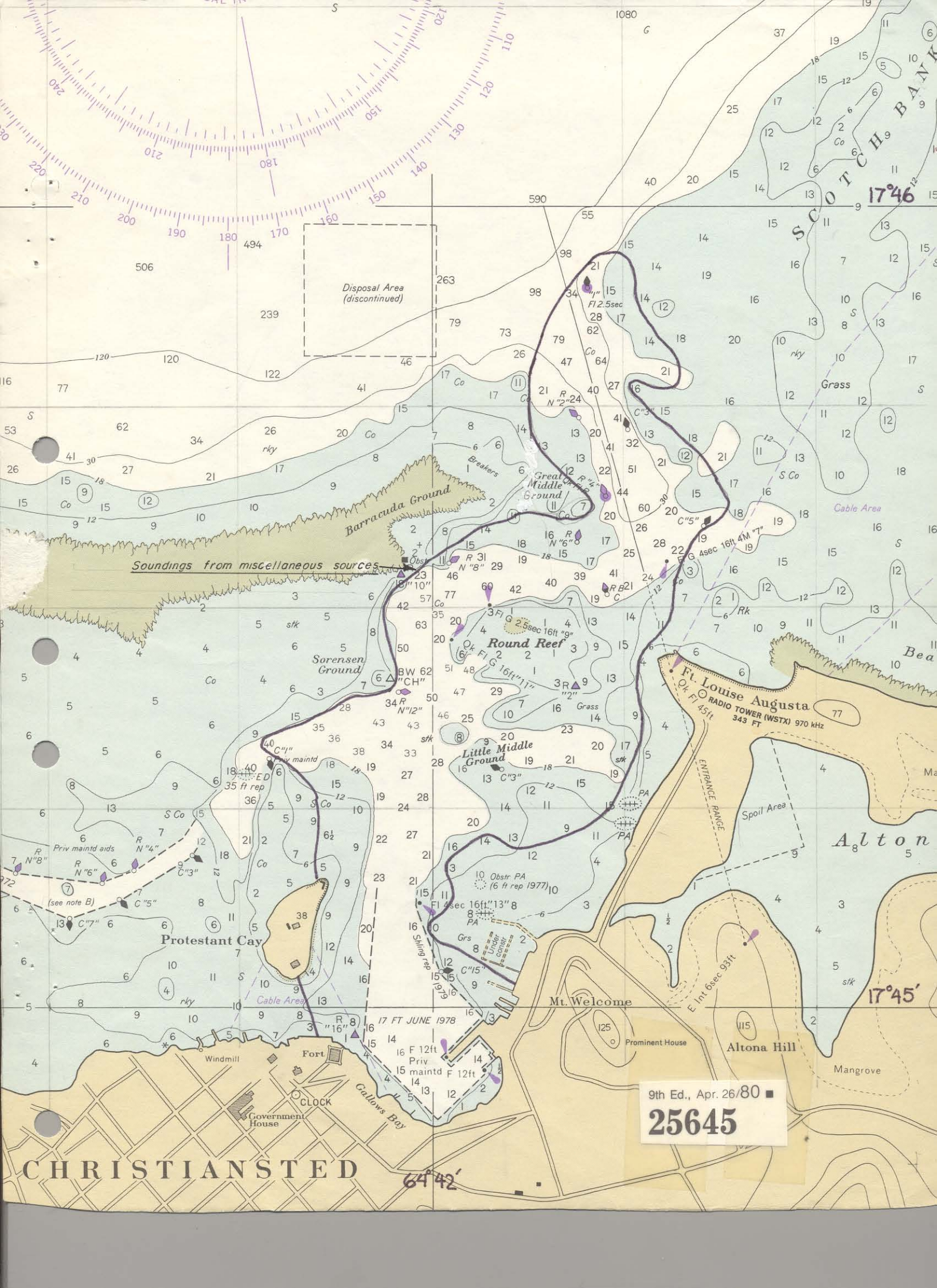
The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproof of charted data. The survey complies with National Ocean Service (NOS) requirements except as noted in the Evaluation Report. The survey records comply with NOS requirements except where noted in the Evaluation Report.

Inspected

  
\_\_\_\_\_  
George K. Myers  
Chief, Standards Section (N/CG242)  
Hydrographic Surveys Branch

Approved 24 December 1985

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



Disposal Area  
(discontinued)

Soundings from miscellaneous sources

9th Ed., Apr. 26/80 ■  
**25645**

CHRISTIANSTED

64°42'

17°46'

17°45'

DEPARTMENT OF COMMERCE  
National Oceanic and Atmospheric Administration  
National Ocean Survey  
Washington, D.C.

Hydrographic Index No. 180C

