

# 10006

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-10-3-82  
Office No. .... H-10006

### LOCALITY

State ..... U.S. Virgin Islands  
General Locality ..... St. Croix  
Locality ..... East Point to Great Pond Bay

19 82

CHIEF OF PARTY  
CAPT. J. A. Yeager

### LIBRARY & ARCHIVES

DATE ..... August 26, 1986

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

ACPG

CATS

25634

25641

25640

} to sign off see  
Record of Application

## HYDROGRAPHIC TITLE SHEET

H-10006

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.

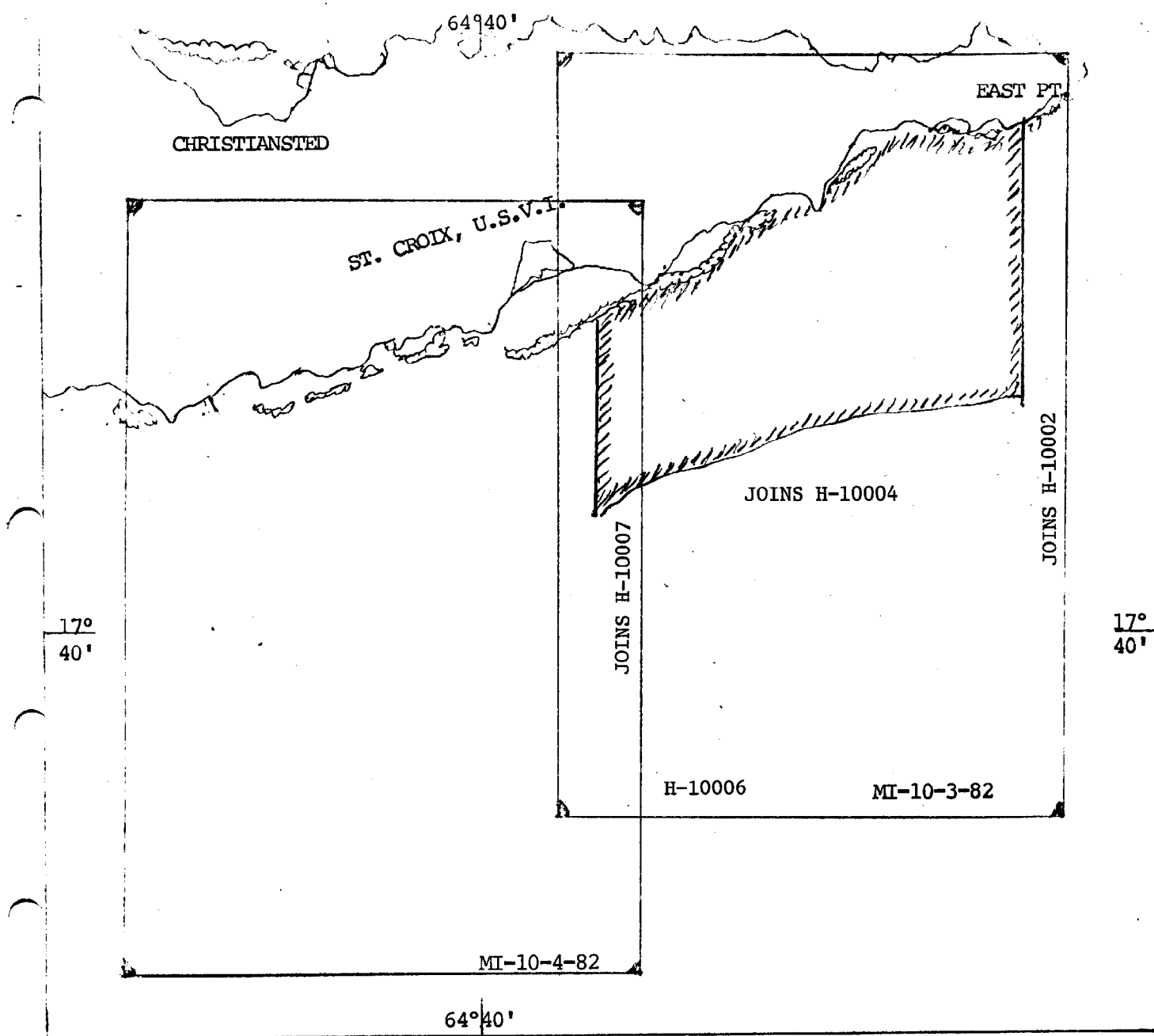
MI-10-3-82

State U.S. VIRGIN ISLANDSGeneral locality ST. CROIXLocality EAST POINT TO GREAT POND BAYScale 1:10,000Date of survey 19 MARCH - 7 APRIL 1982Instructions dated 27 NOVEMBER 1981Project No. OPR 1149-MI/PE-82Vessel NOAA SHIP MT. MITCHELL LAUNCHES (VESNO 2224, 2225).Chief of party CAPTAIN J. AUSTIN YEAGER, NOAASurveyed by SHIP'S PERSONNEL (SEE REMARKS)Soundings taken by echo sounder, ~~hand lead, pole~~ Ross Model 5000 Fineline~~ECHO SOUNDER~~ECHO SOUNDERGraphic record scaled by EV, EM, UG, BM, RC, CS, RWGraphic record checked by RW, RC, BM, CS, EM, FS

Protracted by \_\_\_\_\_

Automated plot by \_\_\_\_\_

Xynetras 1201 Plotter  
~~SHIP'S HYDROPLOT (MTC)~~Verification by F. L. Saundersand tenthsSoundings in fathoms 1 feet at XXXV MLLW ~~GULF COAST DATUM FATHOMS AT MLLW~~REMARKS: LT K.W. PERRIN, LT E.S. VARNEY, LTJG J. ZABITCHUCK, ENS K.P. PETERS,  
ENS F.W. ROSSMANN, ENS R.D. HENEGAR, ENS B.L. COAKLEY, ENS A.E. ORRIS,  
ENS D.I. CREWS, AND ENS G. N. MCLEAN (OFFICER IN CHARGE)Notes in red in Descriptive Report made during  
office processingDUVOIS/SURF M&M 9/18/86



OPR-I149-MI/PE-82

SCALE OF CHART 25641

PROGRESS SKTECH  
HYDROGRAPHIC OPERATIONS  
NOAA SHIP MT. MITCHELL S-222  
J. A. YEAGER CAPT. NOAA  
COMMANDING OFFICER

#### LEGEND

249.5 LNM HYDRO (LAUNCH)  
11.3 SNM HYDRO (LAUNCH)  
23 BOTTOM SAMPLES  
2 NANSEN CASTS

A. PROJECT

This survey was conducted in accordance with Project Instructions OPR-1149-MI/PE-82, St. Croix, U. S. Virgin Islands dated 27 November 1981, amended by changes 1 through 4 dated 21 December 1981, 11 January 1982, 25 January 1982 and 2 March 1982, with one Supplementary Instruction Dated 18 November 1981.

B. AREA SURVEYED

The survey was conducted in the area between East Point and Great Pond Bay, St. Croix, U.S. Virgin Islands.

The survey was conducted between March 19, 1982 (Julian Day 078) and April 7, 1982 (Julian Day 097), and its limits are roughly described by lines connecting the following points:

<u>Latitude (N)</u>	<u>Longitude (W)</u>
<sup>42 00"</sup> 17°38'42"N	<sup>30"</sup> 64°34'08"W
<sup>41 23"</sup> 17°38'42"N	<sup>00"</sup> 64°39'48"W
<sup>43 00"</sup> 17°45'33"N	<sup>00"</sup> 64°39'48"W
<sup>44 51"</sup> 17°45'33"N	<sup>30"</sup> 64°34'08"W

The southeastern shore of St. Croix, from East Point to Great Pond Bay, is a diverse shoreline consisting of both white sand beaches and rough, rocky hills. All areas are protected by reef from the open sea. One beach area is under commercial development along Grapetree Bay. A narrow, unmarked pass exists through the reef into the bay,

and is used with local knowledge only. A 33-foot sport fishing boat is the largest vessel reported to have attempted the pass.

Along the beach at Grapetree Bay is a primitive concrete pier, which is not regularly used by mariners. Bottom composition is largely white sand and coral.

*Groins identified in this area on smooth sheet.*

#### C. SOUNDING VESSELS

Soundings for the survey were obtained by LAUNCH 1017 (VESNO 2224) and LAUNCH 1002 (VESNO 2225) from the NOAA Ship MT MITCHELL (S222).

#### D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDING

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

<u>VESNO</u>	<u>Equipment</u>	<u>Serial Number</u>
2224	Ross 5000 Finline Depth Recorder	1087
	Ross 4000 Transceiver	1079
	Ross 6000 Digitizer	1079
	Ross 2000 Inverter	1079
<u>VESNO</u>	<u>Equipment</u>	<u>Serial Number</u>
2225	Ross 5000 Finline Depth Recorder	3780
	Ross 4000 Transceiver	1053
	Ross 6000 Digitizer	1039
	Ross 2000 Inverter	1050

---

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

Survey records were scanned and checked by trained survey department personnel and checked by the officer in charge. Peaks and deeps which occurred between soundings and considered significant were inserted. Many of these were encountered along the shallow rise of the reef line, and account for over-printed soundings on field sheets.

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

Velocity corrections were obtained from two Nansen casts taken 20 February 1982 (J.D. 051) and 25 March 1982 (<sup>Day</sup> ~~J.D.~~ 084) at  $17^{\circ}52'12''\text{N}$ ,  $64^{\circ}49'24''\text{W}$  and  $17^{\circ}53'54''\text{N}$ ,  $64^{\circ}41'18''\text{W}$  respectively. Results of the second cast were in good agreement with the first, and thus data from the first were used to establish velocity correction tapes. Bar check data were obtained in fair to good weather, and were mostly in agreement with the Nansen cast data. Assumed to have greater accuracy, the Nansen cast data were used to formulate all velocity tapes and velocity tables which are presented in Appendix D. Velocity correctors were applied to all soundings in this survey. Bar check data, when compared with velocity tapes based on Nansen cast data, show an instrument error of 0.1 fathom and 0.0 fathoms for launches 1017 (VESNO 2224) and 1002 (VESNO 2225) respectively and these corrections are to be applied on the TC/TI tapes. (Printouts included in Appendix D, Tables I and II).

Transducers drafts of 0.<sup>3</sup>~~1~~ fathoms were applied to all soundings for both vessels used in the survey. Settlement and squat correctors were determined from Pier 10, in San Juan Harbor, Puerto Rico. Tests for LAUNCH 1002 (VESNO 2225) were conducted on 04 February, 1982 <sup>Day</sup>~~(J.B. 035)~~ and for LAUNCH 1017 (VESNO 2224) on 09 February, 1982 <sup>Day</sup>~~(J.B. 040)~~. A copy of the field data and settlement and squat correctors versus each launch speed in rpms is included in the survey support data. Settlement and squat correctors were insignificant when sounding in fathoms for all survey vessels and therefore 0.0 correctors are used on the TC/TI tapes. A printout of this tape is included in Appendix D.

This survey was conducted using predicted tides based on values predicted 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 hours and -8.16 hours were added to high and low tides respectively with a multiplicative factor of 0.57.

Data acquired from the tide gage at Limetree Bay (#975-1401) will be used when smooth tides are applied to field data at the Atlantic Marine Center, CAM3, Norfolk, VA.

#### E. HYDROGRAPHIC SHEETS

This survey was plotted on four (4) mylar plotter sheets by the MT MITCHELL Hydroplot system with a skew of 90, 21, 54. (2 mainscheme sheets east and west and 2 crosslines, bottom sample and developments sheets east and west.) The entire survey was plotted off-line using electronic corrector tapes, a velocity tape and predicted tide tape which were applied to the soundings on the field sheets. Settlement

and squat, instrument error and smooth tides will be applied on final smooth sheet to be plotted at the Atlantic Marine Center, CAM3, Norfolk, Virginia.

Due to the limitations of the current Range-Azimuth software, the following positions were hand plotted: 1515-1516, 1525-1526, 1550-1551, 1554-1555, and 1558-1559. These positions would not plot because the measured azimuth extended beyond the initial volume of 00°00.0. The system, using RK 216, would not accept azimuths ranging from opposite sides of the 360° mark of a reference circle.

All field records and the following tapes have been forwarded to the Atlantic Marine Center, CAM3.

Range-Range Master Data Tape (Raw and Generated)

Range-Azimuth Master Data Tape (Generated)

Electronic Corrector Tape

Velocity Corrector Tape

Parameter Tapes

Signal Tape

TC/TI Tapes

#### F. CONTROL STATIONS

The control stations used for this survey are as follows:

<u>Station</u> <u>Number</u>	<u>Station</u> <u>Single Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>
*100	East Point, 1980	17°45'28.995"	64°34'02.443"
*200	Buck Island LT, 1980	17°47'19.977"	64°37'10.185"
610	Dall, 1980	17°45'12.670"	64°34'06.700"
620	Isaac 1919	17°44'55.591"	64°34'35.558"
630	Jack 1919	17°44'49.154"	64°35'09.825"
* Not used			



<u>Station Number</u>	<u>Station Single Name</u>	<u>Latitude(N)</u>	<u>Longitude(W)</u>	<u>Longitude(W)</u>
650	Pent <sup>S</sup> any Azimuth MK, 1982	17°44'06.108"	64°36'38.24 <sup>5</sup> "	
700	Fancy 1919	17°43'30.094"	64°38'24.757"	

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

All stations are of Third-Order, Class I accuracy. For further information on these control stations refer to the Horizontal Control Report for OPR-II49-MI/PE-82 submitted by CAM101.

The signal tape list and source names list can be found in Appendix F.

#### G. HYDROGRAPHIC POSITION CONTROL

Range-Azimuth positioning for both vessels was accomplished with a Del Norte system in conjunction with a Wild-T2 Theodolite. Range-Range work was positioned using two Del Norte units.

The following equipment was used in the launches:

<u>Equipment</u>	<u>VESNO</u>	<u>Serial Number</u>	<u>Dates</u>
DMU Master	2224	189 912	<sup>Day</sup> (J.D. 078-079)
DMU Master	2225	172 1068	<sup>Day</sup> (J.D. 80-J.D. 97)

The locations of the various Del Norte remote units used for this survey were:

Remote 72 (S/N 1065)	Remote 74 (S/N 262)	Remote 74 (S/N 1137)	Remote 76 (SN 1062)	Remote 78 (S/N 264)
Station Number: 630	700	650	650	610 630 700

Daily calibrations were obtained by either 3 point sextant fix or Range/Azimuth method. The Range Azimuth method used a multi-prism reflective mirror boards placed at the location of the Del Norte master antenna unit. A signal was measured from a control station and an azimuth turned from another known point to the launch using a Hewlett Packard 3810B unit. In this way the launch's position were determined by traverse, recording the observed range in meters and azimuth. Combining this data with the simultaneously measured Del Norte rates, reductions were made on the Hewlett Packard 9815 A/S using a program written by LT. (j.g.) Zabitchuck of the NOAA Ship MT MITCHELL.

Differences between the computed and observed distances were meaned to determine a corrector value for each day. Correctors of 0 were applied during launch operations.

Baseline calibrations were conducted on the following dates: 15 March, 29 March and 12 April 1982.

A final baseline calibration for this survey was conducted 12 April 1981 with a measured baseline from Frederiksted Pier to a point on South Beach using the HP 3810. Comparisons again were made between the measured and the Del Norte distances. Any deviation from the true distance was recorded and then corrected by adjusting the DMU.

Calibration measurements were recorded using a 30 db attenuator placed on the master unit, producing a noted difference in the resultant measurement. No attenuator was used during survey operations.

Abstracts of the baseline calibrations are included in the support data for this survey.

Antenna distance of zero for both launches has been applied to the parameter tape.

#### H. SHORELINE

Sounding lines were run perpendicular to the shore and reef lines at the innermost limit of safe navigation of the sounding vessels. Certain areas were not navigable inside of the reef line, and no soundings were taken in such areas.

Features detailed on photogrammetric shoreline maps <sup>TP-00005 and</sup> TP-00009, Part 1 of 2, are consistent with those observed by launch personnel while running inshore lines. No specific shoreline inspection was made other than the observations made from the launches during their work. The shoreline was transferred to the field sheets in blue.

#### I. CROSSLINES

Crosslines were run 45 to 90 degrees to the mainscheme sounding lines with mileage amounting to 9.9% of the total sounding line mileage. Crossline soundings agreed well with 86.7% of the soundings within the specifications stated in Section

I.1.2 Part B. II.1 of the Hydrographic Manual. Most of the crossline soundings which comprise the remaining 13.3% are those soundings included between positions #1046 and 1062 (17°42'00"N, 64°37'00"W, and 17°42'30"N, 64°34'30"W). These soundings exceed the limits of agreement of the above cited section of the Hydrographic Manual, but are not in excess of 3 times discrepancy in depth soundings. Therefore, these soundings are acceptable within the guidelines of the same cited section. Review of the fathogram indicates the possibility of some side echo return in this area of steep and rapid drop-off. The disagreement between crossline and mainscheme soundings in this area is believed to be the result of the crossline running parallel to the shelf edge and thus less reliable data than the mainscheme run at 90° to the drop-off.

*Stk. between pos 1046-1059 smooth plotted, remainder rejected in field*

#### J. JUNCTIONS

This survey junctions with the following surveys:

<u>Area of Junction</u>	<u>Field #</u>	<u>Reg. #</u>	<u>Scale</u>	<u>Date</u>	<u>Ship</u>
East	MI-10-1-82	H-10002	1:10,000	1982	MT. MITCHELL
West	MI-10-4-82	H-10007	1:10,000	1982	MT. MITCHELL
South	MI-80-1-82	H-10004	1:80,000	1982	MT. MITCHELL

The soundings of this survey generally agree well with those of the junction surveys. Sounding comparison showed an excellent agreement between this survey and H-10002, with 99% agreement of exact depths recorded. Discrepancies appear at depths greater than 100 fm in the areas of: 17°42'30"N, 64°35'00"W and 17°42'00"N, 64°34'30"W, but are within a 3 fm range. Discrepancies in this area are possibly due to the steep grade of the bottom at the drop-off.

Comparison with H-10004 which borders to the south of this survey, showed a 90% agreement between soundings. The shelf drop was the only area to show any

minor discrepancies from  $17^{\circ}42'30''\text{N}$ ,  $64^{\circ}34'30''\text{W}$ , to  $17^{\circ}41'30''\text{N}$ ,  $64^{\circ}38'45''\text{W}$  and these are possibly due to the difference in scales and steep slope. This 1:10,000 survey shows a more detailed profile of the shelf drop-off, while the 1:80,000 sheet (H-10004) shows fewer soundings in this area, thus a less defined and less accurate profile. With these differences in mind, the comparison resulting in 90% agreement is reasonable.

Comparison with H-10007 to the west of this survey also show excellent results, with 99% agreement, except in the general area of the shelf ledge at  $17^{\circ}41'30''\text{N}$ ,  $64^{\circ}38'45''\text{W}$ , at depths greater than 100 fm. These differences are again possibly due to the steep slope gradient.

#### K. COMPARISON WITH PRIOR SURVEYS

Prior survey review Items #56 and #57 were investigated and no bottom irregularities or surface obstructions were found.

Presurvey Review update dated 12 January 1982 indicates suspected ~~bo~~ys visible above mean low water at locations  $17^{\circ}43'12.73''\text{N}$ ,  $64^{\circ}37'57.63''\text{W}$  (PSR #56), and  $17^{\circ}44'25.54''\text{N}$ ,  $64^{\circ}35'26.12''\text{W}$  (PSR #57) based on data from photogrammetric project CM-7718.

Development lines were run approximately 1/8 to 1/4 mile in length, passing over the above positions and these being the locations of the intersection of all development lines. No unusual bottom profiles were observed along the gentle sloping which deepens seaward. Two detached position soundings were taken at the position of PSR #56 and ~~a depth~~ *on uncorrected sounding* of 4.5 fathoms was obtained at position No. 1510 which is consistent with adjacent soundings of the development lines, mainscheme soundings, and those

*4.3 fath, photo bathymetric depth shown on smooth sheet*

of USC & GS survey No. 4652a dated 1924-1926. Similar results were found for PSR #57 although no D. P. was taken. *4.7 fath. shoal shown on smooth sheet*

According to the photocompiler in Rockville, MD, ~~These~~ <sup>these</sup> items appear to be the size and shape of Fish or Lobster Floats and of a temporary nature.

It is suggested that whatever objects were visible when the photogrammetric data were acquired are no longer present, and no hazards to navigation were revealed in development of these locations. No bottom features were revealed that are not consistent with adjacent soundings. No hazards appear in these areas. *See Eval Rep*

The following prior survey was conducted within the area of this survey:

<u>Survey</u>	<u>Scale of Survey</u>	<u>Date</u>
H-4652a	1:20,000	April 1924-February 1926

When compared with the prior survey, soundings of this survey, 95% of the soundings were found to agree within the defined limits of Section I.1.2 Part B.II.1. of the Hydrographic Manual. Soundings from the current survey are generally of less depth in areas of discrepancy. This indicates that the overall change in the bottom profile could have been due to sediment deposition in these areas or due to the different type of positional control methods used on the surveys. In these instances, the shoaler depth is to be assumed correct.

Inshore areas that have changed since the <sup>prior</sup> ~~last~~ survey are as follows:

The prior depth of 5 1/6 fathoms was found to be only <sup>3.3 4.7 (arr)</sup> 4.2 to 4.5 fm at 17°43'10"N, 64°38'07"W. This prior sounding appears between mainscheme lines in a north-south direction, *and in areas of smooth plotted photobathymetric depths.*

The prior survey indicates a shoal at 4 fm which is not found to extend so far in the seaward direction at  $17^{\circ}42'22''\text{N}$ ,  $64^{\circ}38'43''\text{W}$ .

A shoal of 4 5/6 fm was not found in the current survey, instead 5.3 to 5.5 fm depths were indicated at  $17^{\circ}42'13''\text{N}$ ,  $64^{\circ}38'51''\text{W}$ . *Disregard - falls off present survey.*

The prior survey indicates a flat 11 fm bottom in the area of  $17^{\circ}43'48''\text{N}$ ,  $64^{\circ}36'36''\text{W}$ . The current survey shows <sup>corrected</sup> depths of <sup>10.3</sup> 9.2 to <sup>10.6</sup> 10.5 fathoms.

The sedimentation process is most evident in the central region of the survey, at the 10 and 11 fm flat bottomed areas. The prior survey defines a large flat depression of 11 and 12 fm depths in the area of  $17^{\circ}42'15''\text{N}$ ,  $64^{\circ}38'00''\text{W}$ . Current survey soundings indicate a lesser area of depression exists with more 10 fm depths replacing the former of 11 and 12 fm soundings. Although the difference in depth between surveys does not exceed 1 fm, the change is notable as a slight shoaling process is occurring in the region described. Continuing examination finds the 10 fm curve altered since the last survey including the area from  $17^{\circ}42'15''\text{N}$ ,  $64^{\circ}38'15''\text{W}$ , to  $17^{\circ}43'30''\text{N}$ ,  $64^{\circ}37'00''\text{W}$ . Here, the 10 fm depression has been again reduced in size.

The 10 fm bank described in the prior survey centered at  $17^{\circ}42'36''\text{N}$ ,  $64^{\circ}35'30''\text{W}$  and extends from  $17^{\circ}42'30''\text{N}$ ,  $64^{\circ}36'00''\text{W}$  to  $17^{\circ}42'42''\text{N}$ ,  $64^{\circ}35'05''\text{W}$ , appears to have extended seaward as current soundings in these areas show the seaward edge of the bank to be 9.7 to 11 fm in depth, where they were formerly reported as 12 fm. *Least depth is 8.3 fms over bank*

Further evidence of either sediment deposition in this survey area or positional differences as follows:

Current <sup>corrected 11.1 11.3</sup> depths of ~~10.5~~ to ~~10.9~~ fm in area formerly reported as 11 fm at 17°43'33"N, 64°35'25"W.

Current <sup>corrected 11.7</sup> depths of ~~11~~ fm in area formerly reported as 12 fm at 17°43'10"N, 64°36'30"W.

Prior survey indicates 10 fm in area currently <sup>corrected depths 8.9-9.4</sup> reported as ~~8.7~~ to ~~9.2~~ fm at 17°43'03"N, 64°37'36"W.

Prior survey indicates 11 fm in 9.7 to 10.0 fm region of current survey at 17°42'54"N, 64°37'30"W.

In the area of the steep slope shelf drop, the observed trend in comparison is to find greater depths reported in the prior survey than were found in this survey. This is possibly due to different methods of obtaining soundings on a steep slope bottom on the two surveys and differences in positional control methods used further offshore.

Evidence is as follows:

<u>Prior Survey Depth</u>	<u>Current Depth</u> <i>(corrected)</i>	<u>Location</u>
93 fm	<del>34</del> to <del>50</del> fm	17°41'40"N, 64°38'31"W
146 fm	<del>100</del> to <del>137</del> fm	17°41'31"N, 64°38'36"W
142 fm	<del>122</del> to <del>136</del> fm	17°41'27"N, 64°38'42"W
46 fm	<del>31</del> to <del>40</del> fm	17°41'56"N, 64°37'27"W
63 fm	<del>25</del> to <del>42</del> fm	17°41'52"N, 64°37'37"W
104 fm	<del>38</del> to <del>50</del> fm	17°41'48"N, 64°37'47"W
21 fm	<del>14</del> to <del>17</del> fm	17°41'55"N, 64°37'50"W
104 fm	<del>38</del> to <del>91</del> fm	17°41'48"N, 64°37'45"W
138 fm	<del>119</del> to <del>130</del> fm	17°42'12"N, 64°35'42"W
104 fm	<del>46</del> to <del>59</del> fm	17°42'18"N, 64°35'34"W



It is recommended that in these areas of change, the more recent shoaler depth be charted for greatest accuracy. Any sounding that indicates a shoaler depth when compared to this survey should be carried forth from the prior survey and charted.

*Do not concur. See Eval Rep*

#### L. COMPARISON WITH THE CHART

The area of this survey is covered by the following NOAA chart:

<u>Chart Number</u>	<u>Edition</u>	<u>Date</u>	<u>Scale</u>
25641	18	November 28, 198 <del>7</del> <sup>1</sup>	1:100,000

The existing chart offers relatively few soundings for comparison with the current survey due to the difference in scale of survey. Depth comparison agreed with Section I.1.2 Part B. II.1 of the Hydrographic Manual by 98% with only one sounding falling beyond these standards. That one sounding is ~~located~~<sup>corrected depths</sup> at position: 17°42'25"N, 64°35'12"W and has charted a 41 fm depth where current soundings indicate a ~~22~~<sup>26 30</sup> to 37 fm depth. This sounding occurs along the inshore edge of the shelf drop-off and is adjacent to a steep slope. It is recommended that the shoaler depth be charted in this location.

Slight differences occur within the acceptable limits of the above cited section of the manual. Depth differences are of only  $\pm 1$  fm, but deserve review to further exemplify the sediment deposition process in this area.

<u>Charted Depth</u>	<u>Current Survey Depth</u> <i>(corrected)</i>	<u>Location</u>
13 fm	12 fm	17°42'53"N, 64°36'21"W
41 fm	<del>22</del> <sup>26</sup> to 37 fm	17°42'25"N, 64°35'12"W
10 fm	11 <sup>5</sup> fm	17°43'46"N, 64°35'27"W

<u>Charted Depth</u>	<u>Current Survey Depth</u> <i>(corrected)</i>	<u>Location</u>
10 fm	11.2 fm	17°43'48"N, 64°35'05"W
10 fm	10.9 <del>11.4</del> fm	17°43'25"N, 64°35'24"W
7 3/4 fm*	9.2 <del>9.0</del> fm	17°41'59"N, 64°38'19"W
93 fm	40' <del>38</del> to 74 fm	17°41'43"N, 64°38'26"W

\* It is recommended that the former depth be carried forth and plotted, as it represents a shoaler depth and the original survey may have recorded a bottom feature that was missed between current sounding intervals. *Do not occur - a 7.6 fath. sdg. found 200 meters to southwest on pres. survey*

As mentioned in section K, the reported 11 fm depression charted at 17°42'18"N, 64°37'49"W is now filling to a 10 fm depth. *Least depth is 10.3 fms.*

The inshore areas are difficult to compare, as the sounding vessels were not able to fully explore this area in order to insure the safety of the vessel. Inshore areas do have an excellent agreement with data from the photobathymetric sheet.

A standard wreck shown on the T-sheet TP-00009 at 17°43'07"N, 64°38'41"W <sup>2</sup> *outside hydro limits* was confirmed and should be charted as such, it is not presently charted. Close inspection was not made because surrounding depths posed a hazard to the launch. The standard vessel is visible above MLLW. It should be noted that this wreck does not pose a hazard to navigation because of its location. *chart as shown on H-10007 (1980)*

#### M. ADEQUACY OF THE SURVEY

This survey is considered complete and adequate to supercede prior surveys except those specified, prior soundings which were recommended to be brought forward.

N. AIDS TO NAVIGATION

There are no fixed or floating aids to navigation contained within the area of this survey. *concur*

O. STATISTICS

(All mileage represents linear nautical miles)

Miles of Hydrography	212.4
Miles of Crosslines	25.2
Miles of Developments	11.9
Total Miles of Hydrography	249.5
Total "To and From" Miles	82.0
Total Miscellaneous Miles	86.1
Total Miles Run	417.6
Total Square Miles Hydrography	11.3
Nansen Casts	2
Bottom Samples	23

VESNO 2224VESNO 2225

401	Number of Positions	1621
60.5	Nautical Miles Total Hydro	189.0
2.70	Square Mile of Hydrography	8.55

P. MISCELLANEOUS

All data acquired during *Day* ~~J.D.~~ 78 and *Day* ~~J.D.~~ 79 by LAUNCH 1017 (VESNO 2224) was done using the manual method of range-range hydrography. Frequent errors were

encountered during processing, originating with incorrect Del Norte ranges which caused positioning errors of otherwise correct soundings. Much time was spent in processing and smooth plotting this data.

Photobathymetry data were compared with the junction of this survey, and 90% agreement was found within  $\pm 2$  feet. Photobathymetric depths were determined in 1977 with natural color photography, and were a tremendous aid contributing to the safety of sounding launches, alleviating the need for dangerously close approaches to the shoreline.

#### Q. RECOMMENDATIONS

None.

#### R. AUTOMATED DATA PROCESSING

The following Hydroplot programs were used to acquire and process the survey data:

<u>Program Number</u>	<u>Program Name</u>	<u>Version</u>
RK 111	Range-Range Real Time Hydroplot	01/30/76
RK 112	Hyperbolic Range-Range Real Time Hydroplot	08/04/81
RK 116	Range-Azimuth Real Time Hydroplot	08/24/81
RK 201	Grid, Signal & Lattice Plot	04/18/75
RK 211	Range-Range Non-Real Time Plot	01/15/76
RK 212	Visual Station Table Load and Plot	04/01/74
RK 216	Range-Azimuth Non-Real Time Plot	02/05/76
RK 300	Utility Computations	10/21/80
RK 330	Data, Reformat and Check	05/04/76

---

<u>Program Number</u>	<u>Program Name</u>	<u>Version</u>
PM 360	Electronic Corrector Tape Abstract	02/02/76
AM 500	Predicted Tide Generator	11/10/72
RK 530	Velocity Correction Computation	05/10/76
AM 602	Extended Line Oriented Editor	05/21/75
RK 612	High Speed Print-out	03/23/78

S. REFERENCE TO REPORTS

Horizontal Control Report, OPR-1149-MI/PE-82.

Coast Pilot Report - OPR-1149-MI/PE-82.

Range/Azimuth Program Documentation for the HP9815 A/S.

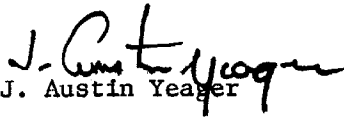
Respectfully Submitted,

*Kenneth W. Perrin, LT, NOAA*

*Sr*  
Craig N. McLean  
ENSIGN, 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.

  
J. Austin Yeager

Captain, NOAA

Commanding Officer

## SIGNAL TAPE LIST

MI-10-3-82

H-10006

~~100 4 17 45 28995 064 34 02450 250 0067 000000~~~~200 4 17 47 19977 064 37 10185 250 0110 000000~~

610 4 17 45 12673 064 34 06705 250 0014 000000

620 4 17 44 5559<sup>0</sup> 064 34 355<sup>43</sup>~~56~~ 139 0032 000000630 4 17 44 4915<sup>1</sup>4 064 35 0982<sup>4</sup>~~8~~ 250 0010 000000650 4 17 44 06108 064 36 3824<sup>5</sup>~~6~~ 250 0008 000000

700 4 17 43 30094 064 38 24757 250 0070 000000

APPENDIX "F"

SIGNAL NAMES/NUMBERS LISTING SOURCE AMC OPS OA/CAM 101 OPR-I149-MI/PE-82

<u>STA NO.</u>	<u>NAME</u>	<u>FIELD COMP.</u>	<u>SOURCE QUAD #</u>	<u>STA #</u>	<u>RECOVERED</u>
<del>100</del>	<del>EAST POINT</del>	<del>1980</del>			<del>MI82</del>
<del>200</del>	<del>BUCK ISLAND LIGHT</del>	<del>"</del>			<del>MI82</del>
610	DALL	"			MI82
620	ISAAC 1919	1982	170644	1062	MI82
630	JACK 1919	"	"	1063	MI82
650	PENTHENY AZIMUTH MK	"			MI82
700	FANCY 1919	"	"	1043	MI82





TYPE OF ACTION		RESPONSIBLE PERSONNEL	
		NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD			<input type="checkbox"/> PHOTO FIELD PARTY <input checked="" type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED		<i>ENS AMY ORRIS</i> <i>ENS AMY ORRIS</i>	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW			OFFICE ACTIVITY REPRESENTATIVE
ACTIVITIES			<input type="checkbox"/> REVIEWER <input type="checkbox"/> QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE
INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'			
(Consult Photogrammetric Instructions No. 64)			
<b>OFFICE</b> <b>I. OFFICE IDENTIFIED AND LOCATED OBJECTS</b> Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75		<b>FIELD (Cont'd)</b> <b>B. Photogrammetric field positions* require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.</b> EXAMPLE: P-8-V 8-12-75 74L(C)2982	
<b>FIELD</b> <b>I. NEW POSITION DETERMINED OR VERIFIED</b> Enter the applicable data by symbols as follows: F - Field L - Located V - Verified 1 - Triangulation 2 - Traverse 3 - Intersection 4 - Resection 5 - Field identified 6 - Theodolite 7 - Planetable 8 - Sextant P - Photogrammetric Vis - Visually A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75		<b>II. TRIANGULATION STATION RECOVERED</b> When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery. EXAMPLE: Triang. Rec. 8-12-75 <b>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH</b> Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75	
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods. **PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.			

JULY 9, 1982

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

*Time in H49935 from*

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: ATLANTIC

Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): 975-1401 LIMETREE BAY, V.I.

Period: MARCH 19-APRIL 7, 1982

HYDROGRAPHIC SHEET: H-10006

OPR: I-149

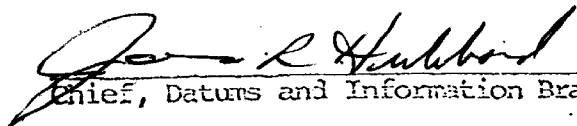
Locality: SOUTHEAST COAST OF ST. CROIX, V.I.

Plane of reference (mean lower low water): 2.27 FT

Height of Mean High Water above Plane of Reference is 0.72 FT

REMARKS:

ZONE DIRECT

  
Chief, Datums and Information Branch

HYDROGRAPHIC SURVEY STATISTICS  
REGISTRY NO.: H-10006

Number of positions	1957
Number of soundings	9953
Number of control stations	4

	<u>TIME-HOURS</u>	<u>DATE COMPLETED</u>
Preprocessing Examination	16	16 JUN 82
Verification of Field Data	443	18 FEB 86
Quality Control Checks	107	
Evaluation and Analysis	17	23 MAY 86
Final Inspection	18	17 JUN 86
TOTAL TIME	601	
Marine Center Approval		20 JUN 86

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

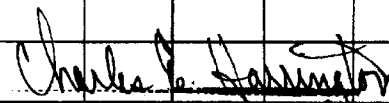
---

## GEOGRAPHIC NAMES

H-10006

Name on Survey	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 ATLAS	G RAND MCNALLY	H U.S. LIGHT LIST	K
CARIBBEAN SEA									1
EAST POINT (title)									2
GRAPETREE BAY									3
GRASS POINT									4
GREAT POND BAY									5
HUGHES POINT									6
ISAAC POINT									7
JACK BAY									8
ROBIN BAY									9
ROD BAY									10
SAINT CROIX									11
TURNER HOLE									12
U.S. VIRGIN ISLANDS (title)									13
									14
									15
									16
									17
									18
									19
									20
									21
									22
									23
									24
									25

Approved:

  
Chief Geographer - N/C6275

MAY 19 1986

ATLANTIC MARINE CENTER  
EVALUATION REPORT

REGISTRY NO.: H-10006

FIELD NO.: MI-10-3-82

U.S. Virgin Islands, St. Croix, East Point to Great Pond Bay

SURVEYED: March 19 to April 7, 1982

SCALE: 1:10,000

PROJECT NO.: OPR-II49 MI/PE-82

SOUNDINGS: Ross Model 5000  
Fineline Echo Sounder

CONTROL: Range/Azimuth  
Del Norte/Theodolite  
(Wild T-2)  
Range/Range Del Norte  
"See Field Sheet"

Chief of Party .....	J. A. Yeager
Surveyed by .....	K. W. Perrin
.....	E. S. Varney
.....	J. Zabitchuck
.....	K. P. Peters
.....	F. W. Rossmann
.....	B. L. Coakley
.....	A. E. Orris
.....	C. N. McLean
.....	R. D. Henegar
.....	D. I. Crews
Automated Plot by .....	Xynetics 1201 Plotter (AMC)

1. INTRODUCTION

a. There were no unusual methods of surveying performed during this survey.

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

2. CONTROL AND SHORELINE

a. The source of the control is adequately described in sections F and G in the Descriptive Report.

b. Shoreline originates with Class III registered shoreline maps TP-00005 and TP-00009 both of 1977. The two shoreline maps consist of two parts, the shoreline map and a photobathymetric overlay. Depths on the smooth sheet in red were determined by photobathymetric methods using photographs of 1977. These depths were transferred from the overlays and provide supplemental information for areas not surveyed by conventional methods.

Differences exist between the photobathymetric survey and the shoreline map with respect to the location of ledges and reefs. Where reefs and, in some cases, ledges 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.

### 3. HYDROGRAPHY

a. Depths at crossings are generally in good agreement, except in some areas where minor differences exist between hydrographic and photobathymetric data.

b. The standard depth curves offshore of the 3-fathom depth curve were adequately delineated. Inshore depths and depth curves were applied from the photobathymetric data. A few 6-fathom supplemental depth curves, a brown curve and a dashed curve were added to further delineate certain shoals and bottom configurations.

c. The development of the bottom configuration and the determination of least depths are considered adequate beyond the 3-fathom depth curve, with the following exceptions:

<u>SOUNDING</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
✓ 4.7 fm	17°44'26"	64°35'27"
✓ 7.6 fm	17°41'57"	64°38'25"
✓ 5.7 fm	17°42'33"	64°38'35"
✓ 5.8 fm	17°42'29"	64°38'43"
5.9 fm not chtd	17°42'27"	64°38'40"

### 4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records, and reports comply with the requirements of the Hydrographic Manual.

### 5. JUNCTIONS

Adequate junctions were effected with H-10002 on the east and H-10007 on the west, both of 1982, during the evaluation of those surveys. The junction with H-10004 (1982) on the south was completed during the evaluation of that survey.

### 6. COMPARISON WITH PRIOR SURVEYS

#### a. H-4652a (1924-26) 1:20,000

This prior survey covers the area of the present survey. While there are areas of agreement, a comparison of the prior and present survey depths beyond the 20-fathom depth curve reveals significant differences along the steep slopes. In shoaler depths, only minor differences of 1-fathom or less indicate a relatively stable bottom.

Differences are readily attributable to steep slopes, irregularity of the bottom, and the surveying methods employed.

The present survey is considered adequate to supersede this prior survey within the common area.

b. H-4652b (1924-25) WD 1:20,000

A portion of this wire-drag survey covers the area of the present survey. No conflicts between present survey depths and effective wire-drag depths were found.

7. COMPARISON WITH CHART 25641(18th Edition, November 28, 1981)

a. Hydrography

The charted hydrography primarily originates with the previously discussed prior surveys which require no further consideration, supplemented by some depths from miscellaneous sources.

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

b. Aids to Navigation

There are no charted aids to navigation within the limits of the present survey.

8. COMPLIANCE WITH INSTRUCTIONS

This survey adequately complies with the project instructions.

9. ADDITIONAL FIELD WORK

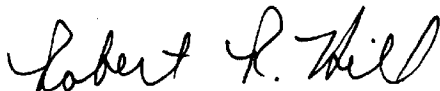
This is an adequate basic survey and no additional field work is recommended.



F. L. Saunders  
Cartographic Technician  
Verification of Field Data



Lisa Quinnlan  
Cartographer  
Standards Section (N/CG242)  
Evaluation and Analysis



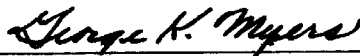
R. R. Hill  
Senior Cartographic Technician  
Verification Check



Inspection Report  
H-10006

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



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

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

Hydrographic Index No. 180C

INDEX  
HYDROGRAPHIC SURVEYS  
Complete through March 1979  
1967-1976  
VIRGIN GORDA TO ST. THOMAS AND ST. CROIX  
VIRGIN ISLANDS

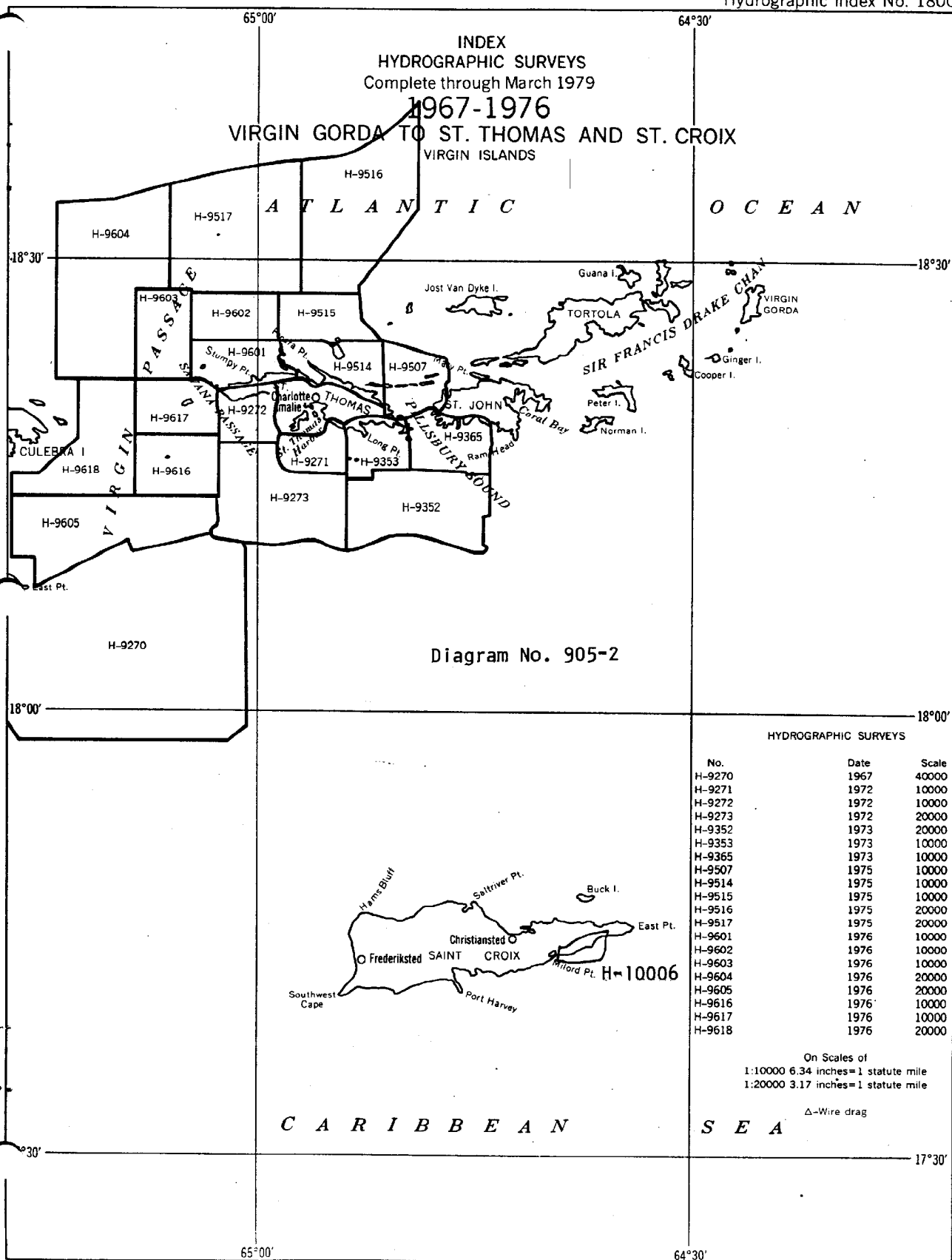


Diagram No. 905-2

HYDROGRAPHIC SURVEYS

No.	Date	Scale
H-9270	1967	40000
H-9271	1972	10000
H-9272	1972	10000
H-9273	1972	20000
H-9352	1973	20000
H-9353	1973	10000
H-9365	1973	10000
H-9507	1975	10000
H-9514	1975	10000
H-9515	1975	10000
H-9516	1975	20000
H-9517	1975	20000
H-9601	1976	10000
H-9602	1976	10000
H-9603	1976	10000
H-9604	1976	20000
H-9605	1976	20000
H-9616	1976	10000
H-9617	1976	10000
H-9618	1976	20000

On Scales of  
1:10000 6.34 inches=1 statute mile  
1:20000 3.17 inches=1 statute mile

Δ-Wire drag

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

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10006

## INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

[illegible]