

9617

Diag. Cht. Nos. 904-2 & 905

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. WH-10-5-76
Office No..... H-9617

LOCALITY

State U.S. VIRGIN ISLANDS
General Locality VIRGIN PASSAGE
Locality SAVANA ISLAND

1976

CHIEF OF PARTY
R.A. Trauschke

LIBRARY & ARCHIVES

DATE August 30, 1977

9617
2196

100... 565-
326... 650
100105

10/1/77
4-2-77

HYDROGRAPHIC TITLE SHEET

H-9617

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.

WH-10-5-76

State U.S. VIRGIN ISLANDS

General locality VIRGIN PASSAGE

Locality SAVANA ISLAND

Scale 1:10,000 Date of survey April 1-13, 1976

Instructions dated October 16, 1975 Project No. OPR-423-WH-76

Vessel NOAA SHIP WHITING & Launch (2931)

Chief of party CDR. R. A. Trauschke

R.A. Trauschke, J.W. DeCoste, D.W. Yeager, P.R. Chelgren,
Surveyed by J.G. Gofus, G.M. Barone, V.E. Newell, D.M. Goodrich

Soundings taken by echo sounder, ~~hand level~~

Graphic record scaled by WHITING Personnel

Graphic record checked by WHITING Personnel

Protracted by N/A Automated plot by Hydroplot System
Calcomp Plotter - 618

Soundings penciled by N/A Verified by B. J. Stephenson

Soundings in ~~fathoms~~ feet at MLW ~~MLW~~

REMARKS: All times are GMT

*app'd. to standards
3/20-78 wot*

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✓ = Misc. items filed in the cahier with the field records

Descriptive Report to Accompany
Hydrographic Survey H-9617
Field No. WH-10-5-76

A. PROJECT

This survey was conducted in accordance with Project Instructions OPR-423-WH-76, Virgin Islands, dated October 16, 1975, as supplemented by Change No. 1 dated January 20, 1976.

B. AREA SURVEYED

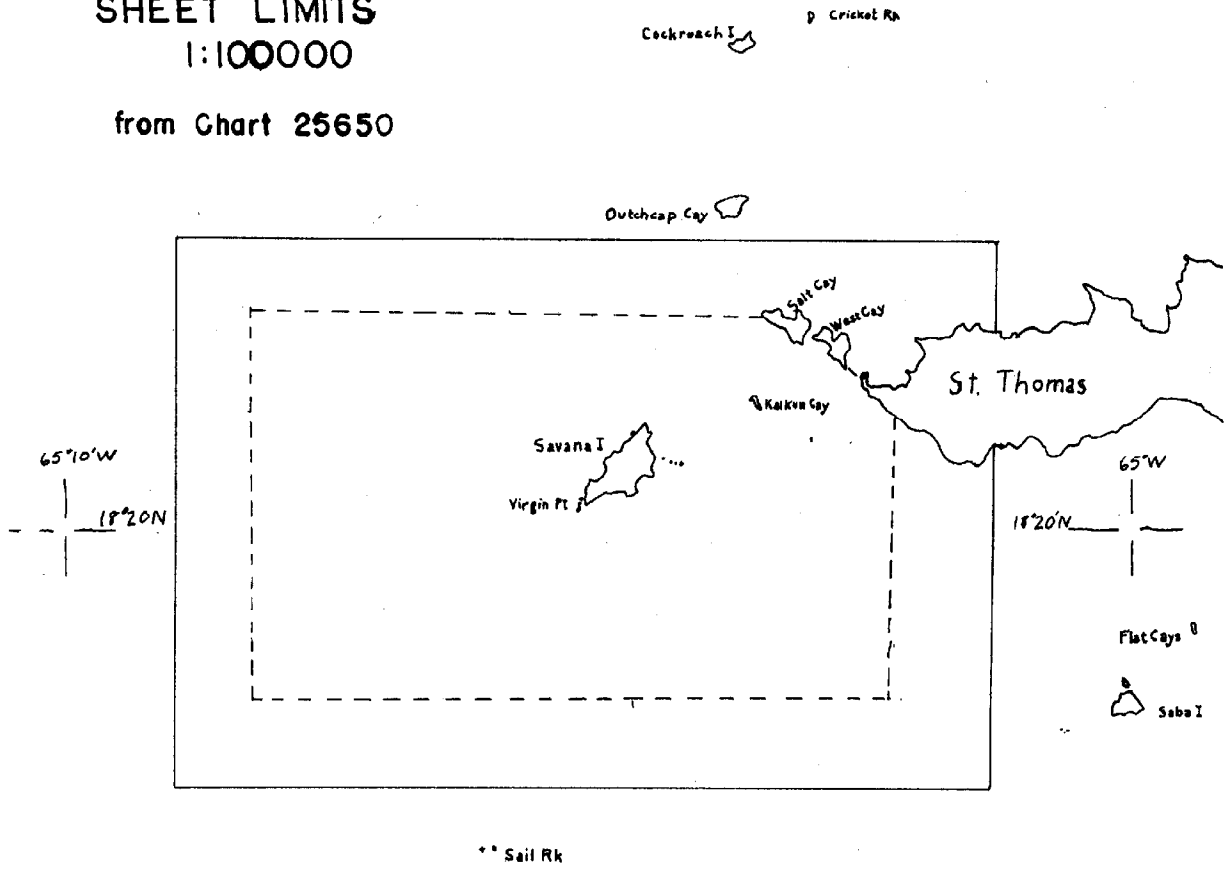
The area surveyed is immediately West of St. Thomas Island and includes a small portion of the shoreline. Savana Island, Kalkun Cay, and Saltwater Money Rock, are within the survey limits and part of the shoreline of Salt Cay and West Cay are included. The sheet overall has the following boundaries:

| | | |
|------------------|-----------|-----------|
| Latitude (North) | 18°22'36" | 18°17'42" |
| Longitude (West) | 65°01'18" | 65°09'00" |

The survey was conducted from April 1, 1976 (J.D. 092) to April 13, 1976 (J.D. 104). Areas of ship hydrography were

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WH-10-5-76
SHEET LIMITS
1:100000

from Chart 25650



run with 400 meter line spacing except, in regions of less than 125 feet, where spacing was reduced to 200 meters. Launch hydrography main scheme spacing was 200 meters split to 100 meters in areas with depths less than 125 feet.

Morphology of the bottom was generally flat throughout the survey except in the area of Savana Passage. Here, several rock outcrops protrude from the flat bottom. These appear to be extensions of the small rock islands off Savana Island and Kalkun Cay. Bottom samples were coral throughout the survey area.

C. SOUNDING VESSEL

The NOAA Ship WHITING, CSS-29 performed all survey work in areas well offshore, while WHITING Launch 1 conducted survey operations inshore, including Savana Passage. EDP numbers of the ship and the Launch were 2930 and 2931 respectively.

Soundings were plotted on during ship operations while the Launch operated in non-automated mode. Output from the Launch was in Digital Control Unit (DCU) format.

D. SOUNDING EQUIPMENT

The depth recorder used by the WHITING was a Ross Model 5000, serial number 1049; the digitizer a Ross Model 6000, S/N 1055; and the transmitter a Ross Model 4000, S/N 1055. Calibrations were taken frequently during the operations; any initial error was taken into account during scanning of the fathograms. Squat and settlement corrections for the WHITING were obtained from October 1973 trials.

Two leadline comparisons with this fathometer were taken in shallow (70 ft.) water. After applying velocity corrections and correcting for transducer draft, differences between leadline cast^s and fathometer readings were negligible (less than 1 %).

The recorder used by the Launch was a Raytheon Model 723 D echo sounder, serial number 37018. Frequent A-F scale checks were performed and initial monitored. A minor problem was encountered with the digitizer. At irregular intervals the digitizer would give readings of 0000; this can be seen on the printouts. This is a characteristic of the system and in no way affected the analog trace.

Problems stemming from operator error were encountered on Day 096 (bad trace and loss of initial). Portions of this data was recovered using Day 096 bar check data to determine initial error. A full description of the proce-

dures is contained in Section P. A bar check taken on Day 095 showed virtually no error and the fathometer was readjusted after Day 096.

Subsequent bar checks showed negligible error; see "Abstract of Corrections to Echo Soundings" for all results.

It should be noted that a transducer draft of 2.0 feet for the Launch was erroneously inserted on all corrector tapes. The true draft is 1.5 feet and a correction has been inserted on the TC/TI tape.

Squat and settlement corrections are taken from trials run in May 1976.

Velocity corrections are based on three Nansen casts and a TDC cast taken on the following dates and locations:

| | | |
|----------------|----------------|------------|
| Nansen casts : | March 8, 1976 | 18°32.6' N |
| | | 65°16.8' W |
| | March 12, 1976 | 18°08.0' N |
| | | 65°10.1' W |
| | March 26, 1976 | 18°09.0' N |
| | | 65°11.0' W |
| TDC cast | March 4, 1976 | 18°09.0' N |
| | | 65°01.1' W |

Corrections produced from these casts are essentially identical. Data from these cast was used to compute sound velocity at depth by means of program RK 530 with curve fit option . Transducer draft was taken into account. This output information was then graphed. Depth intervals for which particular corrections were to be applied were scaled off (ref. Provisional Hydrographic Manual). Intervals and their corrections were then made up into a velocity corrections tape which was used in final plots.

E. HYDROGRAPHIC SHEETS

The ^{field} smooth sheets were prepared by WHITING personnel using a Houston Instruments DP-3 Roll Plotter, serial number 504. The survey area is divided into two plotter sheets at $18^{\circ}20'12''$. Due to the fact that some lines of Launch work extended on to both sheets, all Launch work (positions 1-601) are plotted on both sheets.

~~Due to the density of soundings around the two Pre-survey Review Items, a 1,5000 overlay was made to show these developments. The portions of this sheet which show these development are included in the descriptive report,~~

~~with least depths delineated. The positions plotted on the~~
~~The two developments for PSR items No's 4 and 5 have been~~
~~development sheet are not plotted on the main sheets.~~
entered in printouts and plotted on the smooth sheet.

Velocity corrections and static draft corrections
^w have been applied to the soundings. Electronic position
correctors have been applied during the plotting.

The sheets will be sent to Atlantic Marine Center,
Norfolk, Virginia, for verification and smooth plotting.

F. CONTROL STATIONS

The following were used as electronic control
stations:

| Name | EDP No. | Locations |
|----------------------|---------|-------------------|
| T-95 Cadāstral, 1943 | 130 | St. Thomas Island |
| Salt Offset, 1976 | 140 | Salt Cay |
| El Vigia, USE, 1966 | 148 | Culebra Island |
| East End, 1900 | 158 | Vieques Island |
| Bluff, 1918 | 160 | St. Thomas Island |

All stations are monumented and recoverable with
the exception of Salt Offset. This station was established
using ^{theodolite} three point fix and check angle. All stations conform

*Salt Offset location does not comply with standards described in Provisional Hydrographic
Manual for 3rd order, Class I location; however, this did not depreciate the overall
accuracy of this survey.*

to 3rd order standards and use Puerto Rico datum.

G. HYDROGRAPHIC POSITION CONTROL

Position control was accomplished using the Del Norte system, a range-range configuration. Stations were selected so that intersection of Del Norte ranges was at no time less than 30 degrees, and so that reflection of signals off cliffs and bluffs were minimized.

At times during the course of the survey, erroneous readings were obtained, however, at no time were these errors frequent enough to seriously degrade the accuracy of the survey. These errors were noted on line and later corrected on a time and course basis. Probable causes for these readings were system malfunction or foremast interference. The former would include DMU, Remote or Master malfunction. Foremast interference refers to the fact that on certain headings, the foremast passed between Remote and Master Units, causing occasional erroneous readings.

Calibration of the system was accomplished using three point fixes (with check angle) on the signals listed in the appendix. Pattern correctors were computed from visual and electronic fix data using RK 561. Inverse distance between fixes and check fixes were compared and

daily pattern correctors computed as follows:

Fixes with inverse distances of 20 meters or less were counted once; 10-15 meters inverses, twice; 5-10 meter inverse 3 times; and inverses of less than 5 meters were counted 4 times in averaging.

In this manner, the effects of bad visual fixes were minimized. In addition, every two weeks, the system was calibrated along a baseline of known length. In this configuration, each DMU and Master was calibrated in accordance with procedures described in the Del Norte Manual.

The equipment used were as follows:

Remote Units

| <u>EDP No.</u> | <u>Location</u> | <u>Serial No.</u> |
|----------------|-----------------|-------------------|
| 130 | T-95 Cadastral | "C" 218 |
| 140 | Salt Offset | "B" 220 |
| 148 | El Vigia | "A" 251 |
| 158 | East End | "D" 222 |
| 160 | Bluff | "C" 218 |

Master and DMU Units

| <u>Location</u> | <u>Master S/N</u> | <u>DMU S/N</u> |
|-----------------|-------------------|----------------|
| WHITING | 250 | 181 |
| Launch 1 | 185 | 180 |

All field and baseline calibrations are included in the report "Field Records for Determination of Electronic Position Correctors".

For the most part, this electronic position control was stable and consistent during the course of this survey.

Two areas where electronic position control was not possible are in need of mention. The shoreline on the Northwest and South sides of the ^{SALT CAY?} Island were too close in to allow reception from Del Norte Units. This area was done with "See Boat Sheet" control. At intervals during the lines, position of the Launch with reference to geographical features was noted in the sounding volume (5 meters off rock" etc.) and on the field sheet. Dummy Del Norte readings were made up for these fixes using RK 300, and soundings in between fixes were entered on a time and course basis. The field sheet is enclosed with the smooth sheets for reference purposes on these lines.

A second area Southeast of Salt Cay needs mention. In this area, soundings cross the baseline of the control stations, Salt Offset (140) and Bluff (160). Other control in this area was not possible. On the sheets, these lines have been extended by hand into the cove West of West Cay on a time and course basis. Since these lines were extended to the shore, this is the proper position of these soundings.

H. SHORELINE

Shoreline on the sheets was obtained from shoreline manuscript ~~T-12937~~, T-12940 and T-12941. Photobathymetry was obtained from Shoreline Manuscript T-12941 (2). Field edit was done on all shoreline on this survey and was forwarded under separate cover.

I. CROSSLINES

The percentage of crosslines run on this survey was 10.7 %. Agreement with main scheme lines was excellent in almost all cases. Agreement between Launch and ship work was also excellent.

J. JUNCTIONS

This survey junctions with contemporary surveys WH-10-1-76 (H-9601), WH-10-3-76 (9603), WH-10-4-76 (H-9616) WH-20-3-76 (H-9618) and prior survey H-9272. Junction soundings with ^{H-9616} WH-10-4-76, ^{H-9618} WH-20-3-76 and ^{H-9601} WH-10-1-76 are in close agreement. Soundings of WH-10-3-76 do not overlap but, the nearest adjacent line (400 meters) has depths

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which are close to those of WH-10-5-76. Soundings from H-9272, which was done by the WHITING in 1972 are generally 3-4 feet shoaler than those of WH-10-5-76. This is explained by the fact that velocity corrections were not applied to H-9272.

Photobathymetry taken from Shoreline Manuscript T-12941 (2) is in good agreement with survey soundings, considering the steep slope of the bottom where junction soundings occur.

K. COMPARISON WITH PRIOR SURVEY

The last prior survey of the area was done in 1923-26 and has registry number H-4651a. Agreement with this survey is excellent, 0-1 foot in most cases.

Two pre-survey review items and ^{four} three dashed ^{BS} circle items are within survey limits. The clear visibility of the water in the area facilitated a thorough search for these items. PSI 4, a sunken wreck charted as Existence Doubtful, ^{(lat. 21° 21.55', long. 65° 03.00') 25641 71/e} was not found. Line spacing at 25 meter produced a least depth of 25 feet. A visual search of the area showed no indications. Divers were sent to the site and found no evidence of any wreck or obstruction. It is

Survey Cont. Log

Concur 8/5

recommended that this item be deleted from the chart. The Photobathymetry can also be considered as a development to further disprove this item.

No indications of PSI 5, a sunken wrecked sloop, ^{item} ~~mast~~, (Charted in the vicinity of Lat. 18° 20.70', long. 65° 04.30') ~~25491 Deleted~~ were found. Line spacing of 25 meters produced a least depth of 22 feet toward the shore but no evidence of any obstruction. Visual examination of the area produced no sightings of a mast or wreck. Deletion from the chart is recommended.

Two of the ^{four} ~~three~~ dashed circle items were found.

* An 8 fathom charted sounding at 18° 20.⁶⁵4' N, 65° 03.⁹8' W was confirmed by Launch 1; a least depth of ⁵⁵49 feet was found. Another 8 fathom sounding, at 18° 19.6' N, 65° 06.1' W, was found by the ship in a special development. A 12 fathom sounding at 18° 18.5' N, 65° 04.⁴5' W was not found using 100 meter spacing and crossline. Since no indication of any shoaling was found, it is recommended

Concur

~~The 12 fm sounding has been carried forward to Sheet~~
that this sounding be deleted from the chart. ~~**~~ ^{Sheet} ~~(See Verifier's Report for details)~~

* The pre-survey review didn't have the Wire Drag depth dashed circle as described in pre-survey review. The dash-circle was around a shoal area.

~~** This sounding was mis-plotted on boat sheet; therefore, the development was on a wrong area.~~

L. COMPARISON WITH THE CHART

The survey was compared with Chart 25650 (904), Virgin Passage and Sonda de Vieques, dated August 9, 1975 (sounding in fathoms). Agreement with the chart was good (with ^N.5 fathom) except as shown below:

| <u>Charted Sndg.</u> <u>(feet)</u> | <u>Latitude</u> | <u>Longitude</u> | <u>Survey</u> <u>Soundings</u> |
|---------------------------------------|-----------------|------------------|-----------------------------------|
| 132 | 18°21.4' | 65°07.3' | 139-140 145-147 |
| 84 | 18°21.3' | 65°03.3' | 88-92 |
| 72 | 18°20.2' | 65°04.2' | 78-80 |
| 120 | 18°20.3' | 65°08.2' | 118-119 127-130 |
| 90 | 18°19.6' | 65°04.7' | 95-104 |

It should be noted that considerable inaccuracy is introduced in the process of transferring soundings from the 1:100,000 scale chart to the 1:10,000 scale survey. In cases of clear disagreement, it is recommended that survey soundings supercede the chart soundings.

M. ADEQUACY OF SURVEY

The survey is complete, adequate and should all prior surveys of the area for charting. (See Verifier's Report - section 6)

N. AIDS TO NAVIGATION

One aid to navigation is located in the survey area, Savana Island Light. The position of 18°20'21.780" N 65°05'00.170 " W, was confirmed 1972 by Photo Party 62, (Robert Tibbits, Chief of Party).

O. STATISTICS

| | |
|-------------------------------------|-------|
| Miles, Hydro WHITING (2930) | 159.7 |
| Miles, Hydro Launch 1 (2931) | 83.2 |
| Total Miles Run (Hydro) | 242.9 |
| Square Miles, WHITING | 14.78 |
| Square Miles, Launch 1 | 4.83 |
| Total Square Miles Hydro | 19.61 |
| Percentage of Crosslines | 10.7 |
| Number of Positions, WHITING | 1118 |
| Number of Positions, Launch 1 | 601 |
| Total Number of Positions | 1719 |
| Bottom Samples | 29 |

P. MISCELLANEOUS

The central meridian listed in the Projection Parameters form, is the central meridian of the sheet and not of the project.

Several potentially confusing signal designations exist in the sounding volumes. By common usage, station El Vigia (148) came to be called "Resaca". In no case does this refer to station Resaca (102); this station was not used in this survey. All references to "Resaca" refer to El Vigia (148). In a similar situation, station Salt Offset (140) came to be known as "Salt", station Salt (110) was never used, and all mention of "Salt" refers to Salt Offset (148).

Two lines of soundings were recovered from previously rejected data from 96 day. Data was originally rejected due to poor fathometer trace and loss of initial; however, this small section of the data was recovered to provide complete coverage. Error due to loss of initial was determined by analysis of the bar check taken at the end of the day; this error was then accounted for in the scanning process. Soundings where the trace was lost were deleted. These lines were added onto the body of the data and assigned position numbers 596-601.

The insertion of these two lines of soundings brings this area of the survey to the required 100 meter spacing.

The U.S. Coast Pilot, No. 5, mentions "Strong currents" around the N.E. corner of Savana Island and "heavy tide rips" in the vicinity of Big Current Hole. These areas are both subject to very confused sea conditions due to the prevailing swell from East and Northeast and the refraction around this group of islands. While little evidence of tide rips was seen in the vicinity of Big Current Hole, the area is very difficult for boats to negotiate due to breakers throughout the passage. Drum Rock, as is noted, constricts the passage and creates some of the breakers in the area. The passage through Big Current Hole is best ~~not~~ attempted ~~except~~ on very calm days or without good local knowledge.

Q. RECCOMENDATIONS

None

R. AUTOMATED DATA PROCESSING

The following computer programs were used during the course of this survey.

| <u>Number</u> | <u>Name</u> | <u>Version Date</u> |
|---------------|----------------------------|---------------------|
| RK 111 | Range-Range Real Time Plot | 1/30/76 |
| RK 201 | Grid and H/R Lattice Plot | 4/18/75 |

| | | |
|--------|---|---------|
| Rk 211 | Range-Range Off-Line Plot | 1/15/76 |
| RK 330 | Data Reformat and Check | 3/12/76 |
| RK 561 | Hyperbolic and Range-Range Geodetic Calibrations | 2/19/75 |
| Am 602 | Extended Line Oriented Editor | 3/10/72 |

S. REFERENCE TO REPORTS

The reports " Field Records for Determination of Corrections to Echo Soundings" will be forwarded to Atlantic Marine Center, Norfolk, Virginia.

8/30/76

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 Form 362

Tide Station Used (NOAA Form 77-12): Fortuna Bay, St. Thomas

Period: April 1 - 15, 1976

HYDROGRAPHIC SHEET: H-9617

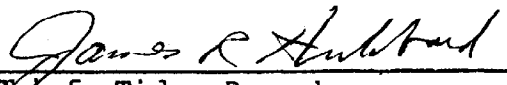
OPR: 423

Locality: Virgin Passage, off St. Thomas

Plane of reference (mean ^{diurnal} ~~lower~~ low water): 0.0 ft.

Height of Mean High Water above Plane of Reference is
1.0 ft.

Remarks: Zone direct.



for Chief, Tides Branch

4. CORRECTION TO ECHO SOUNDINGS ABSTRACT

VELOCITY CORRECTIONS FOR SURVEY H 9617.

TABLE NUMBER 3. UNIT IS FEET.

DEPTH+TRA VELOCITY CORRECTION

| | |
|-------|------|
| 6.0 | 0.2 |
| 9.2 | 0.4 |
| 13.2 | 0.6 |
| 17.0 | 0.8 |
| 20.8 | 1.0 |
| 24.2 | 1.2 |
| 27.8 | 1.4 |
| 31.6 | 1.6 |
| 35.2 | 1.8 |
| 39.0 | 2.0 |
| 42.7 | 2.2 |
| 46.2 | 2.4 |
| 50.2 | 2.6 |
| 53.9 | 2.8 |
| 57.7 | 3.0 |
| 61.3 | 3.2 |
| 65.0 | 3.4 |
| 68.8 | 3.6 |
| 72.2 | 3.8 |
| 76.1 | 4.0 |
| 80.0 | 4.2 |
| 83.3 | 4.4 |
| 87.2 | 4.6 |
| 91.6 | 4.8 |
| 95.8 | 5.0 |
| 99.2 | 5.2 |
| 102.0 | 5.4 |
| 105.9 | 5.6 |
| 109.6 | 5.8 |
| 113.0 | 6.0 |
| 116.5 | 6.5 |
| 120.0 | 7.0 |
| 123.5 | 7.5 |
| 127.0 | 8.0 |
| 130.5 | 8.5 |
| 134.0 | 9.0 |
| 137.5 | 9.5 |
| 141.0 | 10.0 |
| 144.5 | 10.5 |
| 148.0 | 11.0 |
| 151.5 | 11.5 |
| 155.0 | 12.0 |
| 158.5 | 12.5 |
| 162.0 | 13.0 |
| 165.5 | 13.5 |
| 169.0 | 14.0 |
| 172.5 | 14.5 |
| 176.0 | 15.0 |
| 179.5 | 15.5 |
| 183.0 | 16.0 |
| 186.5 | 16.5 |
| 190.0 | 17.0 |
| 193.5 | 17.5 |
| 197.0 | 18.0 |
| 200.5 | 18.5 |
| 204.0 | 19.0 |
| 207.5 | 19.5 |
| 211.0 | 20.0 |
| 214.5 | 20.5 |
| 218.0 | 21.0 |
| 221.5 | 21.5 |
| 225.0 | 22.0 |
| 228.5 | 22.5 |
| 232.0 | 23.0 |
| 235.5 | 23.5 |
| 239.0 | 24.0 |
| 242.5 | 24.5 |
| 246.0 | 25.0 |
| 249.5 | 25.5 |
| 253.0 | 26.0 |
| 256.5 | 26.5 |
| 260.0 | 27.0 |
| 263.5 | 27.5 |
| 267.0 | 28.0 |
| 270.5 | 28.5 |
| 274.0 | 29.0 |
| 277.5 | 29.5 |
| 281.0 | 30.0 |
| 284.5 | 30.5 |
| 288.0 | 31.0 |
| 291.5 | 31.5 |
| 295.0 | 32.0 |
| 298.5 | 32.5 |
| 302.0 | 33.0 |
| 305.5 | 33.5 |
| 309.0 | 34.0 |
| 312.5 | 34.5 |
| 316.0 | 35.0 |

7
710.0 36.0
730.0 37.0
755.0 38.0
775.0 39.0
800.0 40.0
820.0 41.0
845.0 42.0
870.0 43.0
895.0 44.0
920.0 45.0
940.0 46.0
99999.9 46.0

6. LIST OF STATIONS

03/03/77 H 9617
CONTROL LISTING

| STATION ID | LATITUDE | LONGITUDE | SYMBOL | CARTO CODE | ELIV | FREQUENCY | LOCA |
|---------------|--------------|--------------|--------|---------------|-------|-----------|------|
| 108 | 18 20 21.781 | 65 5 0.171 | 0 | 139 | 0.0 | 0.000 | NM |
| 118 | 18 21 43.478 | 65 2 2.519 | 0 | 139 | 0.0 | 0.000 | NW |
| 130 | 18 21 16.383 | 65 0 20.020 | 0 | 139 | 274.0 | 0.000 | NW |
| 140 | 18 21 51.843 | 65 3 14.300 | 1 | 254 | 63.0 | 0.000 | NW |
| 148 | 18 19 31.266 | 65 17 26.979 | 0 | 250 | 198.0 | 0.000 | NW |
| 158 | 18 18 11.263 | 65 16 21.014 | 1 | 254 | 50.0 | 0.000 | NW |
| 160 | 18 21 17.110 | 65 2 31.080 | 0 | 250 | 0.0 | 0.000 | E |

7

6

5

4

3

2

Approval Sheet

Submitted by :

David M. Goodrich

David M. Goodrich

Ens., NOAA

Supervision of field and office work on this hydrographic survey was continuous on a day to day basis to ensure completeness of the survey and that all work was done in accordance with the instructions.

Approved/Forwarded

Robert A. Trauschke

Robert A. Trauschke
CDR., NOAA

Commanding Officer, NOAA Ship WHITING

GEOGRAPHIC NAMES

H-9617

| Name on Survey | Source of Name | | | | | | | | | |
|------------------------|----------------|------------------------|-------------------------|------------------------|---------------|-------------------|---------------------|-----------------|---|----|
| | A | B | C | D | E | F | G | H | I | J |
| | ON CHART NO. | ON PREVIOUS SURVEY NO. | ON U.S. QUADRANGLE MAPS | FROM LOCAL INFORMATION | ON LOCAL MAPS | P.O. GUIDE OR MAP | GRAND McNALLY ATLAS | U.S. LIGHT LIST | | |
| BIG CURRENT HOLE ✓ | ✓ | ✓ | | | | | | | | 1 |
| DIN POINT ✓ | | ✓ | | | | | | | | 2 |
| DOMKIRK ROCK ✓ | | ✓ | | | | | | | | 3 |
| DRUM ROCK ✓ | | ✓ | | | | | | | | 4 |
| KALKUN CAY ✓ | | ✓ | | | | | | | | 5 |
| LITTLE ST. THOMAS ✓ | | | | | | | | | | 6 |
| MERMAIDS CHAIR ✓ | | ? | | | | | | | | 7 |
| ST. THOMAS ✓ | | ✓ | | | | | | | | 8 |
| SALT CAY ✓ | | ✓ | | | | | | | | 9 |
| SALTWATER MONEY ROCK ✓ | | ✓ | | | | | | | | 10 |
| SAVANA ISLAND ✓ | | ✓ | | | | | | | | 11 |
| SAVANA PASSAGE ✓ | | ✓ | | | | | | | | 12 |
| SALT CAY PASSAGE ✓ | | ✓ | | | | | | | | 13 |
| VIRGIN PASSAGE ✓ | | ✓ | | | | | | | | 14 |
| VIRGIN POINT ✓ | | ✓ | | | | | | | | 15 |
| WEST CAY ✓ | | ✓ | | | | | | | | 16 |
| | | | | | | | | | | 17 |
| | | | | | | | | | | 18 |
| | | | | | | | | | | 19 |
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APPROVED

Chas. E. Harrington

STAFF GEOGRAPHER - c 51x2

12 Oct. 1977

HYDROGRAPHIC SURVEY STATISTICS

H-9617

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

| RECORD DESCRIPTION | | AMOUNT | RECORD DESCRIPTION | | AMOUNT | |
|------------------------------|------------------|-------------------------|--|------------|---------------|-----------------------------------|
| SMOOTH SHEET | | 1 | BOAT SHEETS & PRELIMINARY OVERLAYS (2 parts) | | 8 γ | |
| DESCRIPTIVE REPORT | | 1 | SMOOTH OVERLAYS: POS. ARC, EXCESS | | 2 | |
| DESCRIP- TION | DEPTH RECORDS | HORIZ. CONT. RECORDS | PRINTOUTS | TAPE ROLLS | PUNCHED CARDS | ABSTRACTS/ SOURCE DOCUMENTS |
| FOOL ENVELOPES | γ | | 1-smooth P/O | | | 1 |
| CAHIERS | 1 | | 1-with | | | |
| VOLUMES | 2 | | | | | |
| BOXES | | | | | | |

T-SHEET PRINTS (List) TP-12940, TP-12941 - not received at registration 8/24/77 MCR

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

| PROCESSING ACTIVITY | AMOUNTS | | |
|---|----------------------|--------------|--------|
| | PRE- VERIFICATION | VERIFICATION | TOTALS |
| POSITIONS ON SHEET | | | 1719 |
| POSITIONS CHECKED | | 123 | 123 |
| POSITIONS REVISED | | 21 | 21 |
| SOUNDINGS REVISED | | 71 | 71 |
| SOUNDINGS ERRONEOUSLY SPACED | | | |
| SIGNALS (CONTROL) ERRONEOUSLY PLOTTED | | | |
| | TIME - HOURS | | |
| CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION) | | 3 | 3 |
| VERIFICATION OF CONTROL | | 55 | 55 |
| VERIFICATION OF POSITIONS | 13 | 104 | 117 |
| VERIFICATION OF SOUNDINGS | | 0 | 0 |
| COMPILATION OF SMOOTH SHEET | | 0 | 0 |
| APPLICATION OF TOPOGRAPHY | | 2 | 2 |
| APPLICATION OF PHOTOBATHYMETRY | | 9 | 9 |
| JUNCTIONS | | 10 | 10 |
| COMPARISON WITH PRIOR SURVEYS & CHARTS | | 7 | 7 |
| VERIFIER'S REPORT | | | |
| OTHER | | | |
| TOTALS | | | 213 |

| | | |
|--|----------------------------|-------------------------|
| Pre-Verification by C. Meekins, P. Saunders, R. Hill | Beginning Date 07/07/76 | Ending Date 02/18/77 |
| Verification by B. J. Stephenson | Beginning Date 06/03/77 | Ending Date 06/27/77 |
| Verification Check by G. F. Trefethen, W. L. Jonns | Time (Hours) 12 | Date 08/02/77 |
| Marine Center Inspection by Hydrographic Inspection Team, AMC | Time (Hours) 21 | Date 08/12/77 |
| Quality Control Inspection by X. W. Wellman | Time (Hours) 44 | Date 10-12-77 |
| Requirements Evaluation by | Time (Hours) | Date |

Cartons 20 hr 1/11/78

J Baumgardner 4 hrs 3/7/78

APPROVAL SHEET
FOR
SURVEY H- 9617

- A. All revisions and additions made on the smooth sheet during verification have been entered in the magnetic tape records for this survey. A new final position printout has/~~has~~ not been made. A new final sounding printout has/~~has~~ not been made.
- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Provisional Hydrographic Manual. Exceptions are listed in the Verifier's Report.

Date: August 10, 1977

Signed: William L. Jones
Title: Chief, Verification Branch

Reg. No. H-9617

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQ'D _____ INITIALS _____

REMARKS:

Reg. No. H-9617

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE 9-23-82 TIME REQ'D _____ INITIALS JMC

REMARKS:

H-9617

Information for Future Presurvey Reviews

67 from H-4651 b in lat. 18°21.50', long. 65°03.8' is questionable and should be investigated.

| <u>Position Index</u> | | <u>Bottom Change Index</u> | <u>Use Index</u> | <u>Resurvey Cycle</u> |
|-----------------------|--------------|--------------------------------|----------------------|---------------------------|
| <u>Lat.</u> | <u>Long.</u> | | | |
| 181 | 0651 | 1 | 2 | 50 years |
| 182 | 0651 | 2 | 1 | 50 years |

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9617

FIELD NO. WH-10-5-76

Virgin Island, Virgin Passage; Savana Island

SURVEYED: April 1 through April 13, 1976

PHOTOBATHYMETRY: February 1974

SCALE: 1:10,000

PROJECT NO.: OPR-423

SOUNDINGS: Ross Fineline Fathometer
and Raytheon 723D Depth
Recorder

CONTROL: Del-Norte
(Range-Range)

| | |
|-----------------------------|---------------------------|
| Chief of Party | CDR R.A. Trauschke |
| Surveyed by | CDR R. A. Trauschke |
| | J. W. DeCoste |
| | D. W. Yeager |
| | P. R. Chelgren |
| | J. G. Gofus |
| | G. M. Barone |
| | V. E. Newell |
| | D. M. Goodrich |
| Automated Plot by | Calcomp Plotter-618 (AMC) |
| Verified and Inked by | B. J. Stephenson |
| | August 5, 1977 |

1. Introduction

No unusual problems were encountered. The projection parameter was revised during verification. The red changes in the Descriptive Report were made by the verifier.

2. Control and Shoreline

a. The origin of control is adequately described in Sections F and G of the Descriptive Report.

b. The shoreline originates with final reviewed Photogrammetric Manuscripts, T-12940 and T-12941 of 1975/76.

3. Hydrography

a. Depths at crossings are in good agreement.

b. The standard depth curves are adequately delineated. Brown curves and a 36 foot supplemental depth curve were

implemented to portray certain bottom features. Curves along the shoreline were drawn with the aid of the photobathymetry depths.

c. The development of the bottom configuration and the investigation of least depths are considered adequate, with the exception of the development located at latitude 18°18.6'N, longitude 65°04.6'W. The development did not cover the position of the 76 foot wire drag sounding. *See Q.C. report*

4. Condition of Survey

The sounding records, automated plotting and Descriptive Report are adequate and conform to the requirements of the Provisional Hydrographic Manual, with the following exceptions:

a. The line spacing in some areas did not provide soundings sufficient to permit an accurate portrayal of the bottom configuration, approximate positions:

- (1) 18°21.1'N, 65°03.75'W
- (2) 18°21.6'N, 65°04.0'W
- (3) 18°21.9'N, 65°03.6'W

b. The 76 foot wire drag depth at latitude 18°18.5'N, longitude 65°04.4'W was misplotted on the boat sheet. Therefore, the development did not cover the area of the depth. *(76 considered invalid. See QC report)*

5. Junctions

Adequate junctions have been effected with the following contemporary surveys, with the exception of H-9272 (1972) to the east which will have to be completed by Quality Control:

(See Q.C. Report - item 3)

- H-9618 (1976) to the west
- H-9603 (1976) and H-9601 (1976) to the north
- H-9616 (1976) to the south

Soundings in red were determined by Photogrammetric Bathymetry Manuscript T-12941, photography of February 1974. The soundings supplement the present hydrography.

6. Comparison With Prior Surveys

- a. H-4651a (1923-26) 1:20,000

A comparison between the prior survey and present survey reveals only minor differences.* Slight curve displacement and bottom configuration changes are evident where the prior survey was legible. Some of the soundings in the congested areas around Salt Cay, Kalkun Cay, and Savana Island were not legible, so the charted depths were assumed to be accurate and the comparison made with them. The differences are mainly attributed to natural changes in the bottom and less detailed and less accurate methods employed on the prior survey. (* See Q.C. Report - item 5)

Presurvey Review Items Numbers 4 and 5 are adequately described in Section K of the Descriptive Report.

The present survey, with the depths and bottom characteristics brought forward and the Photobathymetry applied, is considered adequate to supersede the prior survey in the common area.

b. H-4651b WD (1924-27) 1:20,000

(See Q.C. Report - item 6)

A comparison between the prior wire drag survey and the present survey reveals varying depth differences. In most cases the present survey located the wire drag depth, but the hang depths were less than the least depths found on the present survey; therefore, the following wire drag depths have been brought forward:

| Hang Depth | Approximate Position | Least Depth on Smooth Sheet |
|---|-----------------------------------|-----------------------------|
| 63 ft | 18° 20.38'N, 65° 04.44'W | 59 to 71 ft |
| * 49 ft | 18° 19.6'N, 65° 06.1'W | 53 ft |
| 25 ft | 18° 20.1'N, 65° 04.7'W | 37 ft (Excessed) |
| * 76 ft | 18° 18.5'N, 65° 04.4'W | 101 ft |
| * 50 ft | 18° 20.6'N, 65° 03.9'W | 55 ft (Excessed) |
| 33 ft | 18° 20.7'N, 65° 04.2'W | 39 ft |
| 33 ft | 18° 21.0'N, 65° 03.4'W | 49.5 ft |
| 22 ft | 18° 21.4'N, 65° 03.8'W | 25 ft 100 m NE |
| * 77 ft | 18° 18.7'N, 65° 08.1'W | 80 ft (Excessed) |
| 67 ft | 18° 21.5'N, 65° 03.8'W | 90 ft |
| 48 ft | 18° 21.3'N, 65° 03.7'W | 48 ft 100m N |
| 65 ft | 18° 19.59'N, 65° 04.05'W | 53 ft 50m SW |
| * Dashed-circled Presurvey Review Items | | |
| 12 ft | 18° 21.64'N, 65° 03.23'W | 17 ft [T-12941(2)] |

The 76 foot wire drag depth at latitude 18°18.5', longitude 65°04.4' has a wire drag strip clearing this depth by 87 feet on H-4651b WD. Quality Control should check

the records on this depth and make a decision as to whether it should be retained on the chart. (See Q.C. Report-item 8)

7. Comparison With Chart 25650 (formerly C&GS 904), 20th Edition, August 9, 1975

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which requires no further consideration; however, the 77 foot wire drag depth at approximate latitude 18°18.7'N, longitude 65°08.1'W is misplotted on this chart and should be corrected.

The present survey, with the depths brought forward and the Photobathymetry applied, is considered adequate to supersede the charted hydrography within the common area.

(See Q.C. Report-item 9)

b. Aids to Navigation

There are no floating aids to navigation in the area of the present survey.

8. Compliance With Instructions

This survey adequately complies with the Project Instructions.

9. Additional Field Work

This is a good basic survey. Additional field work is not recommended.



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Atlantic Marine Center
429 West York Street
Norfolk, Virginia 23510

File No: D6-5
Ser. No: 77-100

August 12, 1977

CAM3/RAT

TO: RADM Robert C. Munson *RCM*
Director, Atlantic Marine Center
FROM: *Robert A. Trauschke*
CDR Robert A. Trauschke
Chief, Processing Division

SUBJECT: Hydrographic Inspection Team Report, H-9617 (1976)

This survey was accomplished by the NOAA Ship WHITING in general compliance with Project Instructions OPR-423-WH-76, dated October 16, 1975.

FIELD WORK

In the following areas, even though line spacing is within limits, additional developments should have been made:

18° 19.18', 65° 08.10'
18° 20.14', 65° 04.72'
18° 20.75', 65° 04.05'
18° 20.85', 65° 03.30'

Also, a junction between the photobathymetry and the hydrography southwest of Salt Cay should have been made.

The 120 foot sounding at 18° 21.7' and 65° 07.4' should have been developed.

Foul areas or areas too dangerous for launch should have been described and delineated.

A "hand" plot of all "See Boat Sheet" work should accompany the survey records. Many "See Boat Sheet" soundings had to be rejected because they were automated incorrectly.



VERIFICATION

In the area of Salt Cay the Hydrographic Inspection Team suggested a number of changes to the Smooth Sheet so it would be more representative of the shoreline and bathymetric manuscripts.


Two rocks awash in the vicinity of latitude $18^{\circ} 21.8'$, longitude $65^{\circ} 03.3'$ were added to the Smooth Sheet. The source for these rocks is photogrammetric bathymetry compiled for T-12941 (1975); however, they were not indicated on the photogrammetric bathymetry shown on T-12941 (1975) or Shoreline Manuscript T-12941 (1971-75). (See Q.C. Report-item 9)

Two photogrammetric bathymetry depths, four feet at latitude $18^{\circ} 21.44'$, longitude $65^{\circ} 02.62'$ and five feet at latitude $18^{\circ} 21.25'$, longitude $65^{\circ} 02.51'$, were added to the Smooth Sheet. The source is the photogrammetric bathymetry compiled for T-12941 (1975); however, they were not indicated on the photogrammetric bathymetry shown on T-12941 (1975).

An isolated feature delineated by a six foot depth curve shown on the Smooth Sheet at latitude $18^{\circ} 21.24'$, longitude $65^{\circ} 02.53'$ originates with the photogrammetric bathymetry shown on T-12941 (1975) for which a least depth does not exist. It should be noted that lesser depths may exist on this feature.

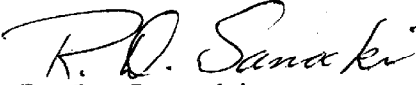
The HIT Team devoted a total of 21 hours to this survey.

Survey H-9617
Examined and Approved:
Hydrographic Inspection Team
Date: August 11, 1977


CDR Robert A. Trauschke, NOAA
Chief, Processing Division

CDR Charles H. Nixon*
Chief, Operations Division

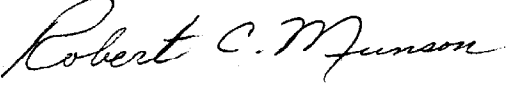

L. Douglas Mason, LT, NOAA
Chief, EDP Branch


R. D. Sanocki
Technical Assistant
Processing Division


Guy F. Trefethen
Verification Branch

* Absent

Approved/Forwarded



Robert C. Munson
RADM, NOAA
Director, Atlantic Marine Center



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

C352

October 12, 1977

TO: *A. J. Patrick*
A. J. Patrick
Chief, Marine Surveys Division

THRU: Chief, Quality Control Branch

FROM: K. W. Wellman *K. W. Wellman*
Quality Evaluator

SUBJECT: Quality Control Report for H-9617 (1976) U.S. Virgin
Islands, Virgin Passage, Savana Island

A quality control inspection has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, junctions, shoreline and photogrammetric bathymetry transfer, decisions and actions by the verifier and cartographic presentation of the data.

Junctional survey H-9601 (1976) on the north is not available for inspection of the junction. The adequacy of the junction will be considered at the time of its quality control evaluation.

In general, the present survey was found to conform to National Ocean Survey standards and requirements except as follows:

1. During verification, several soundings were deleted from the smooth sheet without being formally indicated as excessed in the final sounding printout or included on the final excess



overlay. All soundings considered superfluous should be formally indicated as excessed and final ". . . print-outs of sounding data shall indicate which soundings have been excessed" (see provisional manual-section 6.3.4.1.2). Appropriate revisions were effected during quality control evaluation.

2. The smooth sheet should be annotated to indicate least present depths displaced by shoaler prior survey depths carried forward (see provisional manual- section 6.3.7.3). Such annotations on the smooth sheet were lacking and were added during quality control evaluation.

3. An adequate junction was effected with H-9272 (1972) on the east during quality control evaluation.

4. The 120-ft. depth curve in the junctional area between the present survey and H-9618 (1976) was not in conformance with the requirements of the provisional manual; i.e., not in coincidence (see provisional manual-section 6.3.4.7 and section 7.3.12.5 and the memorandum of August 6, 1976, from the Office of Marine Surveys and Maps entitled "Depth Contour Agreement in Overlap Areas"). The referenced depth curve was reconciled during quality control evaluation.

5. The discussion of comparison with prior surveys in the Verifier's Report does not include any reference to the magnitude of noted depth differences (see provisional manual-section 6.6[11]).

Section 6a of the Verifier's Report is supplemented by the following:

There is good general agreement of depths with scattered depth differences of as much as ± 5 ft.

6. Reference section 6b of the Verifier's Report:

It appears that the comparison effected during verification included consideration of the prior survey soundings and hangs only, and excluded a detailed comparison between

present survey depths and cleared effective depths on the wire-drag survey. A detailed comparison should be accomplished to reveal any conflicts which may indicate bottom change or invalid survey procedures (see provisional manual-section 6.6[11] and the memorandum dated 3-21-77 from the Office of Marine Surveys and Maps entitled "Verifier's Report Format").

Section 6b of the Verifier's Report is supplemented by the following:

This wire-drag survey covers the entire area of the present survey. A comparison between present survey depths and effective wire-drag depths reveals conflicts in the vicinity of lat. $18^{\circ}20.83'$, long. $65^{\circ}02.93'$ where present depths of 54 to 57 ft. fall within areas cleared to effective depths of 65 to 67 ft. The noted conflicts are attributed to faulty recording of wire-drag data as noted in the W.D. Volume. The cleared areas in the immediate vicinity of the referenced soundings are considered invalid and should be disregarded.

Except as noted above, there are no other conflicts between present survey depths and cleared effective depths on this prior wire-drag survey.

7. A few soundings carried forward from H-4651 b W.D. were excessively displaced from their source document position (as much as approximately 60 meters). Appropriate revisions were effected during quality control evaluation.

8. The 76 ft. hang depth carried forward from H-4651 b (1924-27) W.D. in lat. $18^{\circ}18.50'$, long. $65^{\circ}04.40'$ is considered invalid. The position of the hang was cleared by three other drag strips at depths of 76 ft., 87 ft., and 88 ft. The charted 12 fathoms sounding in the vicinity, originating with H-4651 b, should be deleted from the chart.

9. Some comments in the H.I.T. Report are considered inconsistent; i.e., two rocks awash are stated as originating

with bathymetry on T-12941 but also stated as not being indicated thereon. Inasmuch as the referenced features are not shown on photogrammetric bathymetry sheet T-12941(2) or on reviewed shoreline manuscript T-12941 (1971/75) and are therefore unsubstantiated, they were deleted from the smooth sheet during quality control evaluation. (The rocks awash were affirmed as valid by Mr. R.D. Sanocki via telephone conversation of March 3, 1978. They have been therefore restored to the present survey smooth sheet. *T.W.W. 3-7-78*)

9604

(FLW) "4 RA"
RADAR REF

VAR 7.15 W (1951)
ANNUAL INCREASE 5.29

CHART 904 (25650)

Diagram

9603

DUTCHCAP PASSAGE

SALT CAY PASSAGE

SAVANA PASSAGE

4651a

4651b
W.D.

9617

4590
W.D.

BRIGIANT PASSAGE

FL E v 4 sec 125
vis 11 m
Sail Rk
751 17

4598

9605

