

10003

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-10-2-82
Office No. H-10003

LOCALITY

State U.S. Virgin Islands
General Locality St. Croix
Locality Lang Bank

19 82

CHIEF OF PARTY

CAPT. J. A. Yeager

LIBRARY & ARCHIVES

DATE October 3, 1984

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

Area 3

CHTS:

*25641 } to sign off sec
25640 } Record of Application*

10003

HYDROGRAPHIC TITLE SHEET

H-10003

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-10-2-82

State U.S. VIRGIN ISLANDSGeneral locality ST. CROIXLocality LANG BANKScale 1:10,000 Date of survey 6 MARCH - 14 April 1982Instructions dated 27 NOVEMBER 1981 * Project No. OPR-I149-MI/PE-82Vessel NOAA SHIP MT. MITCHELL (S-222) VESNO 2220Chief of party CAPTAIN J. A. YEAGER, NOAASurveyed by SHIP'S OFFICERS (See Remarks)Soundings taken by echo sounder, ~~XXXXXX~~, ~~XXX~~ ECHO SOUNDERGraphic record scaled by RW, RC, CS, UC, EM, FSGraphic record checked by RW, RC, CS, UC, EM, FSProtracted by _____ Automated plot by XYNETICS 1201 (AMC)
SHIP'S HYDROPLOT

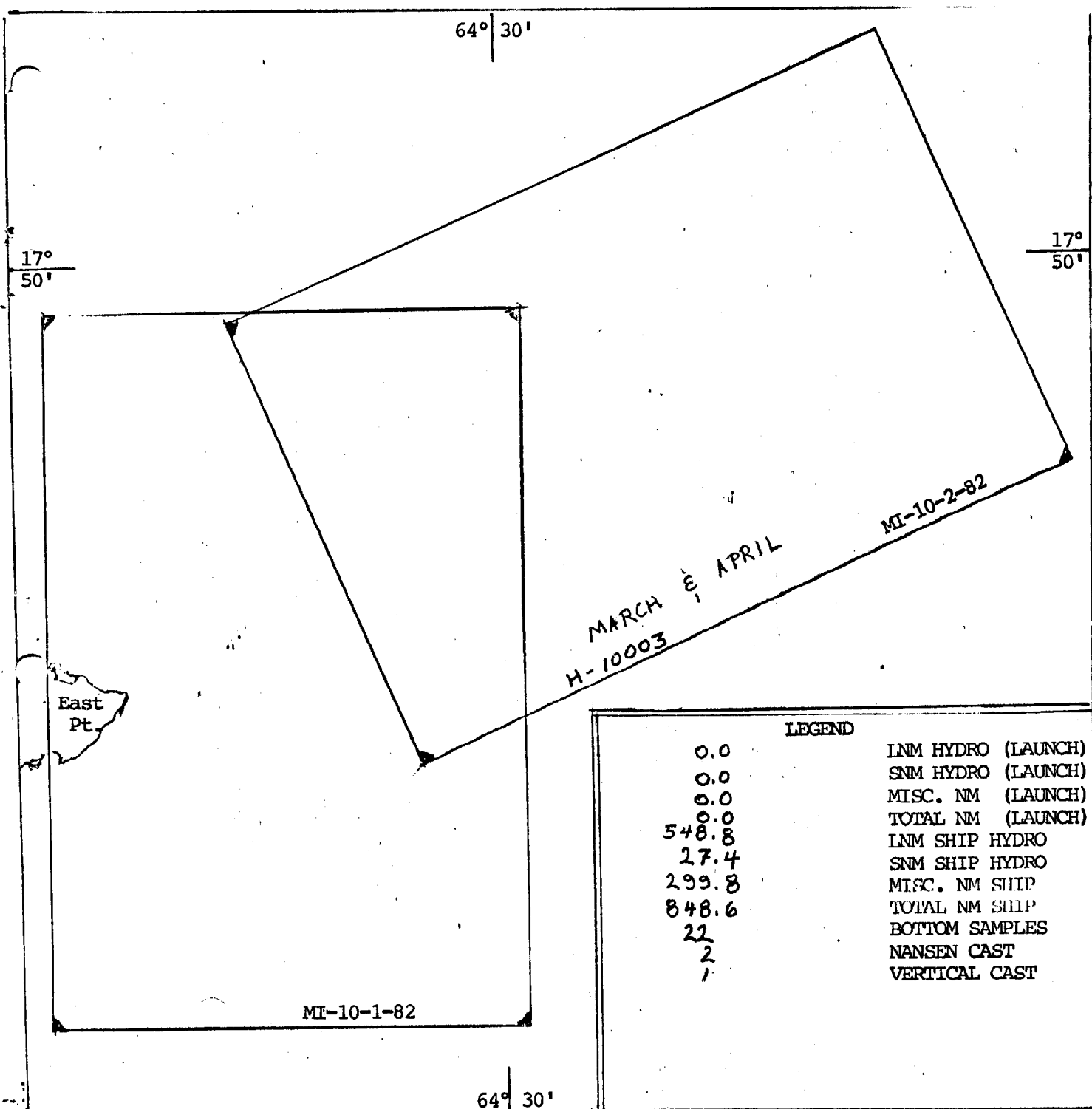
Verification by _____

Soundings in fathoms ~~XXX~~ at ~~XXX~~ MLLW FATHOMS AT MLLWREMARKS: * Supplemented by Changes to Project Instructions 1 thru 4, and
supplement to ^P project ^I Instructions dated 17 NOV. 1981.LCDR. I. LAPINE, LT. K.W.PERRIN, LT. E.S.VARNEY, LT(jg) J.ZABITCHUCK,
ENS. K.P.PETERS, ENS. F.W.ROSSMANN, ENS. R.D.HENEGAR, ENS. B.COAKLEY,
ENS. A.ORRIS, ENS. C.MCLEAN, ENS. D.I.CREWS (SHEET MANAGER)

Notes in red were made during office processing.

AWOIS 12/3/84 MSM SURF 12/3/84 MSM

Mpd to STG 10-5-84 JEB



LEGEND	
0.0	LNH HYDRO (LAUNCH)
0.0	SNM HYDRO (LAUNCH)
0.0	MISC. NM (LAUNCH)
0.0	TOTAL NM (LAUNCH)
548.8	LNH SHIP HYDRO
27.4	SNM SHIP HYDRO
299.8	MISC. NM SHIP
848.6	TOTAL NM SHIP
22	BOTTOM SAMPLES
2	NANSEN CAST
1	VERTICAL CAST

OPR-1149-MI/PE-82, St. Croix, USVI

SCALE OF CHART 25641

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

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* Filed with the original field records.

A. PROJECT

The survey was performed in accordance with Project Instructions OPR-1149-MI/PE-82, St. Croix, U.S. Virgin Islands, dated 27 November 1981. Amendments 1, 2, 3, and 4 were made to the Project Instructions on 21 December 1981, 11 January 1982, 25 January 1982 and 2 March 1982, respectively. A supplement to the Project Instructions was issued 18 November 1981.

B. SURVEY AREA

The survey was conducted offshore, east of East Point, St. Croix, U.S. Virgin Islands. The area surveyed is referred to as Lang Bank. The survey defines the size and shape of the bank. The bottom varies from depths of ⁶5 fathoms to depths in excess of ⁶⁰⁰400 fathoms, with a majority of soundings less than 100 fathoms. The survey limits are:

<u>Latitude</u>	<u>Longitude</u>
17°51'48"N	64°26'15"W
17°49'05"N	64°32'24"W
17°45'12"N	64°30'42"W
17°47'57"N	64°24'33"W

The survey was conducted between 6 March 1982 and 14 April 1982; Julian days 065 - 104.

C. SOUNDING VESSELS

All soundings for the survey were obtained by the NOAA Ship MT. MITCHELL (Vesno 2220).

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were acquired in fathoms using a skeg-mounted transducer (antenna distance 32.0 m forward of the transducer). The following equipment was also used:

<u>Equipment</u>	<u>S/N</u>
Ross Model 5000 Finline Depth Recorder	1050
Ross Model 4000 Transceiver	1050
Ross Model 6000 Digitizer	1050
Raytheon Universal Graphic Recorder	
UGR-196C-23	170
Edo Western Model 248C Transceiver	219
Edo Western Digitrak Model 261C	226

The Ross Recorder, Transceiver and Digitizer were used to determine depths in water of 50 fathoms or less. The purpose was to improve the quality and accuracy of soundings in depths less than 50 fathoms. The Universal Graphic Recorder was used for all depths greater than 50 fathoms.

All survey records were scanned and verified by trained survey personnel and reviewed by ^{D.I. Crews} ~~the Sheet Manager~~. Significant peaks and deeps occurring between

soundings were inserted and errors in digitized depths were corrected on the electronic corrector tape.

Frequent phase checks of the Ross Recorder were made throughout the survey. Adjustments were made as necessary. Departures from the calibrations were adjusted during the scanning and verification process. Scale checks of the Universal Graphic Recorder were performed to assure that data obtained on the UGR was in the correct range of scale. Whenever switching from the UGR to the Ross, the UGR was left running in order to provide depth comparisons between the two systems in case there were any questions about the soundings.

In shallow depths, the fathometer on the Bridge, which has a wider beam width than the skeg mounted transducer, was run concurrently with the survey fathometer. The concurrent use of fathometers was to aid in the discovery of shoals, obstructions and dangers which might not have appeared on the narrower beam Ross Recorder. These records were not retained as survey data.

There were two Nansen casts taken in order to determine velocity corrections. Since both casts were in good agreement only the information from Cast #1 was used to apply velocity corrections:

<u>Cast</u>	<u>Date</u>	<u>Julian Date</u>	<u>Lat. North</u>	<u>Long. West</u>
1	20 February 1982	51	17°52'12"	64°49'24"
2	25 March 1982	94	17°53'54"	64°41'18"

Salinity of the water was determined using a Beckman Induction Salinometer, S/N 24653.
Both Nansen casts fall outside the limits of the present survey.

All Nansen cast data is included in Appendix D. A vertical cast was performed 3 April 1982, to determine instrument error. No instrument error exists. A correction to the soundings of 2.3 fathoms (14.0 feet) was applied for the draft. Settlement and squat correctors for the NOAA Ship MT. MITCHELL were determined 26 July 1981. Information on correctors has been provided to OA/CAM3, Processing Division, in the form of a TC/TI tape.

The predicted tides from Galveston, Texas Station No. 3277 corrected to Charlotte Amalie, St. Thomas, U.S. Virgin Islands Station No. 3513 were applied to the survey data. All tides were applied during off-line processing. Smooth tides have been requested from the Chief, Tides and Water Levels Branch, OA/C23, Rockville Tides Branch.

E. HYDROGRAPHIC SHEETS

Hydrographic sheets for the survey were plotted on the Hydroplot System aboard the NOAA Ship MT. MITCHELL. Six Mylar sheets were plotted with a Modified Traverse Mercator projection at a skew of 114, 21, 36.

<u>Sheet</u>	<u>Data</u>
1	Main Scheme (East)
2	X-Lines, Splits, Dev., Bottom Samples (East)
3	Main Scheme (Mid.)
4	X-Lines, Splits, Dev., Bottom Samples (Mid.)
5	Main Scheme (West)
6	X-Lines, Splits, Dev., Bottom Samples (West)

Soundings from the survey are corrected for electronic positioning and depth errors, draft, velocity and predicted tides. ✓

A smooth ~~plot~~^{sheet} will be produced at the Atlantic Marine Center, CAM3, Norfolk, Virginia, using smooth tides and any further corrections which may be necessary. ✓

All field records have been forwarded to CAM3. Also forwarded were:

Master Range/Range Data Tapes

Master Range/Azimuth Data Tapes - Bottom Samples ✓

Electronic Corrector Tapes

Velocity Correction Tape (Table I)

Parameter/Signal Tapes

TC/TI Tape

F. CONTROL STATIONS

The horizontal control stations used in the survey were:

<u>Signal No.</u>	<u>Name</u>	<u>Lat. (North)</u>	<u>Long. (West)</u>
100	East Point, 1980	17°45'28.995"	64°34'02.450"
110	Lamb, 1919	17°45'41.785"	64°34'28.856"
120	Cotton Garden, 1919	17°45'40.293"	64°35'00.101"
200	Buck Island Light, 1980	17°47'19.977"	64°37'10.185" ✓
420	Christiansted Radio Mast, 1980	17°45'23.546"	64°41'38.905"
540	Little Princess Chimney, 1919	17°45'31.341"	64°43'31.777"
600	Salt 2, 1980	17°47'02.617"	64°44'55.989"

710	House Rm. 3 (Pt. Tuna), 1980	17°59'24.458"	⁵ 6 °53'07.766"
720	^{Argo, 1982} Bake 1918, Offset (St. John USVI), 1982	18°19'04.495"	64°47'21.847"

Stations 100, 110, 120, 200, 420, 540 and 600 were recovered in 1982 by personnel from the NOAA Ship MT. MITCHELL. Station 710 was recovered by personnel from the NOAA Ship PEIRCE. Station 720 was established by personnel from the NOAA Ship PEIRCE in 1982. All stations were of Third Order, Class I accuracy. The Horizontal Datum for the area is the Puerto Rico Datum.
DAKE ARG^o, 1982 IS AN UNMONUMENTED STATION.

G. HYDROGRAPHIC POSITION CONTROL

The Argo System was used in the ^Rrange-^Rrange mode to provide positioning control for hydrography. Argo stations were erected and maintained by personnel from NOAA Ship PEIRCE. The equipment used for the survey consisted of:

<u>Shore Stations</u>	<u>Equipment</u>	<u>S/N</u>
PTA Tuna: House RM 3, 1980	ALU	A047859
	RPU	R0379117
	Power Supply	V0379112
^{Argo, 1982} St. Johns: Bake 1918, Offset	ALU	A0379120
	RPU	R047859 til 16 March
	RPU	R047864 as of 16 March
	Power Supply	V0379100

Calibration to determine whole and partial lane count was performed using the Range/Azimuth method. Calibration was determined by use of a Hewlett-Packard 3810 Total Station unit (S/N 00340) and a Multi-Prism Mirror Board provided by the National Geodetic Survey. The ship's position determined by the Total Station and Mirror Board was compared with the Argo lane readings using either the RK 300 Utility Package Program or a program written by Lt. (jg) John Zabitchuck for use with the Hewlett Packard HP 9815 unit. Visual calibration, using a three point sextant fix, was also performed when the ^Range/^Azimuth method was not available and also as a means of comparing the two methods. The position by horizontal sextant angles was compared to the Argo lane count using computer program RK 561. The two methods showed excellent agreement, with disagreement of no more than 0.03 lanes. The sextants used were:

<u>Sextant</u>	<u>S/N</u>
Plath Hamburg 39	25108
M. Low USN Mk3	L-21
M. Low USN Mk3	L-49

Positioning for bottom samples was provided by the Range/Azimuth method. Equipment used consisted of:

<u>Equipment</u>	<u>S/N</u>
Del Norte DMU/Master	180/620
Remote 76 Unit	1062
Wild T-2 Theodolite	19293

The range and azimuth station was located at East Point¹⁹⁸⁰ and initialed on Buck Island Light, 1980.

<u>Signal Number</u>	<u>Name</u>	<u>Lat. (North)</u>	<u>Long. (West)</u>
100	East Point, 1980	17°45'28.995"	64°34'02.450" ✓
200	Buck Island Light, 1980	17°47'19.977"	64°37'10.185"

The Del Norte range was compared to the ranging function of the Hewlett Packard 3810 Total Station used with the Multi-Prism Mirror Board. A direct comparison of ranges was made to calibrate the Del Norte reading during bottom samples. ✓

The whole lane count was monitored on the sawtooth recorder, while the Argo system was in use. The sawtooth was annotated by hand during survey operations. The only Argo system problem occurred when one fixed shore station (not in use) was turned off causing the total net to shut down on the ship's system. This occurred on 24 March 1982 (JD 82). The system was not usable for approximately three hours. The delay caused by the shutdown was the only problem encountered with the Argo system. ✓

H. SHORELINE

No shoreline exists within the survey area. ✓

I. CROSSLINES See Evaluation Report Sec. 3a.

Crosslines were run at approximately 45° and 90° to the mainscheme lines of the survey. The crosslines amounted to 12.8% of the mainscheme hydrography for the survey. ✓

The agreement of crosslines to mainscheme was good throughout the survey with the greatest disagreement at the eastern end of the survey. The tolerances used by the field hydrographer were .2 fathoms for depths up to 11.5 fathoms, 2 fathoms from 11.5 to 110 fathoms and a value of 1% of the sounding for greater depths. Agreement within the tolerance was better than 90%. Major discrepancies appear in the southeastern and northeastern corners. The cause for the differences was partially due to the crosslines being run parallel to the contours, combined with the roll of the ship.

A list of differences is shown here:

<u>Lat. (N)</u>	<u>Long. (W)</u>	<u>M/S</u>	<u>C/L</u>
17°49'45"	64°29'34"	38	33
17°49'49"	64°29'28"	46 50	49 41
17°49'59"	64°29' ¹⁵ 13 "	88	95
17°50'30"	64°28'34"	208	204
17°49'42"	64°28'55"	9.9	10.5
17°47'15"	64°28'48"	9.8 9.7	16.3 10.4
17°47'03"	64°27'59"	86	92
17°47'06"	64°27'21"	224 223	214 213
17°48'22"	64°25'51"	144	148
17°49'54"	64°25'37"	159 158	167 166
17°50'35"	64°27'57"	232 231	239
17°50'48"	64°27'28"	353	353 354 360
17°50'54"	64°27'12"	383	388
17°48'48"	64°30'49"	6.6	7.1

The values are in disagreement between the mainscheme and crossline for depths over 20 fathoms from LAT. $17^{\circ}50'04''N$, LONG. $64^{\circ}27'06''W$ to LAT. $17^{\circ}50'33''N$, LONG. $64^{\circ}26'12''W$. The problem appears to be a combination of the steep slope and the rolling of the ship at the time the lines were run. ^{No problems encountered with the} ~~crosslines.~~

J. JUNCTIONS See Evaluation Report Sec. 5.

The survey junctions with the following surveys:

<u>Registry Number</u>	<u>Field Number</u>	<u>Area</u>	<u>Scale</u>	<u>Date</u>	<u>Ship</u>
H-10002	MI-10-1-82	West	1:10,000	1982	MT. MITCHELL
H-10004	MI-80-1-82	North, East & South	1:80,000	1982	MT. MITCHELL

These surveys were run concurrently with Survey ^{H-10003} ~~MI-10-2-82~~.

The agreement between this survey and Survey ~~MI-10-1-82~~ (H-10002) was very good with better than 95% agreement of .5 fathom for soundings between 5 and 11 fathoms. The greatest difference in the 5 to 11 fathom range was 2 fathoms. Most soundings outside the half fathom tolerance disagreed by no more than 1 fathom. The agreement between ~~MI-10-2-82~~ (H-10003) and ~~MI-10-1-82~~ (H-10002) was within the 1.5 fathom tolerance between 11 and 20 fathoms in 96% of the soundings. The agreement for soundings over 20 fathoms was ^{good} ~~poor~~. The areas this occurs in were LAT. $17^{\circ}45'30''N$, LONG. $64^{\circ}30'30''W$ and LAT. $17^{\circ}40'45''N$, LONG. $64^{\circ}32'15''W$. The

↓ It is not known what Lat. was meant. This location falls outside the present survey limits.

disagreement in the area was greater than acceptable tolerance, by more than 2 fathoms, due to the steep slope occurring in the areas listed. The vessels used in the two surveys were approaching the contours of the bank from two different directions which tends to produce disagreements in values obtained. *An excellent junction was made during office processing.*

H-10003

The agreement between survey ~~MI-10-2-82~~ and survey ~~MI-80-1-82 (H-10004)~~ was excellent in a majority of soundings. The two surveys do not have a great deal of overlap especially on the eastern end of Lang Bank. The agreement was within 1.5 fathom in the 11-55 fathom range, with no depths shallower than 11 fathoms, in 98% of the soundings. The majority of the soundings in depths greater than 110 fathoms agreed within 1% of the depth, in 98% of the comparable soundings. ~~The soundings at the Northeast corner have the poorest comparison with a sounding at LAT. 17°50'35"N, LONG. 64°28'10" disagreeing by almost 100 fathoms. The difference is most likely caused by different courses of approach along the steep slope and a problem in comparing soundings from one survey to the other due to differences in survey scale.~~ *An excellent junction was made during office processing.*

K COMPARISON WITH THE PRIOR SURVEYS See Evaluation Report Sec. 4i and 6.

The survey was compared with the following surveys.

<u>Survey</u>	<u>Scale</u>	<u>Date</u>
H-4652a	1:20,000	1924 - 1926
H-4652b WD	1:20,000	1924 - 1925

The comparison shows a large number of discrepancies. Some of the disagreements are listed here, but the list should be considered representative rather than complete.

The agreement is best in the flatter, shallow (less than 20 fathom) areas in the midsection of the survey between the east and west end of the survey. The differences make a more marked appearance along the steep slope of the bank. The contours show the same general trends in both surveys, with differences in specific shape. A number of irregularities seem to be disproved by the current survey as to the shape of Lang Bank.

No clear or consistent shift of the contours could be determined. The contours on the south side of the bank, show better agreement than on the north side. The trends of the contours show agreement, but discrepancies occur in the location of specific features. The cusp of the 20 fathom curve, which appears on the prior survey at LAT. $17^{\circ}48'17''N$, LONG. $64^{\circ}28'22''W$, is a good example of agreement in shape. The same shape for the 20 fathom curve occurs immediately to the north on the current survey. Other differences that affect the contours are listed below:

Prior Survey Locations		Present
<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Difference Between Prior and Current Survey</u>
$17^{\circ}49'06''$	$64^{\circ}32'03''$	20 fm curve Contour on current survey appears at LAT. $17^{\circ}48'57''$ LONG. $64^{\circ}31'57''$.
$17^{\circ}49'20''$	$64^{\circ}31'12''$	Current survey shows 20 fathom trough runs to LAT. $17^{\circ}49'20''$, LONG. $64^{\circ}31'12''$. No trough exists. The curve on the prior survey was drawn from insufficient information
$17^{\circ}49'15''$	$64^{\circ}30'55''$	20 fathom depression appears 200 - 300 m North as part of 20 fathom trough on current survey.

LAT. (N) LONG. (W)

17°49'50"

64°28'56"

Difference Between Prior and Current Survey

Current survey gives the 20 fathom curve a longer and thinner appearance going out to LAT. 17°49'43", LONG. 64°29'15".

17°50'15"

64°27'18"

168 fm. sdg. on H-4652a. Present survey has depths of 19-26 fms. in this area.

168 fathom sounding appears at LAT. 17°50'²⁷38", LONG. 64°27'¹⁶18" on current survey.

17°50'52"

64°27'15"

The prior survey shows no depth curve in this area.

(20 fathom curve) appears on current survey at LAT. 17°50'⁵⁷04", LONG. 64°27'13". The closest curve is the 400 fm. curve on the present survey.

17°48'45"

64°27'00" 10 fm. curve.

17°49'07"

64°26'47" 20 fm. curve.

17°49'30"

64°26'53" 20 fm. curve.

Indentations and protusion irregularity in contour does not appear on depth curve current survey.

17°50'15"

64°26'35"

20 fm. curve on H-4652a.

20 fathom curve appears at LAT. 17°50'03", LONG. 64°26'35".

17°50'25"

64°27'56"

Soundings of 58, 30 and 18 appear 200 m south on current survey.

17°49'20"

64°27'17"

10 fm. sdg. on H-4652a.

Sounding of 10 fathoms appears at LAT. 17°49'36", LONG. 64°27'18" on current.

17°49'28"

64°27'17"

21 fm. sdg. on H-4652a.

Sounding of 21 fathoms appear on current at LAT. 17°49'43", LONG. 64°27'17".

<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Difference Between Prior and Current Survey</u>
17°49'36" 28 fm. sdg. on H-4652a.	64°27'18"	Sounding of 28 fathoms appears on current at LAT. 17°49'54", LONG. 64°27'12".
17°49'36"	64°29'50"	East end of 20 fathom trough appears at LAT. 17°49'31", LONG. 64°29'46".

Depths greater than 200 fathoms generally seem to be farther out from the center of the current survey than on the prior survey.

An inspection was made of depths circled on the prior survey, as well as other soundings on the survey. The agreement in the 20 fathom and less area is very good with agreement for 0 - 11.5 fathoms of .5 fathom and 1.5 fathoms for soundings of 11.5 to 20 fathoms in 80% of the comparisons. The percentage falls off greatly in greater depths. The differences appear to be predominantly due to problems in horizontal control on the prior survey rather than a shift of the bottom or inadequacies in the original soundings. The extension of control seems to have presented problems that increased as the prior survey moved east, away from the island. An effort was made to determine if a consistent shift had occurred, but none was apparent.

A representative list of differences ⁱⁿ of soundings is included here to show the nature of discrepancies between the two surveys.

<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Sounding Source</u>	<u>Appearance on Current Survey</u>
17°49'27"	64°26'07"	12 H-4652 b WD	Not a separate sounding, part of contours at LAT. 17°49'30", LONG. 64°26'00". 12 ⁵ fm. in this area on present survey.
17°49'22" 9 ² fm. on present survey in this area.	64°27'00"	26 H-4652a	Not a separate sounding part of contours at LAT. 17°49'23", LONG. 64°26'48"W. 25-26 fm. in this area on present survey.
17°47'45"	64°28'18"	8 H-4652 b WD	Appear in a position between the two 8 ³ -8 ⁶ fm. on the present soundings. survey.
17°48'02"	64°28'18"	8 3/4 H-4652a	
17°48'42"	64°28'28"	8 H-4652 b WD	Appears to be shifted ^{ed} to LAT. 17°48'45", LONG. 64°28'24" with value of 8 ⁸ being least depth.
17°48'47"	64°29'12"	7 3/4 H-4652 b WD	Appears shifted to LAT. 17°48'45" ⁰⁵ , LONG. 64°29'12" with least depth of 8 ⁸ ² .
17°47'22"	64°31'25"	9 1/2, 9 3/4 H-4652 b WD	No equivalent depths found. 11 ³ -12 ⁸ fms. on the present survey.
17°49'02"	64°31'37"	26 H-4652 a	Appears shifted to LAT. 17°49'10", LONG. 64°31'37".
17°47'25"	64°30'18"	9 3/4 H-4652 b WD	No equivalent depths found. 11 ⁶ -12 ⁵ fm. on the present survey.
17°47'11"	64°30'38"	9 1/2, 8 1/4 H-4652a H-4652 b WD	Apparent 125 ⁷⁵ meter shift _x to the east. 8 ⁵ -9 ⁶ on the present survey.

<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Sounding</u>	<u>Appearance on Current Survey</u>
17°46'49"	64°30'45"	8 3/4 H-4652b WD	No equivalent depths found. 10 ² -12 ⁶ f.m. on the present survey.
17°46'44"	64°30'48"	10 H-4652a	No equivalent depths found. 13 ⁵ f.m. on the present survey.

L. COMPARISON WITH THE CHART See Evaluation Report sec. 6b and 7a.

The area of the survey is covered currently by Chart 25641, 18th Edition, dated November 28, 1981, at a scale of 1:100,000. The comparison was done directly with a blow-up of the 17th Edition of the chart dated September 8, 1979, to the scale of the survey, 1:10,000. There were no differences between the two chart editions for this area.

The agreement is mediocre with many of the soundings showing an apparent horizontal shift of position. The best agreement is for soundings up to 25 fathoms with agreement to 1 fathom in 80% of the situations. Soundings less than 25 fathoms are concentrated at the middle of the survey sheet, running east to west.

A general statement on soundings over 200 fathoms would be that there is a tendency to be shifted farther out from the center on the current survey.

The trend and shape of contours presented on the current edition of the chart agree in general with the current survey. Some differences in soundings exist which tend to cause disagreement in the exact appearance of the bank.

Listed here are a series of discrepancies and suggestions to correct the chart to agree with the current survey. The list will give an idea of the often slight, but inconsistent difference between the current chart and current survey.

<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Sounding</u>	<u>Comparisons and/or Corrections Suggested</u>
17°51'10"	64°26'30"	642	* Shift to LAT. 17°51'40"N LONG. 64°26'42"W.
17°49'27"	64°25'34"	65	* Shift to LAT. 17°49'27" LONG. 64°25'43".
17°50'42"	64°25'54"	¹²³ 127	* Shift to LAT. 17°50'30" LONG. 64°26'00".
17°50'16"	64°26'34"	16	* Shift to LAT. 17°50'10" LONG. 64°26'34".
17°50'23"	64°27'49"	58	* Shift to LAT. 17°50'19" LONG. 64°27'49".
17°49'40"	64°28'18"	5 3/4	Remain as charted least depth found 6.3. Do Not Concur
17°49'30"	64°28'36"	5 3/4	Remain as charted least depth found 5.9 at LAT. 17°49'39", LONG. 64°28'39. Concur

* The chart compiler should make his own determination on sounding selection.

<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Sounding</u>	<u>Comparisons and/or Corrections Suggested</u>
17°49'30"	64°29'09"	6	*Shift to LAT. 17°49'35" LONG. 64°29'06".
17°49'18"	64°28'24"	7½	*Shift to LAT. 17°49'33" LONG. 64°28'24".
17°49'09"	64°27'57"	—	*Show 7. ⁹ / ₈ fathoms.
17°48'42"	64°28'26"	8	*Shift to LAT. 17°48'45" LONG. 64°28'24".
17°48'10"	64°29'12"	7½	Remain as charted least depth found ² 8.8 at LAT. 17°48'04", LONG. 64°29'14". Concur
17°47'07"	64°29'01"	7½	Remain as charted least depth found ^{3.3} 8.8 at LAT. 17°48' ⁷ / ₁₀ " ⁷ , LONG. 64°29' ⁸ / ₁₀ " ⁵⁹ . Concur
17°48'45"	64°31'10"	5½	Remain as charted. Concur
17°48'21"	64°30'37"	10	*Shift to LAT. 17°48'26" LONG. 64°30'35".
17°48'14"	64°30'45"	5 3/4	*Shift to LAT. 17°48'14" LONG. 64°30'48".

*The chart compiler should make his own determination on sounding selection.

<u>LAT. (N)</u>	<u>LONG. (W)</u>	<u>Sounding</u>	<u>Comparisons and/or Corrections Suggested</u>
17°47'28"	64°30'18"	9	Remain as charted. Concur
17°46'24"	64°28'56"	367	*Shift to LAT. 17°46'16" LONG. 64°28'48".
17°49'15"	64°26'27"	25	*Correct depth, but shallowest and more representative is 21 at LAT. 17°49'26", LONG. 64°26'24".
17°49'50"	64°26'40"	21	Remain as charted least depth found 23. Do Not Concur
17°46'46"	64°30'44"	9	Remain as charted least depth found 10.4. Do Not Concur. Revise sdg. to 8.2 fm.

*The chart compiler should make his own determination on sounding selection.

The corrections listed here are suggestions of the field hydrographer using the data available to him.

M. ADEQUACY OF SURVEY See Evaluation Report Sec. 6a and 6b.

The survey is considered complete and adequate to supercede prior surveys for charting, with the exception of bringing noted soundings forward from the prior survey.

N. AIDS TO NAVIGATION

No fixed or floating aids to navigation are present in the survey area.

O. STATISTICS

Linear Nautical Miles of Hydrography	488.0
Linear Nautical Miles of Crosslines	38.0
Linear Nautical Miles of Development	23.8
Total Linear Miles Hydrography	548.8
Total Miscellaneous Miles	299.8
Total Miles	848.6
Square Miles	27.41
No. of Positions	2639
Nansen Casts	2
Bottom Samples	22

P. MISCELLANEOUS

None.

Q. RECOMMENDATIONS

It is recommended that corrections be made to the new proposed 1:30,000 chart for this area as well as the next edition of Chart 25641, that will give a better definition to the shape of Lang Bank and the immediate area.

R. AUTOMATED DATA PROCESSING

All data was acquired and processed using the automated Hydroplot/HYDROLOG Computer System aboard the NOAA Ship MT. MITCHELL. The software involved in the preparation, on line production and processing consisted of:

		<u>Version</u>
RK 111	R/R Real Time Plot	01/30/76
RK 116	R/AZ Real Time Plot	08/24/81
RK 201	Grid, Signal & Lattice Plot	04/18/75
RK 211	R/R Non-Real Time Plot	01/15/76
RK 212	Visual Station Table Load & Plot	04/01/74
RK 216	R/AZ Non-Real Time Plot	02/09/81
RK 300	Utility Computations	10/21/80
RK 330	Data Reformat & Check	05/04/76
AM 500	Predicted Tide Generator	11/10/72
RK 530	Velocity Corrections Computations	05/10/76
RK 561	Geodetic H/R Calibration	02/19/75
AM 602	Extended Line Editor	05/21/75
RK 612	High Speed Print Out	03/23/78

S. REFERENCE TO REPORTS

Horizontal Control Report OPR-1149-MI/PE-81-82.

Range/Azimuth Calibration Program Documentation for HP 9815 A/S.

Submitted,
Kenneth W. Plavin, LT, NOAA
for
Donald I. Crews
ENS, NOAA

SIGNAL TAPE LISTING

MI-10-2-82

H-10003

100	4	17	45	28995	064	34	02450	250	0067	000000
110	4	17	45	41785	064	34	28856	139	0018	000000
120	4	17	45	40293	064	35	00101	139	0031	000000
200	4	17	47	19977	064	37	10185	250	0110	000000
420	4	17	45	23546	064	41	38905	139	0000	000000
540	4	17	45	31341	064	43	31777	139	0000	000000
600	4	17	47	02617	064	44	55989	139	0026	000000
710	4	17	59	24458	065	53	07766	250	0018	164670
720	4	18	19	04495	064	47	21847	250	0086	164670

SIGNAL NAME MASTER TAPE PRINTOUT

		<u>FIELD</u> <u>COMP.</u>	<u>SOURCE</u>		<u>RECOVERED</u>
			<u>QUAD #</u>	<u>STA #</u>	
✓ 100	EAST POINT, 1980	1980			MI82
110	LAMB, 1919	1980	170644	1074	MI82
120	COTTON GARDEN, 1919	1980			MI82
✓ 200	BUCK ISLAND LIGHT, 1980	1980			MI82
420	CHRISTIANSTED RADIO MAST, 1980	1980			MI82
540	LITTLE PRINCESS CHIMNEY, 1919		170644	1078	MI82
600	SALT 2, 1980	1980			MI82
✓ 710	HOUSE RM3 (PT TUNA PR ARGO SITE), 1980	1982			PEIRCE 1982
✓ 720	Argo, 1982 BAKE 1918 , OFFSET (ST JOHNS VI ARGO SITE)	1982			PEIRCE 1982

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	ORIGINATOR <input type="checkbox"/> PHOTO FIELD PARTY <input type="checkbox"/> HYDROGRAPHIC PARTY <input type="checkbox"/> GEODETTIC PARTY <input type="checkbox"/> OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	FIELD ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	OFFICE ACTIVITY REPRESENTATIVE <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.)

OFFICE	FIELD (Cont'd)
I. OFFICE IDENTIFIED AND LOCATED OBJECTS 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. 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. EXAMPLE: P-8-V 8-12-75 74L(C)2982
I. NEW POSITION DETERMINED OR VERIFIED 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 A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75	II. TRIANGULATION STATION RECOVERED 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
*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.	III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75

****PHOTOGRAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.**

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

Tides in H49935 folder

JULY 9, 1982

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): 975-1364 CHRISTIANSTED, V.I.

Period: MARCH 6-26, 1982

HYDROGRAPHIC SHEET: H-10003

OPR: I-149

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

Plane of reference (mean lower low water): 3.65 FT

Height of Mean High Water above Plane of Reference is 0.81 FT

REMARKS:
ZONE DIRECT

James R. Harliband
Chief, Datums and Information Branch

GEOGRAPHIC NAMES

H-10003

Name on Survey	Source of Name										
	A	B	C	D	E	F	G	H	K		
	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			
U.S. VIRGIN ISLANDS (title)											1
ST. CROIX (title)											2
LANG BANK											3
											4
											5
											6
											7
											8
											9
											10
											11
											12
											13
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											22
											23
											24
											25

Approved:

Charles E. Harrington
Chief Geographer - N/C62x5

12 June 1984

NOAA FORM 77-27		U.S. DEPARTMENT OF COMMERCE			REGISTRY NUMBER	
HYDROGRAPHIC SURVEY STATISTICS					H-10003	
RECORDS ACCOMPANYING SURVEY: To be completed when survey is processed.						
RECORD DESCRIPTION		AMOUNT		RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1		SMOOTH OVERLAYS: POS., ARC, EXCESS		3
DESCRIPTIVE REPORT		1		FIELD SHEETS AND OTHER OVERLAYS		6
DESCRIP- TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR- GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDIAN FILES	1			3		
ENVELOPES	12				2	
VOLUMES	1					
CAHIERS						
BOXES						
SHORELINE DATA						
SHORELINE MAPS(List): N/A						
PHOTOBATHYMETRIC MAPS(List): N/A						
NOTES TO THE HYDROGRAPHER(List): N/A						
SPECIAL REPORTS(List): N/A						
NAUTICAL CHARTS(List): 25641						
OFFICE PROCESSING ACTIVITIES						
<i>The following statistics will be submitted with the cartographer's report on the survey</i>						
PROCESSING ACTIVITY				AMOUNTS		
				VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET						2606
POSITIONS REVISED				26	0	26
SOUNDINGS REVISED				171	0	171
CONTROL STATIONS REVISED				0	0	0
				TIME - HOURS		
				VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION				14	3	17
VERIFICATION OF CONTROL				15	0	15
VERIFICATION OF POSITIONS				40	0	40
VERIFICATION OF SOUNDINGS				137	0	137
VERIFICATION OF JUNCTIONS				11	0	11
APPLICATION OF PHOTOBATHYMETRY				0	0	0
SHORELINE APPLICATION/VERIFICATION				0	0	0
COMPILATION OF SMOOTH SHEET				70	0	70
COMPARISON WITH PRIOR SURVEYS AND CHARTS				0	11	11
EVALUATION OF SIDESCAN SONAR RECORDS				0	0	0
EVALUATION OF WIRE DRAGS AND SWEEPS				0	14	14
EVALUATION REPORT				0	31	31
OTHER CORRECTIONS AFTER INSPECTION				0	10	10
DIGITIZING				10	0	10
TOTALS				297	69	366
Pre-processing Examination by J.S. BRADFORD AND R.D. SANOCKI				Beginning Date 5/24/82	Ending Date 6/15/82	
Verification of Field Data by J.B. WILSON, R.I. KEENE AND D.V. MASON				Time(Hours) 273	Ending Date 5/6/84	
Verification Check by H.R. SMITH, R.R. HILL, L.G. GRAM AND C.O. MEADOR				Time(Hours) 56	Ending Date 6/11/84	
Evaluation and Analysis by C.D. MEADOR				Time(Hours) 66	Ending Date 7/5/84	
Inspection by R.D. SANOCKI				Time(Hours) 8	Ending Date 6/27/84	

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-10003

FIELD NO.: MI-10-2-82

U. S. Virgin Islands, St. Croix, Lang Bank

SURVEYED: March 6 through April 14, 1982

SCALE: 1:10,000

PROJECT NO.: OPR-I149-MI/PE-82

SOUNDINGS: Ross Model 5000
Depth Recorder,
Raytheon Universal
Graphic Recorder

CONTROL: ARGO (Range/Range),
Del Norte and
Theodolite
(Range/Azimuth)

Chief of Party.....J. A. Yeager

Surveyed by.....L. Lapine
.....K. W. Perrin
.....E. S. Varney
.....J. Zabitchuck
.....K. P. Peters
.....F. W. Rossmann
.....R. D. Henegar
.....B. Coakley
.....A. Orris
.....C. McLean
.....D. I. Crews

1. INTRODUCTION

a. Although section 5.8.2 of the Project Instructions did not require tide correctors for soundings deeper than 100 fathoms, tide correctors were applied to all soundings on the present survey.

b. No unusual problems were encountered during verification.

c. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

a. The control is adequately described in Sections F and G of the Descriptive Report. There is a referenced "Horizontal Control Report OPR-I149-MI/PE-81/82."

b. There is no shoreline within the limits of the present survey.

3. HYDROGRAPHY

a. Crosslines on this survey agree with the main scheme sounding lines within the criteria stated in Sections 4.6.1 and 6.3.4.3 of the Hydrographic Manual.

b. The standard depth curves could be drawn in their entirety. The supplemental 6-fathom curve, dashed curves and brown curves were used to better delineate the apparent coral heads and submerged reefs found throughout the area of Lang Bank.

c. This survey adequately delineates the basic bottom. However, in this area of known coral heads and submerged reefs, this survey does not adequately delineate the least depths on these features. Only ship hydrography, at 100 meter line spacing with occasional 50 meter splits, was done on Lang Bank. No apparent launch work was attempted to locate, visually inspect and then search for the least depths on shoal areas.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports comply with the requirements of the Hydrographic Manual except as follows:

a. Eighteen of the twenty-two bottom samples were incorrectly copied from Sounding Volume 1 onto Oceanographic Log Sheet M. The "Checked By" section of Log Sheet M was blank, indicating that the transfer of this data from the Sounding Volume to Log Sheet M was not verified.

b. More bottom samples should have been taken. The distance between bottom samples exceeded the 12 cm maximum for depths less than 100 fathoms in offshore surveys by up to 44 cm. See Section 1.6.3 of the Hydrographic Manual.

c. The least depths on coral heads and submerged reefs were not verified by hand lead nor was the visibility of such features recorded as required by Section 1.2.1 of the Project Instructions.

d. No negative report of Dangers to Navigation was included in the Descriptive Report as required by Section 6.12 of the Project Instructions. No Dangers to Navigation were found during this survey.

e. The narrative part of the Descriptive Report (Sections A-S) should be single spaced rather than double spaced in order to minimize the bulk of the Descriptive Report.

f. The velocity table submitted by the field unit was not correctly scaled from the velocity graph. A new velocity table was prepared during verification.

g. When making the control station listing, it would be beneficial for the office processing of the field data if the field unit would differentiate between stations used for control and those used only for calibration.

h. The graphic quality of the final field sheet was poor due to the use of penciled supplementary depth curves, poor quality ink work on the standard depth curves, the lightness of the ballpoint inked soundings and not carefully drafting the depth curves using the field overlays.

This deficiency was more serious than usual because Section 10.5 of the Project Instructions required that copies of the final field sheets be sent to the Naval Ocean Research and Development Activity, Bay St. Louis, Mississippi.

i. In Section K of the Descriptive Report, no specific discussion was made about the hangs or groundings on survey H-4652b WD, nor was a statement made about whether the present survey depths and the effective wire-drag depths were in harmony or in conflict.

5. JUNCTIONS

H-10002 (1981-82) to the west *not in Packerville during exam*
H-10004 (1982) to the south, east and north

Excellent junctions were made with surveys H-10002 and H-10004 and the junctional curves are complete and require no further consideration.

6. COMPARISON WITH PRIOR SURVEYS

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

This prior survey covers the entire area of the present survey.

The best agreement between the present survey and the prior survey occurs within the 20 fathom depth curve where there are differences in depths of $\pm .1$ to 1 fathom.

The most extreme differences occur along the eastern part of the survey area where depths on the prior survey range from 120 fathoms shoaler to 166 fathoms deeper than those on the present survey. Control on the prior survey in this area was sextant fixes taken on distant shore signals. The Inspection Report for H-4652a states, "Extreme difficulty was encountered and much time was spent on checking the protracting in the eastern part of the work due to long shots and small angles. The verification indicated that the original plotting of this area was as accurate as possible, but there are probably some errors in position that are unavoidable." The strong currents mentioned in the prior survey's Descriptive Report would also have made it difficult to maintain a constant position when using the electric sounding-wire machine in the deeper depths in the eastern part of the survey area. The present survey depths indicate that the positional errors on the prior survey ranged from about 100 to 1000 meters.

The present survey and the prior survey locations for the submerged fringing reefs along the outer edges of Lang Bank are in fair agreement.

One sounding was brought forward to the present survey. With this addition, the present survey is adequate to supersede the prior survey in the common area.

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

There are no conflicts between the present survey depths and the effective wire-drag depths.

The comparison between survey H-4652b WD and the present survey found 23 hangs, 3 groundings and 12 soundings that fall within the present survey area. Of these 38 items, 15 were not brought forward to the present survey because the present survey has depths in close proximity to them which are in substantial agreement and are more accurately positioned. The present survey depths indicate that control along the eastern limits of survey H-4652b WD was poor. The field at the time of the wire-drag survey also recognized the poor control because their Descriptive Report states that only three signals could be seen and that it was difficult to see the left and center signals during hazy weather and when the afternoon sun was behind these signals, the fixes formed very small angles and there was some error in plotting due to play in the double extension of the protractor arms.

Only the 23 items discussed below were brought forward to the present survey from survey H-4652b WD and need to be considered for charting purposes: *See Examination Report*

1) A sounding of 64 ft. (10⁶ fm.), cleared by 60 ft. (10 fm.) and charted as a 10 fm. sounding in Latitude 17°50'08", Longitude 64°27'15". This sounding falls between 50 meter line spacing in depths of 11⁷ to 12¹ fm. on the present survey and should be revised to a 10½ fm. sounding. Additionally, the notation "cleared 10 fm" should be added to the chart next to this sounding.

AWOIS
11/30/84
msm

2) A sounding of 92 ft. (15³ fm.) on a hang on coral, cleared by 47 ft. (7⁸ fm.) and charted as a 15 fm. sounding in Latitude 17°49'31.5", Longitude 64°30'46". This sounding falls between 100 meter line spacing in depths of 16¹ to 17⁶ fm. on the present survey and should be retained as charted. Additionally, the notation "Co-cleared 7 3/4 fm" should be added to the chart next to this sounding.

AWOIS
11/30/84
msm

3) A sounding of 34 ft. (5⁶ fm.) on a hang on coral, cleared by 29 ft. (4⁸ fm.) and charted as a 5 3/4 fm. sounding in Latitude 17°49'30", Longitude 64°28'42". This sounding falls between 50 meter line spacing in depths of 7⁴ to 7⁶ fm. on the present survey and should be retained as charted. Additionally, the notation "Co-cleared 4 3/4 fm" should be added to the chart next to this sounding.

AWS 015
11/30/84
msm

4) A sounding of 38 ft. (6³ fm.) on a hang on coral, cleared by 34 ft. (5⁶ fm.) and charted as a 6 1/2 fm. sounding in Latitude 17°49'32", Longitude 64°28'05". The present survey has depths of 7⁵ to 7⁶ fm. in the area. This sounding should be retained as charted. Additionally, the notation "Co-cleared 5 1/2 fm" should be added to the chart next to this sounding.

AWS 015
11/30/84
msm

5) A sounding of 42 ft. (7 fm.) on a coral head, cleared by 37 ft. (6^{1/2} fm.) and not charted in Latitude 17°49'30", Longitude 64°28'08". This sounding falls between 100 meter line spacing in depths of 7⁹ to 8 fm. on the present survey. When Lang Bank is charted at the proposed 1:30,000 scale, this sounding should be considered for application to the chart with the notation "Co-cleared 6 fm" placed next to it.

AWS 015
11/30/84
msm

colld on smooth sheet m

6) A sounding of 46 ft. (7⁶ fm.), cleared by 38 ft. (6³ fm.) and charted as a 7 1/2 fm. sounding in Latitude 17°49'17", Longitude 64°28'28". This sounding falls between 100 meter line spacing in depths of 8⁶ to 9¹ fm. on the present survey and should be retained as charted. Additionally, the notation "cleared 6 1/2 fm" should be added to the chart next to this sounding.

AWS 015
11/30/84
msm

7) A sounding of 37 ft. (6¹ fm.) with the bottom characteristic hrd, cleared by 43 ft. (7¹ fm.) and charted as a 6 fm. sounding in Latitude 17°49'14", Longitude 64°27'59". The conflict between the sounding and the clearance depth may be explained by the statement in the wire-drag Descriptive Report that few lift tests were done because of heavy swell. This was more true for the 1924 work than the 1925 work. The correction for lift was based on an estimated lift value to

AWS 015
11/30/84
msm

which one-half the estimated swell was applied. This sounding falls between 50 meter line spacing in depths of 8 to 9⁹ fm. on the present survey and should be retained as charted.

8) A sounding of 43 ft. (7¹ fm.), cleared by 40 ft. (6⁶ fm.) and not charted in Latitude 17°49'13", Longitude 64°27'48". This sounding falls between 100 meter line spacing in depths of 8⁴ to 8⁶ fm. on the present survey. When Lang Bank is charted at the proposed 1:30,000 scale, this sounding should be considered for application to the chart with the notation "cleared 6½ fm" placed next to it.

AW015
11/30/84
msm

9) A hang at an effective depth of 34 ft. (5⁶ fm.) with an actual sounding of 35 ft. (5⁸ fm.), cleared by 31 ft. (5¹ fm.) and not charted in Latitude 17°48'50", Longitude 64°31'26". This hang falls between 50 meter line spacing in depths of 6⁷ to 8⁵ fm. on the present survey. When Lang Bank is charted at the proposed 1:30,000 scale, this hang should be considered for application to the chart as a 5½ fm. sounding with the notation "cleared 5 fm" placed next to it.

AW015
11/30/84
msm

10) A sounding of 35 ft. (5⁸ fm.) on a hang on coral, cleared by 31 ft. (5¹ fm.) and charted as a 5 3/4 fm. sounding in Latitude 17°48'47", Longitude 64°30'47". This sounding falls between 100 meter line spacing in depths of 8² to 9⁵ fm. on the present survey and should be retained as charted. Additionally, the notation "Co-cleared 5 fm" should be added to the chart next to this sounding.

AW015
11/30/84
msm

11) A grounding at an effective depth of 33 ft. (5⁵ fm.) with no sounding taken, cleared by 34 ft. (5⁶ fm.) and charted as a 5½ fm. sounding in Latitude 17°48'45", Longitude 64°31'15". The conflict between the grounding and the clearance depth can be explained by the discussion on lift tests in Item 7 above. This grounding falls between 50 meter line spacing in depths of 7⁵ to 8⁶ fm. on the present survey and should be retained as charted.

AW015
12/9/84
msm

12) A sounding of 79 ft. (13^1 fm.) on a hang on coral, cleared by 67 ft. (11^1 fm.) and charted as a 13 fm. sounding in Latitude $17^{\circ}48'31.5''$, Longitude $64^{\circ}26'10''$. This sounding falls between 100 meter line spacing in depths of 13^8 to 15^1 fm. on the present survey and should be retained as charted. Additionally, the notation "Co-cleared 11 fm" should be added to the chart next to this sounding.

AW015
12/31/84
msm

13) A sounding of 47 ft. (7^8 fm.) on a hang, cleared by 47 ft. (7^8 fm.) and charted as a $7\frac{1}{2}$ fm. sounding in Latitude $17^{\circ}48'08''$, Longitude $64^{\circ}29'12''$. This sounding falls between 50 meter line spacing in depths of 8^2 to 11^5 fm. on the present survey and should be revised to a $7\frac{3}{4}$ fm. sounding. Additionally, the notation "cleared $7\frac{3}{4}$ fm" should be added to the chart next to this sounding.

AW015
12/31/84
msm

14) A hang on coral at an effective depth of 48 ft. (8 fm.) with an actual sounding of 49 ft. (8^1 fm.), cleared by 45 ft. (7^5 fm.) and charted as an 8 fm. sounding in Latitude $17^{\circ}47'56''$, Longitude $64^{\circ}28'19''$. This hang falls between 50 meter line spacing in depths of 8^4 to 8^6 fm. on the present survey. The charted 8 fm. sounding should be retained as charted. Additionally, the notation "Co-cleared $7\frac{1}{2}$ fm" should be added to the chart next to this sounding.

AW015
12/31/84
msm

15) A grounding at an effective depth of 58 ft. (9^6 fm.) with an actual sounding of 65 ft. (10^8 fm.), cleared by 53 ft. (8^8 fm.) and charted as a 9 fm. sounding in Latitude $17^{\circ}47'25''$, Longitude $64^{\circ}30'18''$. This grounding falls between 100 meter line spacing in depths of 11^6 to 13^1 fm. on the present survey. The charted 9 fm. sounding should be retained as charted. Additionally, the notation "cleared $8\frac{3}{4}$ fm" should be added to the chart next to this sounding.

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msm

16) A hang at an effective depth of 59 ft. (9^8 fm.) with an actual sounding of 60 ft. (10 fm.), cleared by 47 ft (7^8 fm.) and not charted in Latitude $17^{\circ}47'22.5''$, Longitude $64^{\circ}31'24''$. This hang falls between 100 meter line spacing in depths of 11^3 to 12^1 fm. on the

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present survey. When Lang Bank is charted at the proposed 1:30,000 scale, this hang should be considered for application to the chart as a $9 \frac{3}{4}$ fm. sounding with the notation "cleared $7 \frac{3}{4}$ fm" next to it.

17) A hang on coral at an effective depth of 57 ft. (9^5 fm.) with an actual sounding of 59 ft. (9^8 fm.), cleared by 47 ft. (7^8 fm.) and charted as a 9 fm. sounding in Latitude $17^{\circ}47'21''$, Longitude $64^{\circ}31'27''$ This hang falls between 100 meter line spacing in depths of 11^3 to 12^8 fm. on the present survey. The charted 9 fm. sounding should be retained as charted. Additionally, the notation "Co-cleared $7 \frac{3}{4}$ fm" should be added to the chart next to this sounding.

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msm

18) A hang on coral at an effective depth of 47 ft. (7^6 fm.) with an actual sounding of 49 ft. (8^1 fm.), cleared by 41 ft. (6^8 fm.) and charted as a $7\frac{1}{2}$ fm. sounding in Latitude $17^{\circ}47'03''$, Longitude $64^{\circ}29'04''$. This hang falls between 100 meter line spacing in depths of 9^7 to 9^8 fm. on the present survey. The charted $7\frac{1}{2}$ fm. sounding should be retained as charted. Additionally, the notation "Co-cleared $6 \frac{3}{4}$ fm" should be added to the chart next to this sounding.

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19) A grounding at an effective depth of 48 ft. (8 fm.) with an actual sounding of 58 ft. (9^6 fm.), cleared by 44 ft. (7^3 fm.) and not charted in Latitude $17^{\circ}47'00''$, Longitude $64^{\circ}28'52.5''$. When Lang Bank is charted at the proposed scale of 1:30,000, this grounding should be considered for application to the chart as an 8 fm. sounding with the notation "cleared $7\frac{1}{2}$ fm" next to it.

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20) A sounding of 54 ft. (9 fm.) on a hang, cleared by 47 ft. (7^8 fm.) and not charted in Latitude $17^{\circ}46'58.5''$, Longitude $64^{\circ}29'04''$. This hang falls in present survey depths of 9^4 to 9^5 fm. When Lang Bank is charted at the proposed 1:30,000 scale, this hang should be considered for application to the chart as a 9 fm. sounding with the notation "cleared $7 \frac{3}{4}$ fm" next to it.

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msm

21) A sounding of 53 ft. (8⁸ fm.) on a hang, cleared by 44 ft. (7³ fm.) and charted as a 9 fm. sounding in Latitude 17°46'49.5", Longitude 64°30'45". This sounding falls in present survey depths of 10⁸ to 11⁵ fm. and should be revised to a 8 3/4 fm. sounding. Additionally, the notation "cleared 7 1/4 fm" should be added to the chart next to this sounding.

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22) A sounding of 58 ft. (9⁶ fm.) with the bottom characteristic hrd, cleared by 38 ft. (6³ fm.) and not charted in Latitude 17°46'09", Longitude 64°29'48". This sounding falls in present survey depths of 10⁶ to 11⁷ fm. When Lang Bank is charted at the proposed 1:30,000 scale, this sounding should be considered for application to the chart as a 9 1/2 fm. sounding with the notation "hrd-cleared 6 1/2 fm" next to it.

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msm

23) A sounding of 43 ft. (7¹ fm.) on a hang, cleared by 38 ft. (6³ fm.) and charted as a 7 fm. sounding in Latitude 17°45'34", Longitude 64°30'45". This sounding falls in present survey depths of 8⁴ to 8⁷ fm. and should be retained as charted. Additionally, the notation "cleared 6 1/4 fm" should be added to the chart next to this sounding.

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msm

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

a. Hydrography

Except for four soundings of 482, 520, 551, and 578 fathoms in the vicinity of Latitude 17°51'00", Longitude 64°21'00", all the charted hydrography originates with the previously discussed prior surveys and needs no further discussion. The four soundings probably originate with U. K. Royal Navy hydrographic sources.

Attention is directed to the following:

1) The notation "breaks in heavy weather", charted in the vicinity of Latitude 17°50'00", Longitude 64°28'00", should be retained as charted unless there is subsequent information to the contrary.

from a miscellaneous source

2) The hydrographer makes additional charting recommendations in Sections L and Q of the Descriptive Report.

Except as noted in this report, the present survey is adequate to supersede the charted hydrography in the common area.

b. Aids to Navigation

There are no fixed or floating aids to navigation within the area of the present survey.

8. COMPLIANCE WITH INSTRUCTIONS

Except as noted elsewhere in this report, this survey adequately complies with the Project Instructions.

9. ADDITIONAL FIELD WORK

This is an adequate basic survey. Additional work is recommended only if it is necessary to know the least depths on the coral heads and submerged reefs found throughout the area of Lang Bank.

Douglas V. Mason
Douglas V. Mason
Cartographic Technician
Verification of Field Data

Robert R. Hill, Jr.
Robert R. Hill, Jr.
Cartographic Technician
Verification Check

Charles D. Meador
Charles D. Meador
Chief, Evaluation and Analysis Group
Evaluation and Analysis

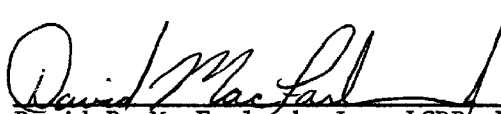
Inspection Report
H-10003

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

Inspected



R. D. Sanocki
Chief, Hydrographic Surveys
Processing Section
Hydrographic Surveys Branch



David B. MacFarland, Jr., LCDR, NOAA
Chief, Hydrographic Surveys Branch

Approved July 5, 1984



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



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

N/CG242:LQ

Date November 25, 1985

TO: N/CG24 - Roy K. Matsushige
 FROM: N/CG242 - *George K. Myers, Jr.*
 George K. Myers, Jr.

SUBJECT: Examination of Hydrographic Survey H-10003 (1982) U.S. Virgin Islands, St. Croix, Lang Bank

Chief of Party J. A. Yeager
 Field Unit NOAA Ship MT. MITCHELL
 Processed by Atlantic Marine Center
 Examined by L. Quinlan

An examination of hydrographic survey H-10003 (1982) was accomplished to monitor the survey for adequacy with respect to data acquisition, conformance with applicable project instructions, delineation of the bottom, determination of least depths, navigational hazards, the junction with H-10004 (1982), sounding line crossings, smooth plotting, digital data standards, decisions made and actions taken by the evaluator, and the cartographic presentation of data.

Cartographic deficiencies and constructive comments are noted on a 1/2-scale copy of the survey smooth sheet which will be forwarded to the marine center.

In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Evaluation Report and as follows:

1. The charting recommendations in the Evaluation Report with regard to the charting of wire-drag data brought forward to the present survey do not conform to present charting policies. The actual charting of these hangs, soundings, and/or clearances is deferred to the chart compiler.

Consideration should be given to adding a cautionary note to the charts of Lang Bank warning the mariner of the numerous coral heads in the area. The present survey may not have obtained the least depth on all such features and the continued validity of the wire-drag survey, being 60 years old, is debatable, considering the possible changes that may have occurred in the coral over that period of time.



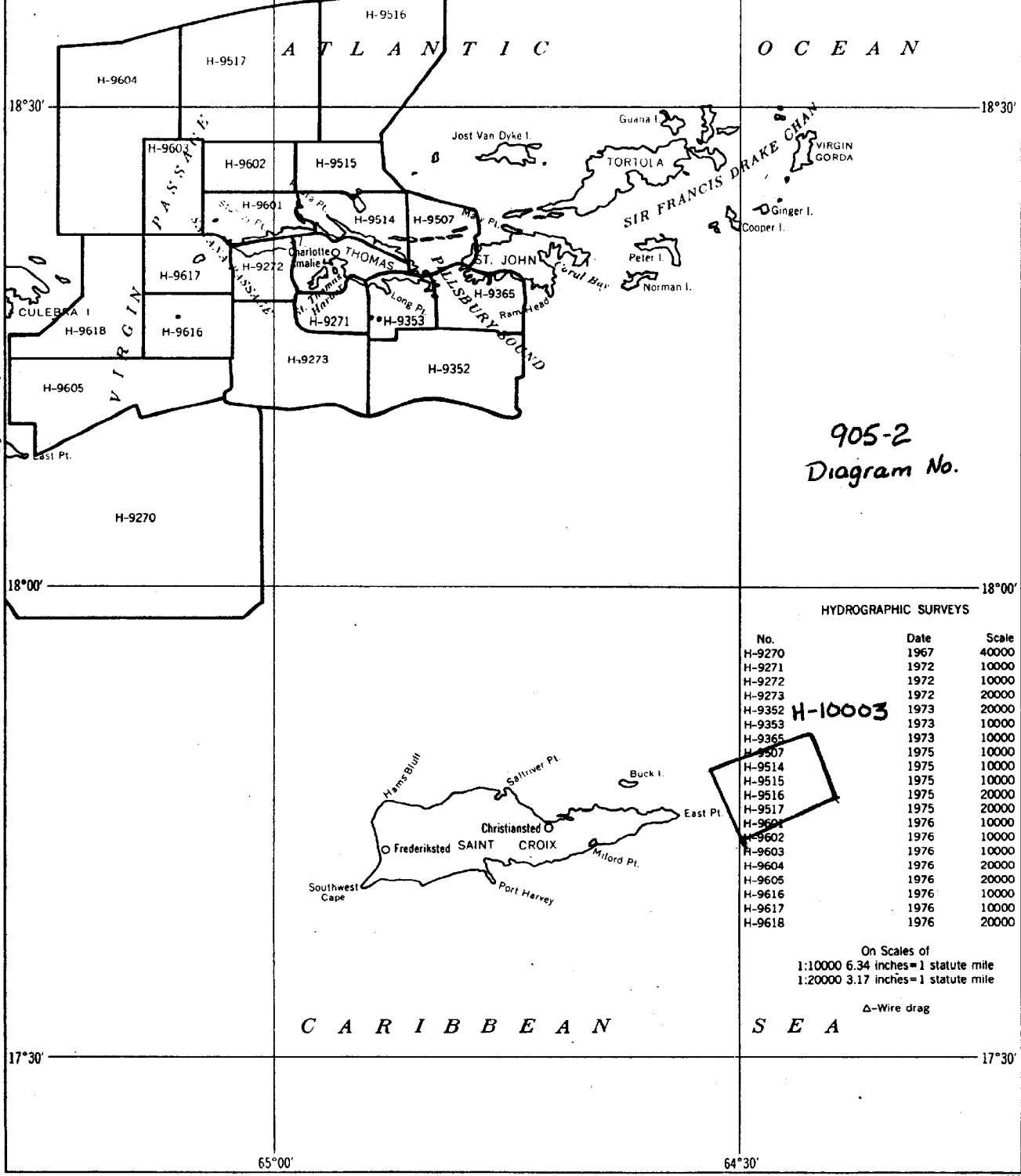
2. The Signal Tape Listing in the Descriptive Report should have been revised to show the four signals used for positional control and to indicate which signals were used for calibration purposes. Signal numbers 100, 200, 710, and 720 were used for control.

3. Survey data were not properly entered in the "Z" record of the Digital Hydrographic Survey Data File. For instance, the registry number and year of the prior survey are in many cases incorrect. Also, sounding values carried forward and depicted correctly on the smooth sheet are shown in error in the listing. In some cases, soundings are identified by the wrong cartographic code.

INDEX
HYDROGRAPHIC SURVEYS
Complete through March 1979

1967-1976

VIRGIN GORDA TO ST. THOMAS AND ST. CROIX
VIRGIN ISLANDS



905-2
Diagram No.

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

H-10003

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

Δ-Wire drag

C A R I B B E A N

S E A

