

9993

Diagram No. 902

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. PE-80-2-82.....

Office No. H-9993.....

LOCALITY

State U.S. Virgin Islands.....

General Locality Mar Caribe.....

Locality Isla de Vieques to St. Croix.....

1983

CHIEF OF PARTY
CDR D.E. Nortrup.....

LIBRARY & ARCHIVES

DATE August 30, 1983.....

9993

25309 (25)
2566 (25)
25309 (25)
25309 (25)
2566 (25)

HYDROGRAPHIC TITLE SHEET

H-9993

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.

PE-80-2-82

State U.S. Virgin Islands

General locality ~~St. Croix~~ MAR CARIBE

Locality ~~Offshore Hans Bluff~~ ISLA DE VIEQUES TO ST. CROIX

Scale 1:80,000 Date of survey ~~14 April~~ ^{FEB.} 1982 - 13 March 1982

Instructions dated 27 November 1981 Project No. OPR- I149-MI/PE 82

Vessel NOAA Ship PEIRCE (VesNo 2830)

Chief of party CDR. Donald E. Nortrup, NOAA

Surveyed by T.W.Ruszala, G.E.Leigh, J.W.Bailey, P.Glickman, R.B.Harris, S.Andreeva

Soundings taken by echo sounder, ~~hand lead, pole~~ Raytheon Universal Graphic Recorder

Graphic record scaled by G.E.L., I.D.R., J.S.B., S.A., B.E.M., B.M., R.B.H.

Graphic record checked by G.E.L., I.D.R., T.R.O., J.S.B.

Protracted by N/A Automated plot by AMC Digital Plotter

Verification by _____

Soundings in fathoms ~~1000~~ at ~~MLLW~~ MLLW

REMARKS: All times used in this survey are Greenwich Mean Time, (GMT).

All notes and corrections in red were made during verification.

STANDARDS CK'D 9-2683

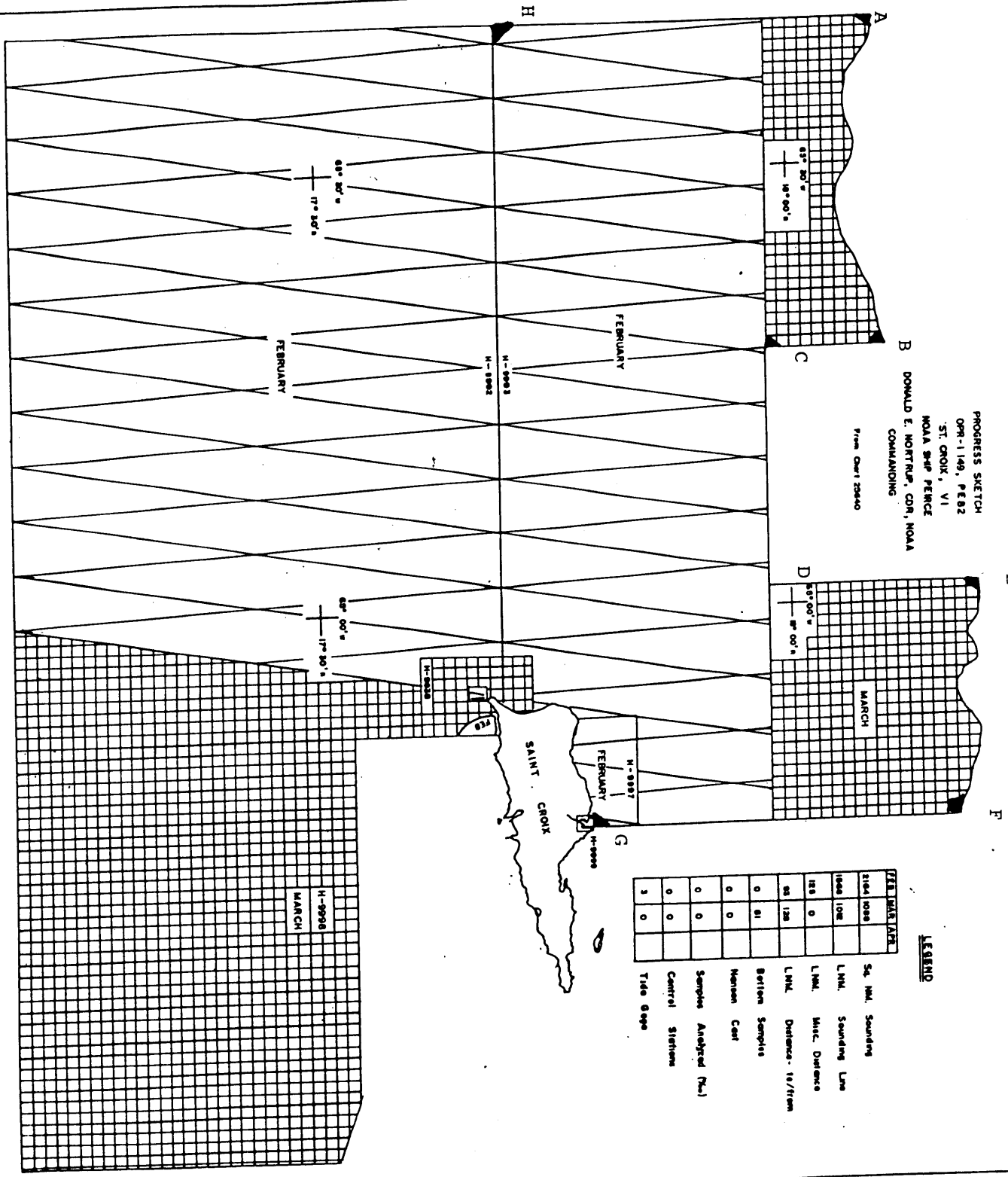
Clay

Awois checked, RWD 10/5/83

PROGRESS SKETCH
 OPN-1149, P. 82
 ST. CROIX, VI
 NOAA SHIP PIERCE
 DONALD E. MORTRUP, CDR, NOAA
 COMMANDING

View Chart 22840

E
 F



FEB	MAR	ATN
1064	1066	
1068	1068	
1072	1072	
1076	1076	
1080	1080	
1084	1084	
1088	1088	
1092	1092	
1096	1096	
1100	1100	
1104	1104	
1108	1108	
1112	1112	
1116	1116	
1120	1120	
1124	1124	
1128	1128	
1132	1132	
1136	1136	
1140	1140	
1144	1144	
1148	1148	
1152	1152	
1156	1156	
1160	1160	
1164	1164	
1168	1168	
1172	1172	
1176	1176	
1180	1180	
1184	1184	
1188	1188	
1192	1192	
1196	1196	
1200	1200	
1204	1204	
1208	1208	
1212	1212	
1216	1216	
1220	1220	
1224	1224	
1228	1228	
1232	1232	
1236	1236	
1240	1240	
1244	1244	
1248	1248	
1252	1252	
1256	1256	
1260	1260	
1264	1264	
1268	1268	
1272	1272	
1276	1276	
1280	1280	
1284	1284	
1288	1288	
1292	1292	
1296	1296	
1300	1300	
1304	1304	
1308	1308	
1312	1312	
1316	1316	
1320	1320	
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1372	1372	
1376	1376	
1380	1380	
1384	1384	
1388	1388	
1392	1392	
1396	1396	
1400	1400	
1404	1404	
1408	1408	
1412	1412	
1416	1416	
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1464	1464	
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1472	1472	
1476	1476	
1480	1480	
1484	1484	
1488	1488	
1492	1492	
1496	1496	
1500	1500	
1504	1504	
1508	1508	
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1596	1596	
1600	1600	
1604	1604	
1608	1608	
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1796	1796	
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1804	1804	
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1888	1888	
1892	1892	
1896	1896	
1900	1900	
1904	1904	
1908	1908	
1912	1912	
1916	1916	
1920	1920	
1924	1924	
1928	1928	
1932	1932	
1936	1936	
1940	1940	
1944	1944	
1948	1948	
1952	1952	
1956	1956	
1960	1960	
1964	1964	
1968	1968	
1972	1972	
1976	1976	
1980	1980	
1984	1984	
1988	1988	
1992	1992	
1996	1996	
2000	2000	

LEGEND

- Sq. NWL Soundings
- L.N.W. Sounding Line
- L.N.W. Misc. Distance
- L.N.W. Distance - 10/From
- Bottom Samples
- Human Cell
- Samples Analyzed (No.)
- Control Stations
- Tide Gage

TABLE OF CONTENTS

HYDROGRAPHIC TITLE SHEET

A. PROJECT	1
B. AREA SURVEYED	1
C. SOUNDING VESSEL	2
D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDING	2
E. HYDROGRAPHIC SHEETS	3
F. CONTROL STATIONS	3
G. HYDROGRAPHIC POSITION CONTROL	5
H. SHORELINE	6
I. CROSSLINES	6
J. JUNCTIONS	6
K. COMPARISON WITH PRIOR SURVEYS	8
L. COMPARISON WITH THE CHART	9
M. ADEQUACY OF SURVEY	9
N. AIDS TO NAVIGATION	9
O. STATISTICS	9
P. MISCELLANEOUS.....	10
Q. RECOMMENDATIONS	10
R. AUTOMATED DATA PROCESSING	10
S. REFERENCE TO REPORTS.....	11

APPENDICES A-I Appendices A,D,E,G and H were removed from the Descriptive Report and filed with the original survey records.

APPROVAL SHEET

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9993
FIELD NUMBER PE 80-2-82
CDR. DONALD E. NORTRUP, NOAA

A. PROJECT

This basic survey is a constituent of Project OPR-1149-MI/PE-82. It was conducted in accordance with project instructions dated ~~31 March 1982~~ ^{27 Nov. 1981} from Associate Director, Marine Surveys and Maps, forwarded via Director, Atlantic Marine Center. Changes to the project instructions that affect this survey are Change No. 1, Amendment to Instructions, dated 21 December 1981 and Change No. 3, Supplement to Instructions, dated 25 January 1982. [✓] Also, Change No. 2 was dated 11 January 1982 and Change No. 4 dated 2 March 1982. Change No. 5 dated 11 May 1982. AMC Supplementary Instructions dated 18 November 1981.

B. AREA SURVEYED

The following are the survey limits (See Progress Sketch that accompanies this report):

Point A	18°05'48"N 065°40'00"W ✓	East to (Running along 100-fathom curve)
B	18°06'00"N 065°17'18"W ✓	South to
C	17° ^{59'00"} 58'42"N 065°17'18"W ✓	East to
D	17°58'24"N 065°01'18"W ✓	North to
E	18°12' ²¹ 24"N 065°01'18"W ✓	East to (Running along 100-fathom curve)
F	18°10'42"N 064°45'00"W ✓	South to
G	17° ^{47'54"} 48'42"N 064°45'00"W ✓	West (Running along 100-fathom curve north of St. Croix Island to the southwest part of St. Croix Island then westward to)
H	17° ^{15'} 41'2"N 065° ^{39'39"} 40'0"W	North to (Point A)

This survey was conducted between 14 February 1982 (JD 045) and 13 March 1982 (JD 072). ✓

C. SOUNDING VESSEL

The hydrographic survey was conducted by NOAA Ship PEIRCE, Vesno 2830, which is equipped with the hydroplot system. ✓

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

This survey was conducted using the Raytheon Universal Graphic Recorder, Model UGR-196-23 (S/N 164). This unit was combined with Digitrak Digitizer Model 261C (S/N 277) and a Raytheon PTR (transmitter/receiver) Model 105B (S/N 162). ✓

Velocity corrections were computed from Nansen Cast #1. The cast was taken by the NOAA Ship MT. MITCHELL on 20 February 1982 at 17°52'12"N, 064°49'24"W. The Nansen Cast was taken to a depth of 4000 meters and extrapolated to a depth of 5000 meters. ✓
Nansen Cast #1 (Table No. 1) was graphed and scaled at the following intervals:

<u>Depth (fms)</u>	<u>Scaled Interval (fm)</u>
0 - 20	0.1
20 - 110	0.2
Over 110	1.0

The memory capacity of the PDP 8/E computer can store only a limited number of correctors (velocity tape correctors) utilizing program RK 211, therefore, the velocity tape was condensed and a new tape was generated with less than 75 correctors. This condensed version of the velocity tape was used to plot the final field sheets. The condensed velocity tape (Table No. 3) was graphed at the following intervals: ✓

<u>Depth (fms)</u>	<u>Scaled Interval (fm)</u>
0 - 20	0.1
20 - 110	0.5
Over 110	2.0

Nansen Cast #2 was taken by MT. MITCHELL on 25 March 1982, however, the data from this cast was obtained after the plotting of the final field sheet and was not applied. ✓
Data from both casts will be included in the PEIRCE's Corrections to Echo Soundings Report. ~~Listings of both velocity tables are in Appendix D of this report.~~ Listings are after Sec. 5 of this D.R.

A static draft of 1.7 fathoms was computed from a vertical cast (leadline, S/N PE 100-1-78) taken on 22 July 1981. This draft was applied to all master tapes and off line corrector tapes. ✓

Settlement and squat corrections for the ship with both launches aboard are based on observations made 21 September 1981 at the Army Corps of Engineers Pier, Elizabeth River, Norfolk, Virginia. Corrector values for speeds used in this survey are negligible, however, they are calculated and listed in the Sounding Corrections Abstract. Results of settlement and squat can be found in the supplemental data files of this report. All speed changes during this survey are noted in the sounding volume and the on line master printouts. ~~A copy of the Sounding Correction Abstract and the TC/TI tape is in Appendix D.~~ ✓

In areas where this survey junctioned with inshore survey coverage over steeply sloping bottom, junction sounding disagreement was anticipated. This anticipated disagreement was a function of the sounding systems employed, i.e., inshore coverage by Ross narrow beam echo sounder vs. offshore coverage by UGR wide beam sounder. The following procedure was followed in dealing with this condition: See Sec. 4c of the Evaluation Report.

Ross soundings greater than 150 fathoms not to be smooth plotted (NSP). ^{No ROSS soundings on this survey.}

Where Ross and UGR sounding conflict in less than 150 fathoms:

- A. Save Ross and NSP soundings obtained from UGR if Ross fathometer trace can be interpreted confidently.
- B. Save UGR and NSP sounding obtained from Ross if Ross trace is ambiguous. (Must also NSP all deeper soundings on same Ross sounding line in this case).

E. HYDROGRAPHIC SHEETS

The field sheets were plotted on board the PEIRCE by the ship's PDP 8/E computer and complot roll-bed plotter.

All hydrographic data is presented on four plotter sheets. The north survey sheet depicts mainscheme, mainscheme splits, and crosslines. The south survey sheet depicts mainscheme and mainscheme split hydrography while the third sheet (overlay for the south survey sheet) depicts crosslines. The fourth sheet is a blowup of the area surveyed around St. Croix Island (800 meter spacing).

Three of the sheets are at a scale of 1:80,000 with a skew of 0, 18, 54. The blowup is at a scale of 1:40,000 with a skew of 0, 20, 36. ~~Listings of the sheets' parameters are in Appendix A of this report.~~

The final smooth sheet ^{was} ~~will be~~ compiled by Atlantic Marine Center. All field records ~~will be~~ forwarded to A.M.C. for final verification.

F. CONTROL STATIONS

This survey was controlled by horizontal control stations WASHINGTON, 1919 (Signal #008), HOUSE RM 3, 1980 (Signal #026) and BAKE ARGO, 1982 (Signal #041) utilizing the ARGO (Automatic Range Grid Overlay) system. All other horizontal control stations were used as calibration objects.

All horizontal control used in this survey is based on the Puerto Rico Datum. Listed below are the control stations used in this survey:

<u>Signal #</u>	<u>Station Name</u>	<u>Source</u>	<u>Type</u>
*003	PORT FERRO LH 2 USGS 1941	NGS	Visual Calibration ✓
008	WASHINGTON, 1919	NGS	Electronic Shore Station ✓
⁰⁵² *008	MICRO TOWER	**FFA	Visual Calibration ✓

To avoid confusion in the survey control file, between WASHINGTON, 1919 and MICRO TOWER, the station number for MICRO TOWER was changed to 052 during verification.

*007	RADIO TOWER, WIVV	**FFA	Visual Calibration ✓
011	SPRAT HALL MILL, 1919	NGS	Visual Calibration ✓
012	PROSPERITY CHIMNEY HOT, 1919	NGS	Visual Calibration ✓
020	SOUTHWEST CAPE ^{LT} LIGHT, 1980	AMC	Visual Calibration ✓
026	HOUSE RM 3, 1980	AMC	Electronic Shore Station ✓
037	FREDERIKSTED HARBOR ^{LT, 1982} LIGHT, 1975 (field position)	FFA	Visual Calibration ✓
041	BAKE ARGO, 1982 (field position)	NGS/PE	Electronic Shore Station ✓

*NOTE: These objects' geographical position are on a separate signal tape which was used only for whole lane checks (See Appendix F of this report for a listing of this signal tape). ✓

**Fixed and Floating Aids (FFA) List ✓

Station WASHINGTON (008) is a published third order station, Quad I70644, Station I141. ✓

Station HOUSE RM 3 (026) is a third order station established by personnel from Atlantic Marine Center, Operations Division, in 1980, Quad I70654. ✓

Station BAKE ARGO is an unmonumented eccentric to station BAKE 1918. (See supplemental files for information on BAKE ARGO.) ✓

Station SPRAT HALL MILL (011) is a third order station established in 1919, Quad I70644, Station I130. Station PROSPERITY CHIMNEY HOT (012) is a third order station established in 1919, Quad I70644, Station I108. ✓

Station SOUTHWEST CAPE ^{LT} LIGHT (020) is a third order station established in 1980 by personnel from Atlantic Marine Center, Operations Division.

Station FREDERIKSTED HARBOR LIGHT (037) is an unmonumented station. The geographic position was obtained from the Fixed and Floating Aids (FFA) computer printout. A preliminary position was determined by PEIRCE in 1981. A final position (located by third order methods) ~~will be~~ ^{was} determined by the NOAA Ship MT. MITCHELL and ~~will be~~ ^{was} submitted ~~to~~ ^{by} Operations Division, Atlantic Marine Center.

Station PORT FERRO LH 2 USGS 1941 is a published third order station, Quad I80652, Station I056. ✓

Positions of MICRO TOWER ⁰⁵² (~~008~~) and RADIO TOWER WIVV (007) were obtained from the Fixed and Floating Aids (FFA) list. These two stations do not meet Third Order, Class I accuracy standards. (See Section G for use of the objects). ✓

~~No~~ ^H horizontal control stations ~~are~~ ^{Washington, 1919 (008) is} located within the limits of this survey. The two signal tapes used in this survey are included in Appendix F of this report. ✓

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic positioning of the ship for this survey was obtained in the range/range mode using the ARGO system, a medium range, phase comparison system. The electronic equipment and serial numbers used in this survey are as follows: ✓

ARGO EQUIPMENT

Vesno 2830	Range Processing Unit (RPU)	R0879121	45 - 69
		R047854	70, 72
	Antenna Loading Unit (ALU)	A0379123	45 - 72
	Control Display Unit (CLU)	C037744	45 - 72
	Strip Chart Recorder	S097958	45 - 72
	Thermal Printer	212A06969	45 - 72
	Power Supply	V038167	45 - 72
WASHINGTON, 1919 (008)	Range Processing Unit	R047864	45 - 72
	Antenna Loading Unit	A0379127	45 - 72 ✓
	Power Supply	V0379124	45 - 72
HOUSE RM 3, 1980 (026)	Range Processing Unit	R0379117	45 - 72
	Antenna Loading Unit	A047859	45 - 72 ✓
	Power Supply	V0379112	45 - 72
BAKE ARGO, 1982 (041)	Range Processing Unit	R047859	45 - 72
	Antenna Loading Unit	A0379120	45 - 72 ✓
	Power Supply	V0379100	45 - 72

The ARGO system was calibrated using the three point sextant fix with check angle (See Hydrographic Manual Fourth Edition, Section 4.4.3.3. for description of method). The following stations were used as visual calibration objects: SPRAT HALL MILL, 1919 (011), FREDERIKSTED HARBOR LIGHT, 1975 (037), SOUTHWEST CAPE LIGHT, 1980 (020) and PROSPERITY CHIMNEY HOT, 1919 (012). ✓

Calibrations were taken periodically throughout the survey and whole lane checks (via three point sextant fixes) were taken intermittently to validate whole lane count between the opening and closing calibrations. On-line partial rate correctors were based on the first calibration and entered into the program via the nav-cal feature of program RK 112. The average of the opening and closing partial rate corrector was used as the final corrector value. Since calibrations were taken periodically throughout this survey, the same corrector value may apply for a maximum of three Julian Days (See Electronic Calibration Abstracts in the supplemental data files of this report). All corrector values were applied to the off-line corrector tape. ~~An Electronic Corrector Abstract is in Appendix E of this report.~~ ✓

On 8 March 1982 through 11 March 1982 (JD 067 - 070) PEIRCE operated while monitoring three calibrated ARGO rates (Stations WASHINGTON, BAKE ARGO, HOUSE RM 3). As a precaution the three rates were recorded simultaneously at the end of each sounding line. The premise was that should ARGO fail any two of the three rates yielding acceptable geometry could be combined to define the vessel's position. Two such pairs yielding the same result would confirm the validity of the ARGO lane count on all three rates at time of observation. ✓

On 10 March 1982 (JD 069) the ARGO system went down (loss of time slots). The preceding hydrography was validated by the method explained above in paragraph two. Once the system was brought back on line calibrations were taken using shore stations located off the Island of Vieques. Station PORT FERRO LH 2 USCG 1941 (003), MICRO TOWER (008) ⁰⁷² and RADIO TOWER WIVV (007) were used as visual calibration objects to determine whole lanes on the three electronic shore stations (WASHINGTON, BAKE ARGO, HOUSE RM 3). Calibrations taken on 11 March (JD 070) at FREDRIKSTED PIER confirmed rates on all three stations (calibrations off the Island of Vieques were not used in determining daily corrector values). This is an actual pier and not a triangulation station. ✓

Throughout the survey, ARGO was maintained at a smoothing code of 02. Two time slots 01-05-00-00 were incorporated into the system to allow for a one second update. Fixed shore stations' AGC values and antennae range tune values were monitored hourly. The ARGO system was maintained at a frequency of 1646.7 KHZ. Daily AGC values and antennae tune values can be found in the supplemental data files. ✓

H. SHORELINE

There is no shoreline included within the survey limits. See Sec. 2b of the Evaluation Report.

I. CROSSLINES

A total of 191.9 nautical miles of crosslines were run. This constitutes over 20% of the total mainscheme hydrography. Crossline/mainscheme agreements were excellent with 100% of all sounding comparisons within 1% of the depth. ✓

J. JUNCTIONS See Sec. 5^{and 8} of the Evaluation Report.

This survey junctioned with ^{ten} ~~eight~~ surveys. Junctions with H-9273 and H-9352 were not required by the project instructions. However, they are contemporary surveys, 1972 and 1973, and thus the comparisons were made after returning to AMC. They were not available on board during the field work. Processing Division supplied an "excessed", 1:80,000 portion of the 1:20,000 surveys for comparison purposes. The following is the list of surveys and their position relative to this survey. ✓

<u>Survey Registry No.</u>	<u>Scale</u>	<u>Date</u>	<u>Position Relative to H-9993</u>
H-9270	1:40,000	1967	North
H-9273	1:20,000	1972	North
H-9352	1:20,000	1973	North
H-9595	1:100,000	1976	West
H-9935	1:10,000	1981-82	SW ^E
H-9937	1:10,000	1981	Southeast
H-9938	1:10,000	1981-82	SW ^E
H-9992	1:80,000	1982	South
H-9997	1:10,000	1982	Southeast
H-10004	1:80,000	1982	East

H-9270 (DA-40-1-67)

Junction comparisons with verified survey H-9270 were very good with 95% of the soundings agreeing within ± 5 fathoms for depths ranging from 1695 - 2300 fathoms. The largest difference was observed at $17^{\circ}58'42''N, 065^{\circ}15'48''W$. Prior survey H-9270 reveals a depth of 1806 fathoms as compared to this survey depth of 1732 fathoms.

H-9273 (WH-20-1-72)

General agreement of soundings, in waters 20-²⁰³35 fathoms deep, is good. ^{A few} Deeper soundings comparisons, on the steep continental slope, showed poorer agreements. Several soundings which had a lateral displacement of 2 mm or less were compared. The discrepancies varied from 20 to 57 fathoms but at the 1:80,000 scale of this survey 2 mm equals 160 m. This horizontal distance, at right angles to the steep continental slope, could easily result in discrepancies of this magnitude. ~~Many adjacent soundings on this slope differ by more than 57 fathoms indicating these are reasonable agreements.~~

H-9352 (WH-20-1-73)

General agreement of soundings is excellent with most comparisons within three fathoms. A 133 fm sounding (H-9352) at $18^{\circ}11'00''N, 64^{\circ}46'50''W$ is very close to a 25 fm sounding on H-9993. A review of the fathogram revealed that the 25 fm sounding is on the very edge of the steep continental slope where a small lateral displacement can result in a large change of depth.

H-9595 (MI-100-1-76)

Junction comparisons with verified Survey H-9595 are very good. Survey H-9595 junctions with this survey along the western limits of the survey. The contours are consistent from one survey to the next indicating no breaks or irregularities in the

bottom contour. General agreement was + 3 fathoms for depths less than 150 fathoms. All sounding agreements were within ± 10 fathoms for depths ranging from 150 - 1093 fathoms. ✓

H-9937 (PE-10-4-81)

Junction comparisons with ~~unverified~~ Survey H-9937 are poor. Survey H-9937 junctions with this survey along a steep continental slope. The junctioning area runs along the 100-fathom curve from Hams Bluff to the southern limit of the survey. The discrepancies encountered during this junctioning are due to the steepness of the continental slope and to the inherent differences of the sounding equipment used in each survey (UGR vs Ross). ✓
See Section D of this report for recommendations and guidelines.

H-9937 archived at headquarters when H-9937 verified at AMTC. No formal junction made. See D.R. of H-9937. JKM 3/11/86

H-9992 (PE 80-1-82)

This survey junctions with ~~unverified~~ Survey H-9992 to the south. Junction comparisons are excellent with 100% of the sounding comparisons within 1% of the depth. The depth curves are continuous throughout the junction zone. ✓

H-9997 (PE 10-1-81)

Comparisons between junction zones of ~~unverified~~ Survey H-9997 and this survey are poor. The poor junctioning is probably due to the innate differences between the two sounding systems (wide beam UGR vs narrow beam Ross) in combination with the fact that the junction occurs along a steep continental slope. Recommendations are made in Section D of this report. ✓

H-10004 (MI-80-1-82)

Comparisons with contemporary survey H-10004 were excellent with 100% of the soundings within 1% of the depth. This survey junctioned with ~~unverified~~ survey H-10004 to the east. ✓
Depths contours are continuous through the junction zone.

K. COMPARISONS WITH PRIOR SURVEYS See Sec. 6 of the Evaluation Report, and Sec. 4e.

The St. Croix Presurvey Review was issued 14 November 1981 and updated 12 January 1982. There were no presurvey review items located within the limits of this survey. ✓

Comparisons were made with prior Survey H-4653A, surveyed in 1924-25 at a scale of 1:20,000. Comparisons with this survey were good, with sounding comparisons within + 10 fathoms for depths ^{over 600} ~~over 200~~ fathoms. Due to the spacing of the sounding line (800 meters) in this particular area of the survey, there were few meaningful depth comparisons. Comparisons of depth curves from both surveys indicate consistent trends with no noticeable variations. Prior survey H-4653A covered the following area of this survey: ✓

Northern Limit	17°49'00"N
Southern Limit	17°41' ³⁰ 00"N
Eastern Limit	64°45'00"W
Western Limit	64°57'12" 65°03'00"W

Even though the prior soundings fall between present survey sounding lines, they show an excellent fit with the slopes and depth curves indicated by present survey soundings. The same is true for H-2805.

It is recommended that this survey supersede the common area of prior survey H-4653A for charting purposes. ✓

Comparisons were made with prior survey H-2805, surveyed in 1906, at a scale of 1:100,000. Comparisons with this prior survey cover the area directly south of the Island of Vieques. Comparison with this prior survey was fair. ^{agood} There were few meaningful ~~depths comparisons, however~~ general agreements were ± 10 fathoms for depths less than 200 fathoms. For depths ranging from 200 - 1940 fathoms, agreements were generally within ± 15 fathoms. The trend of the 100-fathom curves compares favorably to this survey's 100-fathom curve. It is recommended that this survey supersede prior survey H-2805 for chart purposes. Concur ✓

L. COMPARISONS WITH THE CHART See Sec. 4d and 7 of the Evaluation Report.

Comparisons were made with Chart 25640 at a scale of 1:326,856, 29th Edition, August 22, 1981. Comparisons with the chart reveal few meaningful depth comparisons due to the line spacing of this survey. Inshore soundings and contour agreements are good; however, discrepancies were noted in areas where depth curves are spaced close together. The 100-fathom depth curve agrees very well with the charted 100-fathom curve. The trend of the survey depth curves are similar to the charted depth curves. ~~The only significant feature observed during this survey is a depth of 1005 located approximately 18° 07' 42" N, 064° 52' 24" W. Surrounding soundings range from 903 - 969 fathoms.~~ Not a significant feature.

A charted notation "ED" (existence doubted) located ^{in 18° 07' 15" N, 064° 48' 48.5" W} should be deleted from the chart. This item is a reported (1941) 20 fathom shoal area. A development in that area revealed depths ranging from 1081³ - 1203 fathoms. Concur

Comparisons were made with Chart 25641 at a scale of 1:100,000, 18th Edition, November 28, 1981. Comparison with the chart ^{shows} was good with the majority of sounding comparisons within ± 5 fathoms for depths less than 500 fathoms. General agreement for depths ranging from 500 - 2390 fathoms is ± 10 fathoms. The corresponding depth curves are similar in shape and displacement. ✓

M. ADEQUACY OF THE SURVEY

This survey is considered complete and adequate to supersede all charted information and the common portions of the prior survey cited in Section K of this report. ^{For the purpose of bathymetric mapping, additional development and reduced line spacing would have been desirable for ridges and troughs.} ✓

N. AIDS TO NAVIGATION

There are no aids to navigation within the limits of this survey. ✓

O. STATISTICS

Linear Nautical Miles of Hydrography	900.1
Square Nautical Miles of Hydrography	1435 ✓
Total Number of Positions	1019

Nansen Cast (MT. MITCHELL)	2
Vertical Cast	0 ✓
Bottom Samples	0
Tide Stations	3

P. MISCELLANEOUS See Sec. 4a and 6 of the Evaluation Report.

No significant features were apparent during this survey. No bottom samples were taken during this survey due to the inadequacy of bottom sampling equipment on PEIRCE to obtain samples at greater depths. No Loran-C Chart Verification Data was provided to MOA23 as required by section B.4 of the Project Instructions. ✓

Q. RECOMMENDATIONS

It is recommended that data compiled for this survey supersede the common portions of all existing charts and prior surveys. Specific recommendation regarding charted features can be found in Section K and Section L of this report. ✓

R. AUTOMATED DATA PROCESSING

The following programs were used in acquiring and processing data for this survey:

<u>PROGRAM</u>	<u>PROGRAM NAME</u>	<u>VERSION</u>
RK 112	Hyperbolic R/R Hydroplot	08/04/81
RK 201	Grid, Signal, Lattice Plot	04/18/75
RK 211	Range/Range Non-Real Time Plot	02/02/81
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	05/04/76
RK 360	Electronic Corrector Abstract	02/02/76 ✓
RK 500	Predicted Tide Generator	11/10/72
RK 530	Layer Corrections for Velocity	05/10/76
RK 561	H/R Geodetic Calibration	02/19/75
RK 602	Elinore-Extended Line Oriented Editor	05/20/75
RK 612	Line Printer List	03/22/78

S. REFERENCE TO REPORTS

The ship's personnel installed three tide gages on St. Croix Island. See field tide note in Appendix B of this report. This report, leveling records, and monthly tide records have been submitted to Tides and Water Levels Branch, Rockville, Maryland. Corrections to echo soundings have been submitted to the Atlantic Marine Center. ✓

Respectfully submitted,

Roslyn B. Harris

Roslyn B. Harris, ENS, NOAA

VELOCITY TABLE NO. 1

PE 80-2-82

H-9993

000025	0	0000	0001	001	283000	009992
000043	0	0001				
000060	0	0002				
000080	0	0003				
000100	0	0004				
000115	0	0005				
000135	0	0006				
000154	0	0007				
000175	0	0008				
000190	0	0009				
000210	0	0010				
000255	0	0012				
000290	0	0014				
000330	0	0016				
000365	0	0018				
000402	0	0020				
000440	0	0022				
000470	0	0024				
000510	0	0026				
000550	0	0028				
000590	0	0030				
000624	0	0032				
000660	0	0034				
000700	0	0036				
000735	0	0038				
000780	0	0040				
000820	0	0042				
000860	0	0044				
000905	0	0046				
000950	0	0048				
000990	0	0050				
001030	0	0052				
001070	0	0054				
001115	0	0056				
001160	0	0058				
001220	0	0060				
001610	0	0070				
001900	0	0080				
002180	0	0090				
002750	0	0100				
003000	0	0110				
003300	0	0120				
003870	0	0130				
004200	0	0140				
004700	0	0150				

VELOCITY TABLE NO. 1 (CONT'D)

PE 80-2-82

H-9993

005200	0	0160
005700	0	0170
006200	0	0180
006800	0	0190
007300	0	0200
007800	0	0210
008300	0	0220
008800	0	0230
009300	0	0240
009800	0	0250
010100	0	0260
010500	0	0270
011000	0	0280
011300	0	0290
011800	0	0300
012100	0	0310
012400	0	0320
012700	0	0330
013000	0	0340
013400	0	0350
013700	0	0360
014000	0	0370
014300	0	0380
014600	0	0390
014900	0	0400
015100	0	0410
015400	0	0420
015650	0	0430
015900	0	0440
016200	0	0450
016500	0	0460
016700	0	0470
016950	0	0480
017200	0	0490
017400	0	0500
017700	0	0510
017900	0	0520
018100	0	0530
018350	0	0540
018600	0	0550
018800	0	0560
019100	0	0570
019300	0	0580
019500	0	0590
019700	0	0600
020000	0	0610
020150	0	0620

VELOCITY TABLE NO. 1 (CONT'D)

PE 80-2-82

H-9993

020400	0	0630
020600	0	0640
020800	0	0650
021000	0	0660
021200	0	0670
021400	0	0680
021550	0	0690
021700	0	0700
021900	0	0710
022100	0	0720
022250	0	0730
022400	0	0740
022600	0	0750
022750	0	0760
022900	0	0770
023100	0	0780
023250	0	0790
023450	0	0800
023600	0	0810
023750	0	0820
023950	0	0830
024100	0	0840
024300	0	0850
024450	0	0860
024600	0	0870
024800	0	0880
024950	0	0890
025100	0	0900
025300	0	0910
025450	0	0920
025600	0	0930
025750	0	0940
026000	0	0950
026150	0	0960
026300	0	0970
026500	0	0980
026650	0	0990
026800	0	1000
027000	0	1010
027150	0	1020
027300	0	1030
027500	0	1040
027700	0	1050
027850	0	1060
028000	0	1070
999999	0	1080

APPENDIX B

FIELD TIDE NOTE

FIELD TIDE NOTE

Field tide reduction of soundings was based on predicted tides from Galveston, Texas, corrected to Charlotte Amalie, St. Thomas, U.S. Virgin Islands, and were interpolated by PDP 8/E computer utilizing AM 500. All times of both predicted and recorded tides are Greenwich Mean Time.

Four tide stations were in operation during hydrographic operations performed by PEIRCE. The location and period of operation of all stations are listed below:

<u>Station</u>	<u>Location</u>	<u>Period of Operation</u>
Frederiksted, St. Croix (975-1584)	17 42.8 N 64 53.0 W	3 Februaury 1982 - 26 March 1982
Limetree Bay, St. Croix (975-1401)	17 42.0 N 64 45.2 W	2 February 1982 - end April 1982
Christiansted, St. Croix (975-1364)	17 45.0 N 64 42.3 W	1 February 1982, end April 1982
Charlotte Amalie, St. Thomas (975-1639)	18 20.1 N 64 55.1W	Primary Tide Station

Stations Frederiksted, Christiansted, and Limetree Bay were installed and maintained by personnel from PEIRCE. Station Charlotte Amalie was operational and under the jurisdiction of Atlantic Marine Center, Tides and Water Levels Branch throughout the survey.

Frederiksted, St. Croix - Fisher-Porter 1550, S/N 2R60301A4338M13 gage was installed on 3 February 1982 and began operations on 4 February 1982. The staff was installed on 1 February 1982 and leveled on 4 February 1982.

Upon inspection of the gage and staff on 26 February 1982, the tide staff was discovered missing. It was concluded that the staff was washed away during a storm which generated heavy winds and sea conditions on 24 February 1982. A new staff was installed and leveled on 27 February 1982 and 5 March 1982 respectively. The gage began operation on 2 March 1982 and operated satisfactorily through the remainder of the project.

On 26 March 1982, the tide station was removed due to completion of hydrographic operations by PEIRCE. The final levels were run on 22 March 1982. All tidal records and data were forwarded to Tides and Water Levels Branch, Rockville, Maryland.

Limetree Bay (Hess Oil Dock #8) - Fisher-Porter 1550, S/N 7608A1079M16 gage was installed on 2 February 1982 and began operations that date. The staff was installed on 2 February 1982 and leveled on 3 February 1982.

Upon inspection of the gage on 5 March 1982 it was discovered that the battery voltage had dropped below the operational level. The battery was replaced on 5 March 1982 and gage resumed operating. Total down time of gage was 2.45 days.

The station will be terminated at completion of hydrographic operations by MT. MITCHELL at the end of April 1982. The station will also be releveled at that time and all information and data will be submitted to Tides and Water Levels Branch, Rockville, Maryland.

Christiansted, St. Croix - Fisher-Porter 1550, S/N 7408A1330M1 gage was installed and began operating on 1 February 1982. The staff was installed on 1 February 1982 and leveled on 2 February 1982. The gage operated satisfactorily throughout hydrography performed by PEIRCE.

The station is still in operation and will be terminated at the end of hydrographic operations performed by MT. MITCHELL. The staff will be releveled at that time and all information and records will be submitted to Rockville, Maryland.

Charlotte Amalie, St. Thomas - All levels on this station were performed by Atlantic Marine Center, Tides and Water Levels Branch as directed by Project Instructions. This station is under the jurisdiction of Tides and Water levels, however, frequent checks were made with the tide observer concerning performance of the station. All data will be forwarded to Rockville, Maryland.

Zoning: There was no pre zoning in this survey.

Galveston, Texas - Reference station.

DATE: November 15, 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): 775-1584 Fredericksted, V.I.

Period: February 8-March 26, 1982

HYDROGRAPHIC SHEET: H-9992, H-9993, H-9998

OPR: I-149

Locality: Offshore St. Croix, Virgin Islands

Plane of reference (mean lower low water): 4.93 ft.

Height of Mean High Water above Plane of Reference is 0.77 ft.

REMARKS: Recommended Zoning:

Zone direct.

*This supersedes previous Tide Notes.

Since this tide note covers three basic surveys, only a copy is included with this Descriptive Report.

Donald D. Carr
for Chief, Tidal Datums and Information Branch

APPENDIX C

GEOGRAPHIC NAMES LIST

GEOGRAPHIC NAMES

H-9993

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
MAR CARIBE												1
ISLA DE VIEQUES												2
ST. CROIX												3
SOUTHWEST CAPE												4
HAMS BAY												5
HAMS BLUFF												6
BARON BLUFF												7
FREDERIKSTED CANYON												8
U.S. VIRGIN ISLANDS (TITLE)												9
FREDERIKSTED												10
ST. CROIX RIDGE												11
WHITING SEAMOUNT												12
VIRGIN ISLANDS TROUGH												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

Approved:

Charles G. Harrington
Chief Geographer - N/C42x5

5 MAY 1983

APPENDIX F
LIST OF STATIONS

SIGNAL TAPE LISTING

PE 80-2-82

H-9993

001	7	17	45	10414	064	50	18319	139	0000	000000	
002	7	17	45	30654	064	51	44022	139	0000	000000	
003	7	17	46	16088	064	52	16709	139	0000	000000	PORT FERRO LH 2 USGS 1941
004	0	17	46	16137	064	52	16714	250	0120	000000	
005	7	17	46	17977	064	52	40699	250	0002	000000	
006	7	17	46	10399	064	52	53606	250	0003	000000	
007	7	17	45	46034	064	53	20838	250	0001	000000	
008	7	17	45	02528	064	52	38157	139	0248	164670	WASHINGTON, 1919
009	7	17	44	58704	064	53	39801	250	0001	000000	
010	7	17	44	50878	064	53	40813	250	0001	000000	
011	7	17	44	30545	064	53	23843	139	0000	000000	SPRAT HALL MILL, 1919
012	7	17	43	40693	064	53	02029	139	0000	000000	PROSPERITY CHIMNEY HOT, 1919
013	7	17	43	16256	064	52	42609	139	0000	000000	
014	4	17	43	12163	064	53	04841	250	0001	000000	
015	4	17	42	58025	064	53	05088	250	0001	000000	
016	4	17	42	56230	064	53	18163	250	0002	000000	
017	7	17	42	53386	064	52	49025	139	0000	000000	
018	7	17	42	45551	064	53	01835	250	0002	000000	
019	0	17	40	46879	064	54	01044	250	0011	000000	
020	7	17	40	46824	064	54	01035	139	0000	000000	SOUTHWEST CAPE LT, 1980
021	2	17	41	23988	064	51	19093	250	0000	000000	
022	2	17	45	45409	064	53	21052	252	0000	000000	
023	5	17	42	56132	064	53	20717	252	0000	000000	
024	7	17	42	55668	064	53	20653	252	0000	000000	
025	7	18	19	04387	064	47	21668	250	0086	164670	
026	7	17	59	24458	065	53	07765	250	0011	164670	HOUSE RM 3, 1980
027	7	17	45	55932	064	49	37681	139	0000	000000	
028	7	17	46	10990	064	49	03923	139	0000	000000	
029	7	17	46	43409	064	48	23855	139	0049	000000	
030	7	17	46	21548	064	48	45797	139	0000	000000	
031	7	17	46	43822	064	48	13582	139	0000	000000	
032	7	17	47	02614	064	44	55987	139	0000	000000	
033	4	17	45	28995	064	34	02450	250	0067	000000	
034	7	17	46	48515	064	45	15121	250	0000	000000	
035	7	17	46	44494	064	45	06720	250	0000	000000	
036	7	17	46	51285	064	45	30017	250	0000	000000	
037	7	17	42	58500	064	53	03250	139	0000	000000	FREDERIKSTED HARBOR LT, 1982
038	7	17	42	09470	064	52	54680	139	0000	000000	
039	7	17	42	23600	064	53	01600	139	0000	000000	
040	7	17	43	13600	064	51	28200	139	0000	000000	
041	7	18	19	04495	064	47	21847	250	0000	164670	BAKE ARGO, 1982
042	7	17	41	25024	064	45	57436	139	0000	000000	
043	7	17	43	13463	064	51	28570	139	0265	000000	
044	7	17	40	54267	064	50	22096	139	0000	000000	
045	7	17	44	56707	064	35	39299	250	0002	164670	
046	7	17	42	05437	064	51	41506	250	0000	000000	
047	7	17	41	44350	064	52	03370	250	0000	000000	
048	7	17	40	54556	064	50	21967	250	0002	000000	
049	7	17	46	44406	064	45	08271	250	0001	000000	
050	7	17	46	35076	064	45	36666	250	0001	000000	
051	7	17	46	35178	064	45	40786	250	0001	000000	

SIGNAL TAPE LISTING

PE 80-2-82

H-9993

001	7	18 08	14470	065 16	06330	200 0040	000000	000000	PUNTA ESTE LT
002	7	18 06	37890	065 22	34490	200 0056	000000	000000	PUNTA CONESA LT
003	7	18 05	53000	065 25	24000	¹³⁹ 200	0068	000000	PORT FERRO LH USCG 1941
004	7	18 05	42970	065 28	18700	200 0018	000000	000000	ESPERANZA WHARF LT
005	7	18 06	45000	065 23	58000	087 0000	000000	000000	TANKS
006	7	18 07	48170	065 24	52850	086 0000	000000	000000	
007	7	18 06	05430	065 28	15310	086	0000	000000	RADIO TOWER WIVV
⁰⁵² 008	7	18 05	42560	065 33	05270	086	0000	000000	MICRO TOWER
⁰⁰⁸ 009	7	17 45	02528	064 52	38157	²⁵⁰ 139	0248	164670	WASHINGTON, 1919
⁰²⁶ 010	7	17 59	24458	065 53	07765	139	0011	164670	HOUSE RM 3, 1980
⁰⁴¹ 011	7	18 19	04495	064 47	21847	250	0086	164670	BAKE ARGO, 1982

NOTE: THIS SIGNAL TAPE WAS ONLY USED IN CALIBRATIONS OFF THE ISLAND OF VIEQUES. CALIBRATIONS WERE TAKEN TO CHECK WHOLE LANES ON THE ARGO SYSTEM AFTER EXPERIENCING PROBLEMS WITH THE SYSTEM.

APPENDIX I

LANDMARKS FOR CHARTS

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"/> GEODETIC 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.)

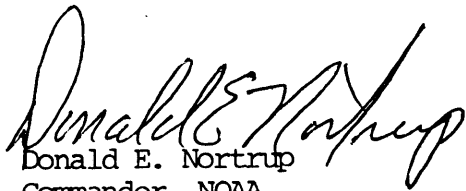
OFFICE	FIELD (Cont'd)
<p>I. OFFICE IDENTIFIED AND LOCATED OBJECTS Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object. EXAMPLE: 75E(C)6042 8-12-75</p>	<p>B. Photogrammetric field positions** require entry of method of location or verification, 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</p>
<p>FIELD</p> <p>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</p> <p>A. Field positions* require entry of method of location and date of field work. EXAMPLE: F-2-6-L 8-12-75</p> <p>*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.</p>	<p>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</p> <p>III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH Enter 'V-Vis.' and date. EXAMPLE: V-Vis. 8-12-75</p> <p>**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.</p>

APPENDIX J

APPROVAL SHEET

APPROVAL SHEET
H-9993

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent checks of progress and adequacy. This report and final field sheet have been closely reviewed and found to represent a complete survey adequate to supersede the common coverage portions of all prior surveys cited in Section K of this Descriptive Report for charting purposes.



Donald E. Nortrup
Commander, NOAA
Commanding Officer
NOAA Ship PEIRCE S-328

HYDROGRAPHIC SURVEY STATISTICS

H-9993

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS. ARC, EXCESS		2
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		9
DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES					
ENVELOPES					
VOLUMES					
CAHIERS				1 raw Plo	
BOXES				2-smooth Plo, etc.	

SHORELINE DATA

SHORELINE MAPS(List):

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List): 25640 and 25641

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			1053
POSITIONS REVISED	0	0	0
SOUNDINGS REVISED	5	14	19
CONTROL STATIONS REVISED	0	0	0
	TIME - HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	8	9	17
VERIFICATION OF CONTROL	3	0	3
VERIFICATION OF POSITIONS	13	0	13
VERIFICATION OF SOUNDINGS	117	0	117
VERIFICATION OF JUNCTIONS	10	30	40
APPLICATION OF PHOTOBATHYMETRY	0	0	0
SHORELINE APPLICATION/VERIFICATION	0	0	0
COMPILATION OF SMOOTH SHEET	149	65	214
COMPARISON WITH PRIOR SURVEYS AND CHARTS	0	33	33
EVALUATION OF SIDESCAN SONAR RECORDS	0	0	0
EVALUATION OF WIRE DRAGS AND SWEEPS	0	0	0
EVALUATION REPORT	0	17	17
OTHER DIGITIZING AND MISC. E AND A	17	8	25
TOTALS	317	162	479

Pre-processing Examination by
L.G. CRAM AND R.H. WHITFIELDBeginning Date
5/25/82Ending Date
5/27/82Verification of Field Data by
R.H. WHITFIELD AND M.L. HOLLOWAYTime(Hours)
281Ending Date
4/83Verification Check by
G.F. TREFETHEN AND C.D. MEADORTime(Hours)
32Ending Date
4/83Evaluation and Analysis by
C.D. MEADORTime(Hours)
80Ending Date
7/25/83Inspection by
CDR. K.Wm. KIENINGER AND R.D. SANOCKITime(Hours)
6Ending Date
7/28/83

ATLANTIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO.: H-9993

FIELD NO.: PE-80-2-82

U.S. Virgin Islands, Mar Caribe, Isla de Vieques to St. Croix

SURVEYED: February 14 through March 13, 1982

SCALE: 1:80,000

PROJECT NO.: OPR-1149-MI/PE-82

SOUNDINGS: Raytheon Universal
Graphics Recorder (UGR)

CONTROL: ARGO (Range/Range)

Chief of Party D.E. Nortrup

Surveyed by T.W. Ruzala
..... G.E. Leigh
..... J.W. Bailey
..... P. Glickman
..... R.B. Harris
..... S.I. Andreeva

Automated Plot by Xynetics 1201 Plotter (AMC)

Verified and Inked by M.W. Holloway

1. INTRODUCTION

- a. No unusual problems were encountered during verification.
- b. Notes in the Descriptive Report were made in red during verification.

2. CONTROL AND SHORELINE

- a. The control is adequately described in sections F and G of the Descriptive Report.
- b. Shoreline in brown was added to the present survey from Charts 25641, 18th Edition, November 28, 1981 and 25650, 24th Edition, May 3, 1980 for orientation purposes only.

3. HYDROGRAPHY

- a. Crosslines on this survey agree with the main scheme sounding lines within the limits prescribed by the Hydrographic Manual.
- b. Because of the steep slopes at the island shelf breaks, only the shoalest and 100 fathom depth curves were shown in these areas. From 100 fathoms to the deepest depths, all standard depth curves could be completely drawn.
- c. This survey adequately delineates the basic bottom and the least depths.

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. Adequate equipment was not carried on board the PEIRCE to take the bottom samples required by section 8.1 of the Project Instructions and sections 1.6.3 and 4.7.1 of the Hydrographic Manual.

b. Echograms were not always accurately scanned where scale changes had been made.

c. Present survey UGR soundings which conflicted with ROSS soundings on the larger scale inshore junctional surveys were not deleted from the digital hydrographic records by the field. The following conflicting soundings from the present survey were given cartographic code 78 during verification:

Position No.
1, 1⁺⁶, 2-3, 3⁺⁴, 3⁺⁸-4⁺⁸, 5⁺¹-6, 8-8⁺⁵, 9-10, 10⁺²-10⁺⁵,
11⁺⁵-15, 581, 1051-1051⁺³, and 1052⁺²-1052⁺⁴.

d. No comparison was made with Chart 25650, 24th Edition, May 3, 1980, which covers a portion of the northwest part of the present survey.

e. No comparison was made with prior survey H-2871 (1907) 1:20,000, which covers a portion of the northwest part of the present survey.

f. No Strip Chart Records were provided with the original survey data for J.D.'s 45 and 46.

5. JUNCTIONS

H-9270 (1967) to the north
H-9273 (1972) to the northeast
H-9352 (1973) to the northeast
H-9595 (1976) to the west
H-9935 (1981-82) to the southeast
H-9937 (1981) to the southeast
H-9938 (1981-82) to the southwest
H-9992 (1982) to the south
H-9997 (1982) to the southeast
H-10004 (1982) to the east

Since the smooth sheet for H-9270 is archived at Headquarters, a standard junction was not made. Except as noted below, the comparison between a copy of H-9270 and the present survey smooth sheet shows adequate agreement between soundings in the junctional area and the standard junctional curves can be completed.

The following areas of conflict exist between H-9270 and the present survey:

a. If the 1150 and 1211 fathom soundings on H-9270 in Latitude 18°05'45", Longitude 65°01'33", were reversed, there would be a better fit with the soundings between positions 627-628 on the present survey.

b. In the vicinity of Latitude $17^{\circ}58'40''$, Longitude $65^{\circ}07'40''$, a section of a sounding line on H-9720, which is 20-30 fathoms deeper than present survey depths, appears to be out of position. If these soundings were shifted to the southeast, there would be an excellent fit with the soundings between positions 103-104 on the present survey.

c. Soundings between positions 137-138 on the present survey are about 70 fathoms shoaler than those on H-9270 in the vicinity of Latitude $17^{\circ}59'00''$, Longitude $65^{\circ}15'00''$. There is no readily apparent reason for this difference.

d. A section of sounding line on H-9270 in the vicinity of Latitude $18^{\circ}15'00''$, Longitude $65^{\circ}17'45''$, is about 140 fathoms deeper than the depths indicated between positions 1015-1016 on the present survey. If contoured, these soundings would form a canyon which the echogram for the present survey indicates does not exist. There is no readily apparent reason for this discrepancy.

The smooth sheets for H-9273 and H-9352 are archived at Headquarters and standard junctions were not made. The comparison between copies of H-9273 and H-9353 and the present survey smooth sheet shows excellent agreement between soundings in the junctional areas and the standard junctional curves can be completed.

The smooth sheet for H-9595 is archived at Headquarters and a standard junction was not made. The comparison between a copy of H-9595 and the present survey smooth sheet shows good agreement between soundings in the junctional area and the standard junctional curves can be completed.

After deleting those UGR soundings on the present survey which conflicted with the junctional ROSS soundings on H-9935, H-9937, H-9938 and H-9997, adequate junctions were made with these surveys and the junctional curves are complete and need no further consideration. A 200 fm sdg. on H-9993, located in lat. $17^{\circ}46'27''$, long $64^{\circ}51'35''$, was revised to a 201 fm sdg. subsequent to survey approval, in order to effect an adequate junction with H-9997

An excellent junction was made with H-9992 and the junctional curves are complete and need no further consideration. SEB 7/9/86

An excellent junction was made with H-10004 and the junctional curves are complete and need no further consideration.

There are no contemporary junctional surveys to the northwest of the present survey.

6. COMPARISON WITH PRIOR SURVEYS

H-2805	1:100,000	1906
H-2871	1:20,000	1907
H-4653a	1:20,000	1924-25

In spite of the distance to the visual shore signals, .4 to 11.3 nautical miles, and the use of a deep-sea wire sounding machine, the soundings on prior surveys H-2805 and H-2871 agree with present survey depths within ± 10 fathoms to the 1000 fathom depth curve. Beyond the 1000 fathom depth curve, there is agreement of ± 15 fathoms between prior and present soundings.

On prior survey H-4653a, soundings inside the 600 fathom depth curve agree within ± 10 fathoms with present survey depths. In water from 600 fathoms to beyond 1500 fathoms, the prior soundings range from scattered excellent agreement to 40-300 fathoms deeper than present survey depths. These extreme differences may represent either positional problems in maintaining sounding stations due to wind and current patterns along the north and west coasts of St. Croix or billowing of the sounding wire away from the vertical as it was lowered to the bottom which would cause the measured depths to be deeper than was actually the case.

Bottom characteristics were carried forward from all three prior surveys to supplement present survey data. With these additions, the present survey is adequate to supersede these prior surveys in the common area.

7. COMPARISON WITH CHARTS

No. 25640 (29th Edition, August 22, 1981)

No. 25641 (18th Edition, November 28, 1981)

No. 25650 (24th Edition, May 3, 1980)

a. Hydrography

A small part of the charted hydrography, mainly those soundings within the 1000 fathom depth curve, originates with the previously discussed prior surveys and is adequately discussed under those comparisons. The remaining charted hydrography probably originates with British Admiralty and Defense Mapping Agency Charts.

Beyond the 1000 fathom depth curve, charted soundings range from scattered instances of good agreement to extremes of 417 fathoms shoaler to 500 fathoms deeper than present survey depths. These differences can be attributed to charting sources of varying ages and accuracies.

Attention is directed to the following:

A charted 20 fathom sounding (ED) was investigated at reduced line spacing on the present survey and the hydrographer's recommendation for charting is stated in section L of the Descriptive 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 limits of the present survey.


8. COMPLIANCE WITH INSTRUCTIONS

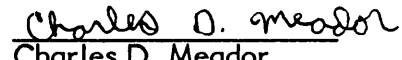
Except as listed elsewhere in this report, this survey adequately complies with the Project Instructions.

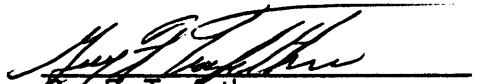
Change No. 5 of the Project Instructions, dated May 11, 1982, which required junctions with H-9273 (1972) and H-9352 (1973), was received after the survey was completed by the field unit. However, during the field work, the hydrographer had extended the present survey limits far enough to make a junction with these surveys.

9. ADDITIONAL FIELD WORK

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


Maurice W. Holloway
Cartographic Technician
Verification of Data

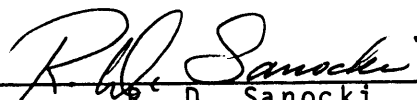

Charles D. Meador
Cartographer
Evaluation and Analysis


Guy F. Trefethen
Senior Cartographic Technician
Verification Check

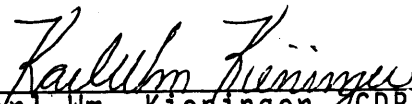
INSPECTION REPORT
H-9993

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

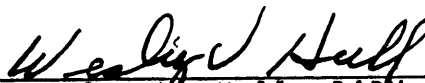


R. D. Sanocki
Chief, Verification Section
Hydrographic Surveys Branch



Karl Wm. Kieninger, CDR, NOAA
Chief, Hydrographic Surveys Branch

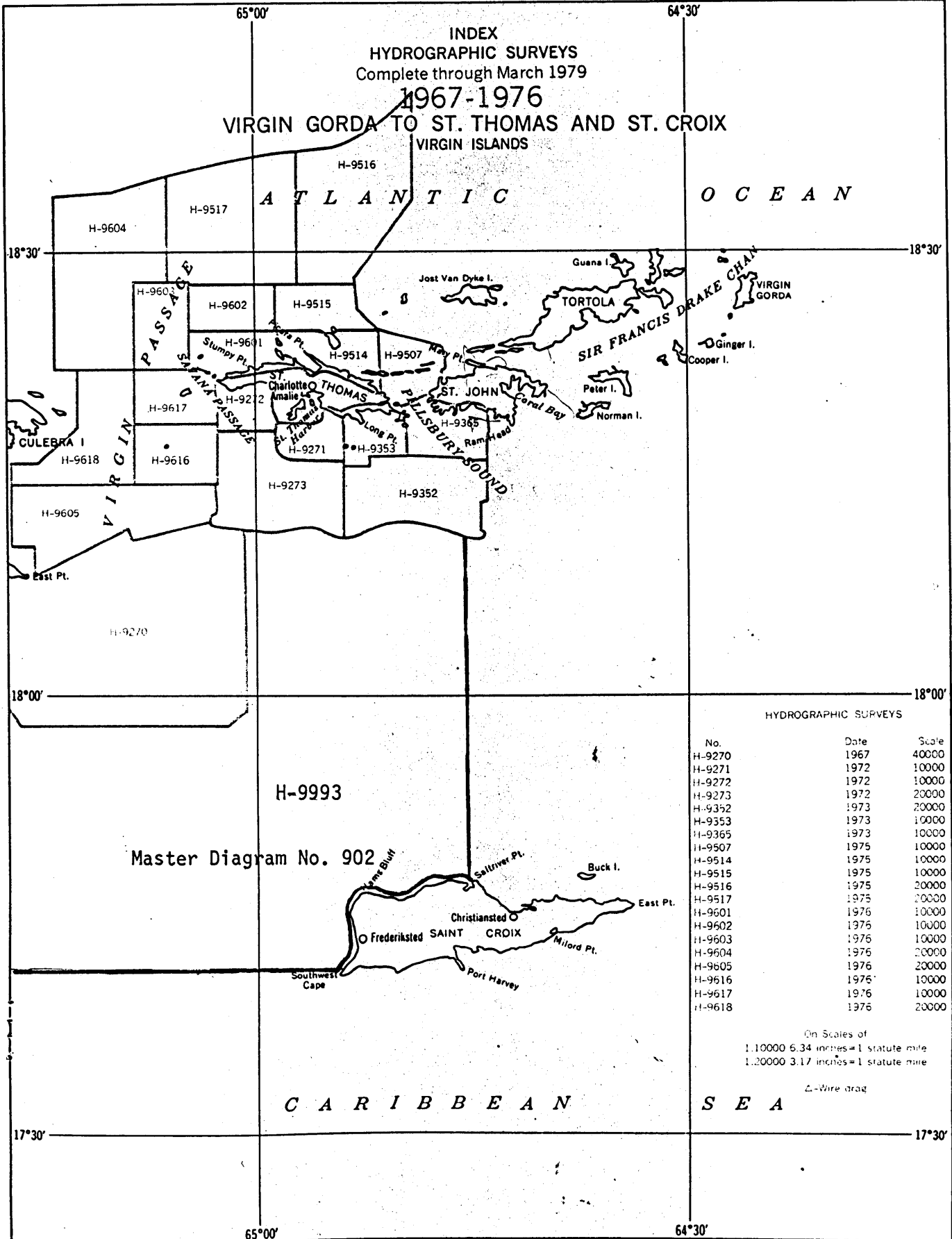
Approved August 2, 1983



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

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

Hydrographic Index No. 130C



HYDROGRAPHIC SURVEYS

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

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

△--Wire drag

