

9608

Diag. Cht. No. 904-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT (HYDROGRAPHIC)

Type of Survey HYDROGRAPHIC
Field No. MI-10-4-76
Office No. H-9608

LOCALITY

State PUERTO RICO
General Locality SOUTHEAST COAST
Locality PUNTA TUNA TO PUNTA YEGUAS

1976

CHIEF OF PARTY
W.V. HULL

LIBRARY & ARCHIVES

DATE 5-19-77

9608

Area 3

Chts

920

- 920

- 929

HYDROGRAPHIC TITLE SHEET

H-9608

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-10-4-76

State Puerto Rico

General locality Southeast Coast

Locality Punta Tuna to Punta Yeguas

Scale 1:10,000 Date of survey 29, 31 Mar; 1, 6, 7, 13, 16 Apr 76

Instructions dated October 1, 1975 Project No. OPR-423-MI-76

Vessel NOAA Ship Mt. Mitchell; Vessel Numbers 2226, 2227

Chief of party Wesley V. Hull, Commanding, NOAA

Surveyed by Lt. A.J. Potok, Lt(jg) S.R. Iwamoto, Ens. D.L. Terry, Ens. R. Mann, Ens. N. Konchuba, Ens. W.T. Dewhurst, Ens. D.R. Rice, Ens. J.F. Bailey Raytheon

Soundings taken by echo sounder, ~~hand track plot~~ Ross Fineline Echo Sounder, Universal Graphic Recorder

Graphic record scaled by AJP, SRI, DLT, RM, NK, WTD, DRR, JFB

Graphic record checked by PWS, RW, FL PROCESSING DIVISION - AMC

Protracted by - Automated plot by CALCOMP 618, AMC

Soundings plotted by CALCOMP-618 - EDP-AMC

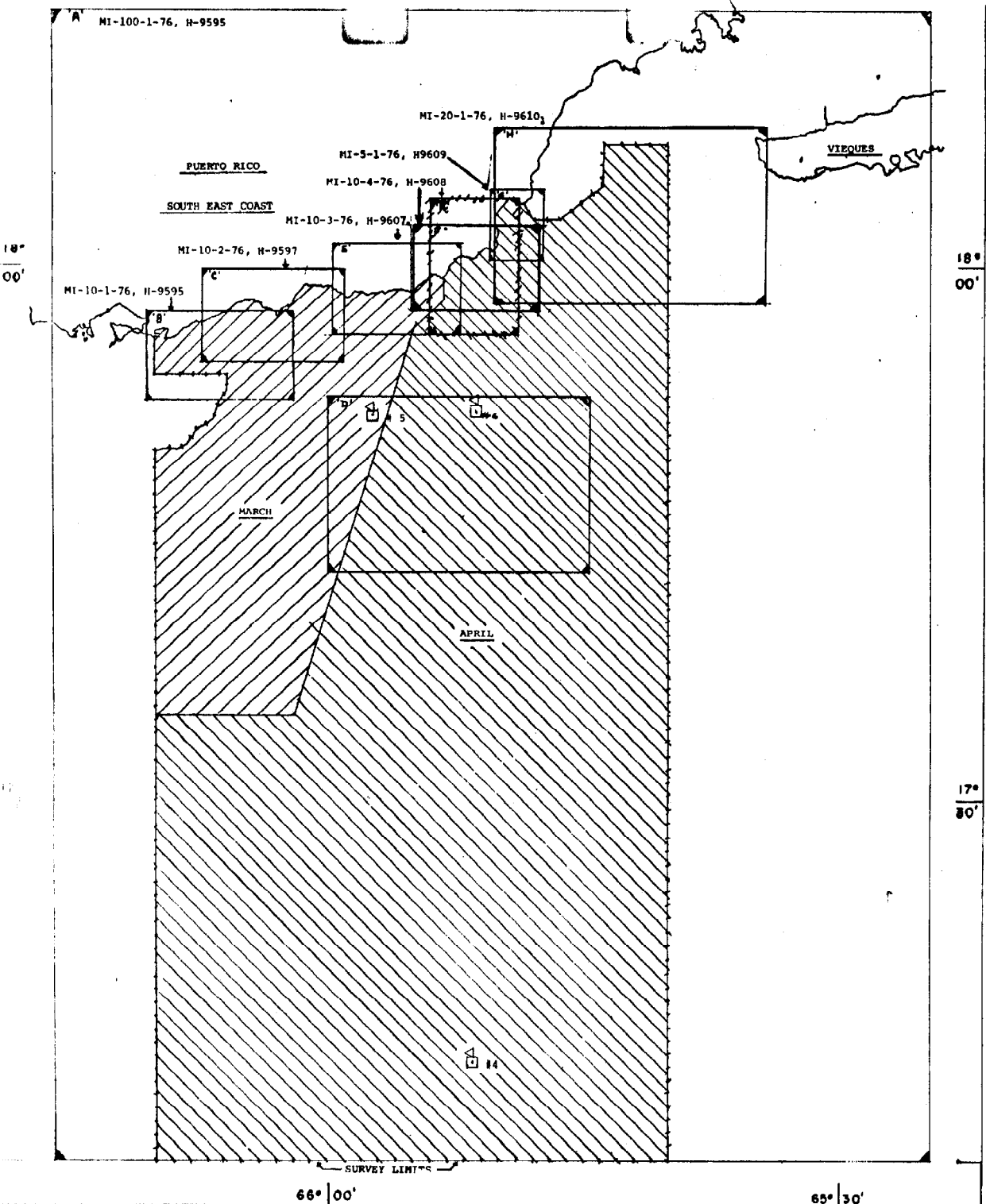
Soundings in ~~feet~~ feet at MLW MKW Smooth sheet plotted in feet
~~Soundings in both fathoms and feet~~

REMARKS: changes by L. G. Cram

Verified by L. G. Cram

Applied to stds 9/5/77

[Signature]



PROGRESS SKETCH

OPR-421-MI-76

MARCH-APRIL 1976

NOAA SHIP HT. MITCHELL MSS-22

SCALE OF NBS CHART #2564C

STANLEY V. HILL, CDR, NOAA COMMANDING

SHEET LEGEND

MAR.	APR.
226	1,295
205	1,162
640	154
31	9
2	1
296	4

- 100' SOUNDING LINE SHIP
- 500M SOUNDING AREA SHIP
- 100' SOUNDING LINE LAUNCH
- 500M SOUNDING AREA LAUNCH
- NANSON CAST (SERIAL/TEMP.)
- BOTTOM SAMPLES

DESCRIPTIVE REPORT
TO ACCOMPANY
HYDROGRAPHIC SURVEY MI-10-4-76

REGISTRY NO. H-9608
OPR-423-MI-76

SOUTHEAST COAST OF PUERTO RICO
1976 FIELD SEASON

SCALE 1:10,000

NOAA SHIP MT. MITCHELL (MSS-22)

WESLEY V. HULL
CDR NOAA
COMMANDING OFFICER

A. Project

This survey, H-9608, was conducted in accordance with Project Instructions for OPR-423-MI-76, dated 1 October 75 and amended 16 January 76, and will be referred to as MI-10-4-76 in this report.

B. Area

Hydrography extended from Point Tuna to 1/4 mile north of Point Yeguas. The latitudes and longitudes of the survey are listed below:

1.	18° 01' 30" N	65° 48' 33" W	<i>Items (1) through (4) positions approximate. This is an inshore survey.</i>
2.	17° 59' 30" N	65° 47' 08" W	
3.	17° 57' 30" N	65° 52' 08" W	
4.	18° 02' 24" N	65° 55' 00" W	

Work was done on the survey on nonsequential days as follows:
29 March 76 (Julian Day 089), 31 March 76 (J.D. 091) through 1 April 76 (J.D. 092), 6 April 76 (J.D. 097) through 7 April 76 (J.D. 098), 13 April 76 (J.D. 104), and 16 April 76 (J.D. 107).

C. Sounding Vessel

The following vessels worked on this survey:

VESNO	Description	Positions	J.D.
2226	1004 (Jensen)	0001-0869	089, 091-092, 097-098
2220	NOAA Ship Mt. Mitchell (MSS-22)	5000-5149	104, 107
2227	17' MonArk	6001-6021	107

Launch 2226 and Vessel 2220 obtained and recorded data by means of the NOS Hydroplot System. Electronic control data, digitized soundings, corrections to electronic control data, and corrections to echo soundings were entered into the PDP-8E computers. Output consisted of teletyped printouts, fathograms, punched tapes, and an on-line plot. Launch 2226 completed areas with depths of less than 200 feet and obtained bottom samples. Due to fathometer limitations in greater depths, MSS-22 ran the lines beyond the 200-foot contour.

Vessel 2227 surveyed shoal areas in range-range and range-azimuth modes with a battery powered Del Norte distance measuring unit and a portable fathometer, with times and pattern values from the DMU being recorded into the sounding volumes. (Serial numbers of equipment are included in Appendix 9). This data was later converted to punched paper tape form and fed into the PDP-8E using program RK211 to plot the hydrography off-line. Detached positions were noted for field edit objects and were recorded in the same manner as the shoal area soundings.

D. Sounding Equipment and Corrections to Echo Soundings

The following is a list of sounding equipment used for MI-10-4-76.

VESNO:	Sounding Equipment:	Serial No:
2226	Ross Labs Model 200-A	0537-1039-5
2220	Ross Labs Model 5000	1050
	Raytheon Universal Graphic Recorder	107
2227	Raytheon Model D	E719B

Transducers in Launch 2226 and MSS-22 are tied into the Hydroplot System so that soundings are digitized to the nearest tenth of a foot. The soundings from vessel number 2227 were manually logged.

All fathograms were scanned by survey personnel and spot checked by the officers. Peaks and deeps were inserted into main scheme lines and sea action was meaned, then the soundings differing from the digitized depths were adjusted by combining a corrector tape reflecting these changes with the accurate data.

While on-line, phase calibration checks and checks to ensure that the initial line was set at zero were made every hour, during turns, and when fathometer paper was changed. Adjustments were made, if necessary, for greater accuracy, and these were noted in the sounding volume if significant and accounted for by scanning.

Bar checks were performed daily on 2226 and 2227, weather permitting. Instrument error was determined by comparing the bar check data with velocity curves obtained from oceanographic observations. Results of these comparisons in the form of tables and graphs are included in the Abstract of Corrections to Echo Sounding (Appendix 4).

There were three Nansen casts obtained during this survey. Following is the list of locations and dates pertinent to the cast data.

Nansen Cast No:	Latitude:	Longitude:	Date:	J.D:
4	17°15.0'N	65°51.6'W	4 Mar 76	064
5	17°15.6'N	65°73.3'W	5 Mar 76	065
6	17°52.5'N	65°50.8'W	17 Apr 76	108

RK 530 was used to obtain depth corrections in feet and fathoms using input data of salinity, temperature and depth from the Nansen Casts. Results from the shallower casts performed in March were averaged to find one correction. Four depths from the April cast were used as a check against this correction for accuracy and consistent readings. No appreciable change in the readings was observed. A graph showing comparisons is presented in Appendix 4. Serial Numbers of thermometers and dates of calibration are listed on the next page.

Protected Reversing
Thermometer Serial No.

Last Calibration
or Check

2995	2/73
7687	2/73
12974	1/73
12977	2/73
12982	1/2/74
13008	2/73
13010	2/73
13050	2/73
13261	1/2/74
13263	1/2/74
13276	1/2/74
13300	2/25/74
13306	2/73
13310	1/2/74
13315	2/25/74
13321	1/2/74
13326	2/73
17266	2/73
18567	2/73
19543	2/1/73
33067	1/2/74
35667	1/2/74
A58865	1/2/73

Unprotected Thermometer
Serial Number

Last Calibration
or Check

15468	2/21/73
53915	2/21/73
A257865	2/21/73
612683	2/21/73
612863	2/21/73
623116	2/21/73
623117	2/21/73

Settlement and Squat tests were conducted on Launch 2226 in Norfolk in January 76 to determine draft corrections at various RPM's. Similar tests were performed on 2227 in April in Puerto Rico. MSS-22 (2220) was last calibrated on 22 July 74 in Mayport, Florida at standard speed, 140 RPM, and 1/2 speed. Corrections ranged from 0.0 at 1/2 speed to 0.5 at full speed, with intermediate speed corrections determined by interpolation. An abstract of settlement and squat correctors versus RPM's as well as speed is included in Appendix 4.

Tide gages accompanying this survey were located at Arroyo, Yabucoa, and Playa de Naguabo. (Locations are plotted on the progress sketch accompanying the tide letter in Appendix 2). Data from these tide gages will be used at AMC to determine smooth tide reductions for the survey.

*Difference
in fact*

E. Hydrographic Sheets

All survey data, the descriptive report, and smoothed field sheets will be sent for final processing to AMC, Norfolk, VA. The following is a list of the materials which will accompany this report:

1. Range-Range Master Tapes (for vessels 2226, 2220, 2227)
2. Range-Range Corrector Tapes (for vessels 2226, 2220, 2227)
3. Range-Azimuth Master Tapes (for vessel 2227)
4. Velocity Tape
5. ASCII Signal Tape
6. TC/TI Tape
7. Parameter Tapes

On-line plotting was accomplished using RK 111 and the NOS Hydroplot System. RK 211 was used for the off-line plot with a pen angle of 45°. The displacement of the horizontal control master unit from the skeg-mounted transducer by 32.0043 meters was accounted for by RK 211. Velocity correctors were applied to the soundings via corrector tapes, using a draft of 1.5 feet for the launch 2226, 14 feet for the ship, and 1 foot for 2227. Smooth tide reductions and TC/TI correctors will be applied during final processing at AMC. Included in Appendix 4 is a listing of the TC/TI tape and velocity tables. Two Hydrographic Operations Log Books (Sounding Volume) which were used to record information and facts not noted elsewhere are included in the survey records.

The developments run on this sheet are plotted on the paper overlay which accompanies the paper smoothed field sheet. A Mylar overlay is also included showing shoreline features, plotted soundings from prior surveys and charts, and pre-survey review items.

F. Control Stations

Stations used for MI-10-4-76 ^(H-9608) were located by ship's personnel using intersection and traverse. A list of those stations used in this survey are as follows:

037	House 1966	17°54'25"	65°59'08"
068	Breakwater	18°12'10"	65°38'06"
069	Nav #2	18°03'16"	65°49'43"
070	Nav #2	18°02'40"	65°48'34"
070	Guano	18°01'18"	65°50'00"
071	School	18°00'23"	65°52'26"
072	Camp	18°01'06"	65°50'40"
073	Camp Offset	18°01'02"	65°50'45"
074	Yeguas	18°00'53"	65°50'06"
075	Yeguas Offset	18°00'56"	65°50'09"
076	Point Toro	18°00'26"	65°51'31"

All control stations used during the project and their characteristics are listed in List of Stations, Appendix 6. Recoverable Stations are indicated by Cartographic Codes 139 and 250. For further information regarding these stations, reference the Horizontal Control Report for OPR-423-MI-76.

G. Hydrographic Position Control

This survey was conducted using the Del Norte Positioning Equipment System in range-range and range-azimuth modes using frequencies of 9350 and 9450 MHz. Del Norte remote units were positioned on the stations described in Section F, Control Stations. Serial numbers of the DMU's and remote units are listed in Appendix 9 as well as the vessels and dates on which they were used. Malfunctions required switching of equipment on days 089 and 091.

Calibration was performed at the beginning of the survey and each in-port period thereafter. Readings, taken over a measured distance determined by a geodimeter, were taken on the DMU's, masters and remote combinations used by a specific vessel. Comparisons were taken between two consecutive calibrations and any deviation was used as a corrector in smooth plotting for each following 2-week period. At the end of each reading the DMU's were adjusted to zero deviation. A list of correctors is provided in Appendix 5.

H. Shoreline

Shoreline soundings were accomplished by launch 2226 using range-range Del Norte mode with the automated real-time NOS Hydroplot System. Vessel 2227 obtained soundings, in areas inaccessible to 2226, by range-range and range-azimuth modes, and verified alongshore features. References were made to field edit positions from T-sheets 12151 and 12161. A discrepancy was noted in the limit of the shoal area from lat. 18°00'25"N long. 65°52'19"W to Point Toro. Launch hydrography determined an offshore limit, which is outlined in red ink on the shoreline Mylar sheet.

I. Crosslines

8.7% of the total main scheme was crossline with agreement of 2 feet. Differences between readings were due to the irregular nature of the bottom and steep slopes near the 100-fathom curve.

J. Junctions

This survey junctioned with three contemporary surveys - to the west with MI-10-3-76 (H-9607), to the south with MI-100-1-76 (H-9595), and to the ~~east~~^{north} with MI-5-1-76 (H-9609). The northern side was bounded by shoreline (see progress sketch, Appendix 2). Junction with MI-10-3-76 and MI-5-1-76 was within 2 feet which is good agreement considering the irregular bottom. Accuracies of junction soundings with MI-100-1-76 were difficult to determine due to large scale differences, however, soundings generally were in agreement along the 100-fathom contour line.

K. Comparison with Prior Survey

The following are findings and recommendations regarding pre-survey review items for MI-10-4-76 ^(H-9600) from pre-survey review dated 12/16/70 and revised 12/18/75.

- sunken rock*
1. A ~~rock~~ ^{sunken rock} awash, pre-survey review item 10, charted at lat. 18°00.38'N and long. 65°52.25'W was found. It is recommended that this rock ~~remain charted at this location.~~ ^{be changed to indicate a rock awash}
 2. Another rock, pre-survey review item 11, charted at lat. 18°01.0'N and long. 65°50.48'W, was awash. It should remain charted at this location. *Pos # 6001*
 3. Pre-survey review item 12, charted at 17°59.45'N and 65°52.49'W, — *Sunken rock - carried forward from H. 2583 in correct position.* was located with excellent agreement in depth. This rock was found in 17' of water. The recommendation is to chart this rock at this location. *Rec # 6021 shows least depth over these rocks - 11 feet*
 4. For the unnumbered pre-survey review item of 23 feet, charted at 18°00'36" and 65°49'58", ^{side} a 23-foot depth was determined. It is recommended that this ~~rock~~ ^{side} remain charted. *Pos # 549 3' out.*
 5. The unnumbered pre-survey review item showed 23, 26, 23, and 33-foot depths charted in the area of 18°00'15" and long. 65°50'15". The boat sheet shows agreement to within 1 foot of these soundings. These locations should be charted in this location.

The most recent survey, H-4740, was completed in 1927. All selected depths from this ~~chart~~ ^{prior survey} agreed with this present survey to within 3 feet.

L. Comparison with Chart

The charts ~~2560~~ ²⁵⁶⁵⁰ (1:100,000), last revised 8/10/74, and ~~2600~~ ²⁵⁶⁵³ (1:20,000), last revised 8/23/75, were compared with the observed soundings obtained in this survey by randomly selecting soundings from these charts and transferring them to the boat sheet. Agreement within 5 feet occurred for all soundings compared except a ~~21'~~ ^{26'} charted sounding at 17°59'42"N and 65°52'13"W, which was found to be 29 feet. It is recommended that this 21' sounding be revised.

Least depths and locations of investigated shoal areas are:

Depth (feet)	Latitude	Longitude
13	17°59'03"	65°52'51"
6	17°59'14"	65°52'33"
X 2 <i>at edge of coral reef</i>	17°59'25"	65°52'21"
13/10	17°59'35"	65°51'57"
20	17°59'47"	65°51'26"
21	17°59'56"	65°51'02" — 65°51'02"
20	18°00'06"	65°50'33" — 65°50'33"
22	18°00'17"	65°50'17"
17/4	18°00'49"	65°50'42"

Tide tapes were not included in final ship's plot, so that all depths are in error by this difference.

M. Adequacy of the Survey

This survey completes the boat sheet MI-10-4-76, Registry No. H-9608. It is complete and adequate to supersede all previous surveys.

N. Aids to Navigation

There were no aids to navigation in the survey area. *one fixed aid
Punta Tuna Light*

O. Statistics

	Vessel Number			Total
	2226	2220	2227	
Linear Nautical Miles of Sounding Line	73.4	23.9	0.5	98.8
Number of Positions	871	141	21	1033
Nautical Square Miles Area Surveyed	4.25	1.0	-	5.25
Number of Bottom Samples	25	0	0	25
Linear Nautical Miles of Crossline	11.4	-	-	11.4
Serial Temperature Casts	0	3	0	3

P. Miscellaneous

All times are GMT. Bottom samples were taken with a small snapper cup sampler, were packaged, labeled, refrigerated, and forwarded to the Division of Sedimentology, Smithsonian Institute, Washington, D.C. 20560. NOAA Form 75-44 Oceanographic Log Sheet M is included in Appendix 8. Locations of bottom samples are plotted on the smoothed field sheet.

Fresh to strong easterly winds predominant during survey operations created dangerous surf conditions. This limited hydrography to relatively deep water in many areas. The heavy surf and small range of tide prohibited delineation of the low water line by hydrographic methods.

A listing of the alphabetical designation of the Del Norte remote units used, as well as the launches with which they were used, dates used, serial numbers, and electronic positioning control correctors is included with the survey data.

Q. Recommendations

None.

R. Automated Data Processing

The following is a list of principal programs utilized during this survey and their respective version dates:

RK 111	Range-Range Real Time Plot	1/30/76
RK 211	Range-Range Non-Real Time Plot	1/15/76
RK 201	Grid, Signal, Lattice Plot	4/18/75
RK 212	Visual Station Table Load and Plot	4/1/74
RK 530	Velocity Corrections Computations	6/25/74
RK 561	Hyperbolic & Range-Range Geodetic Calibration	2/19/75
AM 602	Extended Line Editor (Elinore)	5/21/75

S. Reference to Reports

Horizontal Control Report - OPR-423-MI-76
Field Edit Report - OPR-423-MI-76

Respectfully Submitted,

Virginia E. Newell

Virginia E. Newell (for Nicholas Konchuba)
Ens, NOAA

APPROVAL SHEET

MI-10-4-76

OPR-423

The field work on this hydrographic survey was under my daily supervision.

The Boat Sheets and records have been reviewed and approved by me.



Wesley V. Hull,
Commander, NOAA
Commanding

SIGNAL TAPE LISTING
 S. E. COAST PUERTO RICO
 OPR-423
 1976

001	7	17	57	54896	066	14	08038	139	0030	000000
002	7	17	58	22430	066	03	33160	139	0000	000000
003	7	17	55	24289	066	12	54369	139	0000	000000
004	7	17	57	26125	066	06	48552	139	0000	000000
005	7	17	56	28130	066	11	30480	139	0020	000000
006	7	17	57	18137	066	13	21221	139	0000	000000
007	7	17	56	27984	066	11	30492	139	0020	000000
008	7	17	57	02223	066	14	13396	139	0000	000000
009	7	17	55	49830	066	09	36300	139	0012	000000
010	7	17	56	22971	066	09	24876	139	0000	000000
011	7	17	55	55630	066	09	29480	250	0002	179960
012	7	17	56	34624	066	08	30394	254	0000	000000
013	7	17	57	04082	066	06	46070	139	0009	000000
014	7	17	56	55304	066	07	47245	254	0002	000000
015	7	17	58	06992	066	04	49629	243	0004	000000
016	7	17	57	24873	066	02	53022	139	0000	000000
017	7	17	57	15451	066	02	54796	139	0002	000000
018	7	17	57	15897	066	02	54675	139	0006	000000
019	7	17	57	48025	066	02	08955	243	0001	000000
020	7	17	57	59574	066	03	40647	139	0000	000000
021	7	17	58	51831	066	00	06942	243	0020	000000
022	7	17	59	25192	065	53	08421	139	0000	000000 ✓
023	7	17	58	17415	065	59	05197	243	0002	000000
024	7	17	58	46960	066	03	35570	139	0100	000000
025	7	17	58	10814	065	58	43351	243	0000	000000
027	7	17	58	11488	065	58	38302	243	0000	000000
029	7	17	58	21047	065	57	18861	243	0000	000000
031	7	17	58	27199	065	56	20914	243	0000	000000
033	7	17	58	39074	065	55	08580	243	0002	000000
035	7	17	58	42359	065	54	57715	243	0001	000000
037	7	17	59	24818	065	53	08350	139	0023	000000
038	7	17	56	12650	066	09	29950	243	0002	000000
040	7	18	00	52797	065	50	06473	139	0024	000000 ✓
045	7	18	03	48175	065	48	22539	250	0123	000000
047	7	18	06	58702	065	46	47109	250	0026	000000
050	7	18	10	57724	065	41	41835	139	0086	000000
060	7	18	12	10085	065	38	05789	250	0014	179960
061	7	17	58	47030	066	03	35560	139	0050	000000
062	7	17	58	53924	066	01	05956	250	0003	000000
063	7	17	58	36712	065	58	07926	254	0020	000000

064	7	17	58	11443	065	58	38229	243	0003	000000
065	7	17	59	14329	065	54	17456	254	0002	000000
066	7	17	59	39552	065	53	32817	254	0002	000000
068	7	18	03	15823	065	49	42677	250	0010	000000
069	7	18	02	39699	065	48	34314	250	0010	000000
070	7	18	01	17798	065	50	00007	243	0025	000000 ✓
071	7	18	00	22662	065	52	26037	254	0015	000000 ✓
072	7	18	01	05623	065	50	39659	254	0002	000000 ✓
073	7	18	01	02192	065	50	45000	254	0002	000000 ✓
074	7	18	00	52797	065	50	06473	139	0024	000000 ✓
075	7	18	00	55624	065	50	08924	243	0020	000000 ✓
076	7	18	00	25857	065	51	30969	254	0005	000000 ✓
077	7	17	58	40742	065	55	59937	254	0002	000000 ✓
078	7	18	02	58609	065	49	29119	139	0003	000000
079	7	18	02	52979	065	49	01486	139	0003	000000
080	7	18	02	46582	065	49	04600	139	0003	000000
081	7	18	03	09356	065	50	12594	243	0003	000000
082	7	18	03	21377	065	50	01255	254	0007	000000
090	7	18	04	43876	065	47	47167	139	0005	000000
091	7	18	03	35764	065	50	37539	139	0000	000000
092	7	18	03	23477	065	50	12228	139	0000	000000
099	7	17	56	25426	066	08	39410	243	0000	000000

SIGNAL NAMES LIST OPR-423 SE COAST, PR

001 TOWER 2 1975
002 ARROYO WATER TANK
003 INFIERNO 2 1966
004 MACHETE B STACK
005 BOX 1975
006 CENTRAL AGUIRRE STACK
007 BOX DEL NORTE 1975
008 AGUIRRE METEOROLOGICAL TWR
009 OLE GRANDE 1975
010 LAS MAREAS RANGE FRONT LIGHT 1975
011 MAREAS HI FIX 1972
012 DITCH
013 BARR
014 TREE
015 BR-01
016 PT FIGURAS LIGHTHOUSE (ABANDONED)
017 BR-02
018 ARROYO BEACON LIGHT
019 1-75
020 ARROYO CATHOLIC CHURCH
021 BR-03
022 PT TUNA LIGHTHOUSE
023 2-75
024 CENTRAL LAFAYETTE (USGS)
025 3-75
027 4-75
029 BP-05
031 5-75
033 6-75
035 GARBAGE ROCK
037 HOUSE 1966
038 PP-1
040 YEGUAS 2
045 GUAYANES 2
047 BAT
0550 LIMA 3

Q180653 1001A
1008A
1010
1021A

060 ALGODON 4 HI FIX Q180653 1052A
061 CENTRAL LAFAYETTE (PRELIM USC&GS)
062 FENCE
063 TANK
064 PT VIENTO
065 MID BAY
066 BAY CORNER
068 BREAKWATER
069 NAV #2
070 GUANO
071 SCHOOL
072 CAMP
073 CAMP OFFSET
074 YEAGAS
075 YEAGAS OFFSET
076 PT TORO
077 PP-5
078 NAV #7
079 NAV #6
080 NAV #5
081 TB-1
082 TURN DOLPHIN
090 PDM BREAKWATER
091 REAR RANGE
092 FRONT RANGE
099 PP-6

VELOCITY TAPE LISTING
MI-10-4-76
(in feet)

VESSEL 2220
2226

000080 0 0002 0001 000 222000 009608
000120 0 0004
000160 0 0006
000220 0 0008
000260 0 0010
000320 0 0012
000360 0 0014
0 400 0 0016
0 450 0 0018
000500 0 0020
000550 0 0022
000590 0 0024
000650 0 0026
000680 0 0028
000730 0 0030
000760 0 0032
000810 0 0034
000860 0 0036
000900 0 0038
000940 0 0040
000980 0 0042
001030 0 0044
001150 0 0050
0 1310 0 0060
0 560 0 0070
001760 0 0080
001960 0 0090
002160 0 0100
002360 0 0110
002560 0 0120
002750 0 0130
002950 0 0140
003150 0 0150
003350 0 0160
003540 0 0170
003730 0 0180
004920 0 0190
004110 0 0200
004300 0 0210

004500 0 0220
004700 0 0230
004800 0 0240
005070 0 0250
005250 0 0260
005490 0 0270
005640 0 0280
006000 0 0290
006200 0 0300
006300 0 0310
006500 0 0320
006900 0 0340
007200 0 0360
007600 0 0380
008100 0 0400
008500 0 0420
009000 0 0440
009600 0 0460
010000 0 0480
010600 0 0500
011400 0 0520
012000 0 0540
012500 0 0560
013000 0 0580
013750 0 0600
014400 0 0620
015000 0 0640
015700 0 0660
016500 0 0680
017200 0 0700
018000 0 0720
018800 0 0740
019600 0 0760
020500 0 0780
021400 0 0800
022250 0 0820
023300 0 0840
024000 0 0860
025000 0 0880
026250 0 0900
027200 0 0920
028400 0 0940
029500 0 0960
030500 0 0980
031500 0 1000

033000	0	1020
034000	0	1040
035500	0	1060
036750	0	1080
038000	0	1100
039600	0	1120
041300	0	1140
042800	0	1160
044500	0	1180
046000	0	1200
048000	0	1220
049500	0	1240
999999	0	0094

VELOCITY TAPE LISTING
(in feet)

LAUNCH 2227

000020 1 0001 0002 001 222700 999999
000043 0 0000
000068 0 0001
000090 0 0002
000115 0 0003
000138 0 0004
000162 0 0005
000180 0 0006
000200 0 0007
000221 0 0008
000243 0 0009
000263 0 0010
000283 0 0011
00102 0 0012
000324 0 0013
000348 0 0014
000365 0 0015
000388 0 0016
000403 0 0017
000430 0 0018
000442 0 0019
000470 0 0020
000488 0 0021
000505 0 0022
000530 0 0023
000550 0 0024
000571 0 0026
000610 0 0027
000635 0 0028
00999 0 0028

8/10/76

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Atlantic Marine Center:

Hourly heights are approved for

Tide Station Used (NOAA Form 77-12): Yabucoa Harbor

Period: March 3 - April 18, 1976

HYDROGRAPHIC SHEET: H-9608

OPR: 423


Locality: Off the southeast coast of Puerto Rico

Plane of reference (mean ~~lower~~^{diurnal} low water): 1.62 ft.

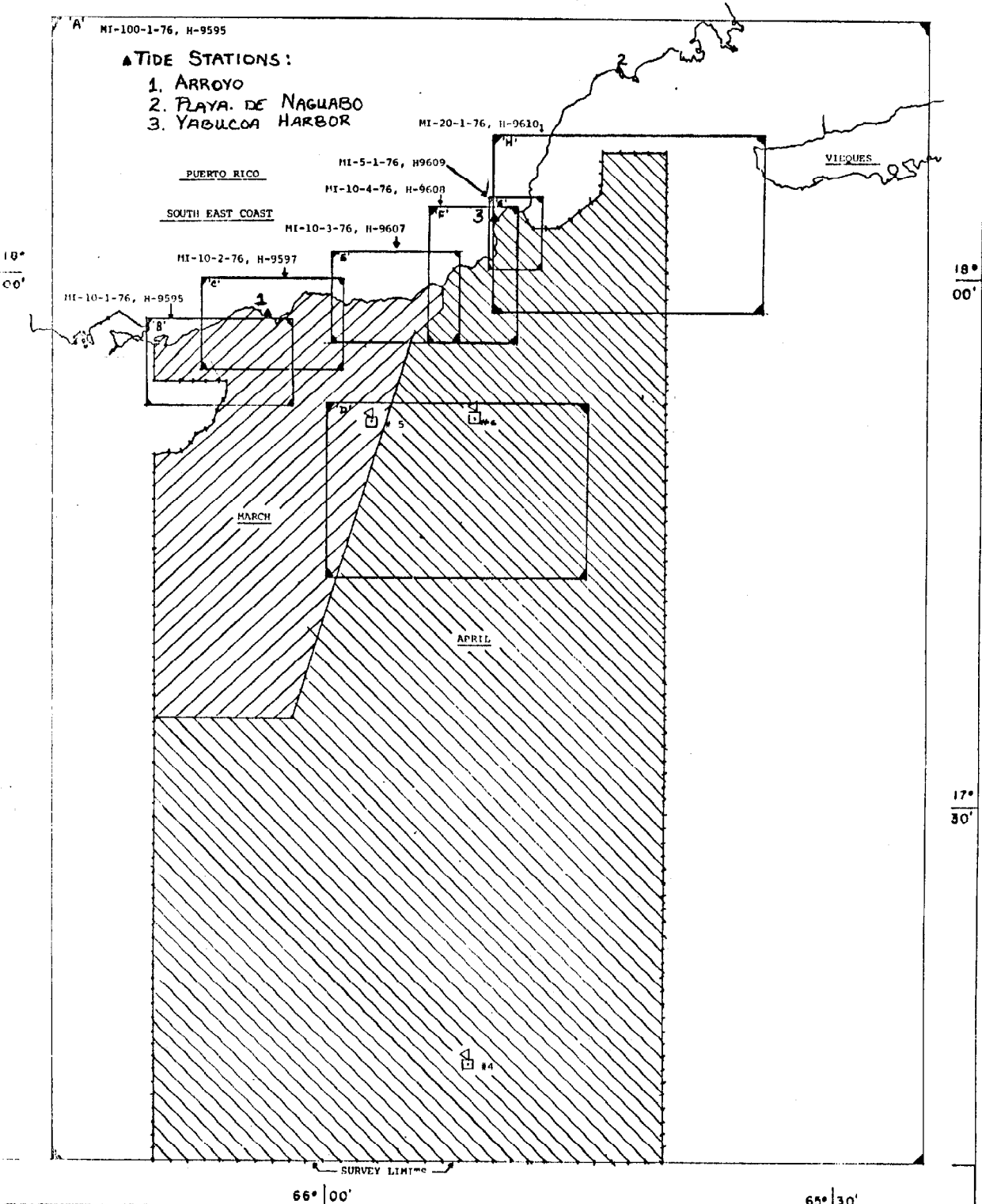
Height of Mean High Water above Plane of Reference is

0.8 ft.

Remarks: Zone direct.



James R. Hubbard
Chief, Tides Branch



TIDE STATIONS:

1. ARROYO
2. PLAYA DE NAGUABO
3. YABUCCA HARBOR

PUERTO RICO

SOUTH EAST COAST

VIEQUES

MI-5-1-76, H9609

MI-10-4-76, H-9608

MI-10-3-76, H-9607

MI-10-2-76, H-9597

MI-10-1-76, H-9595

MI-20-1-76, H-9610

18°

00'

18°

00'

MARCH

APRIL

17°

30'

66° 00'

65° 30'

SHEET LEGEND

PROGRESS SKETCH

OPR-423-MI-76

MARCH-APRIL 1976

NOAA SHEET NO. MITCHELL MSS-22

SCALE OF NUS CHART #25640

WESLEY V. HULL, CDR, NOAA COMMANDING

MAR.	APR.
236	1,295
205	1,162
640	154
31	9
2	1
236	4

- TOP SOUNDING TIME SHEET
- SOME SOUNDING AREA SHEET
- TOP SOUNDING LINE (A) (B) (C)
- SOME SOUNDING AREA (A) (B) (C)
- RAVEN CASE (SERIAL/TEMP.)
- BOTTOM SAMPLES

H-9608

GEOGRAPHIC NAMES

Name on Survey	Source of Name											
	A	B	C	D	E	F	G	H	K			
ARRECIFE SARGENT												1
CUCHILLA DE PANDURAS												2
PUERTO MANNABO												3
PUNTA TORO												4
PUNTA TUNA												5
PUNTA YEGUAS												6
												7
												8
												9
												10
												11
												12
												13
												14
												15
												16
												17
												18
												19
												20
												21
												22
												23
												24
												25

APPROVED

Chas. B. Harrington

STAFF GEOGRAPHER - CS1x2

6 June 1977

APPROVAL SHEET
FOR
SURVEY H- 9608 (1976)

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

Date: May 3, 1977

Signed: William L. Jones

Title: Chief, Verification Branch

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9608

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET plus PNO, Control Overlay, & Excess Ovlv		1	BOAT SHEETS 2-paper & 1-mylar		1	
DESCRIPTIVE REPORT		1	OVERLAYS (Preliminary)		3	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1-Fathograms & Printouts					
VOLUMES	2					
BOXES			1-Smooth Printout, 2-Envelopes of UGR & 1-Envelope Of Misc. Data			Fathograms
T-SHEET PRINTS (List) 2 Chart Markups (#25650 & #25659)						
SPECIAL REPORTS (List) Horizontal Control Electronic Calibration Report						

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			
	PRE-VERIFICATION	VERIFICATION	REVIEW	TOTALS
POSITIONS ON SHEET				1033
POSITIONS CHECKED		103	10	
POSITIONS REVISED		30	3	
DEPTH SOUNDINGS REVISED		60	6	
DEPTH SOUNDINGS ERRONEOUSLY SPACED		--	--	
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		--	--	
	TIME (MANHOURS)			
TOPOGRAPHIC DETAILS		40	14	
JUNCTIONS		8	1	
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS		20	2	
SPECIAL ADJUSTMENTS		--	--	
ALL OTHER WORK		164	28	
TOTALS		232	45	277
PRE-VERIFICATION BY D. Mason, M. Hickson, and R. Roberson		BEGINNING DATE 06/16/76	ENDING DATE 12/14/76	
VERIFICATION BY L. Cram		BEGINNING DATE 02/01/77	ENDING DATE 04/12/77	
REVIEW BY L. Cram		BEGINNING DATE 04/28/77	ENDING DATE 05/02/77	

QC: *MA. Meyers* 50 hrs 6/20/77

not kept Baumgardner 8/14/77 6 hrs.

REGISTRY NO. H-9608

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

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

CARDS CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

REGISTRY NO. _____

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

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

MAGNETIC TAPE CORRECTED

DATE 5-3-82 TIME REQUIRED _____ INITIALS JME

REMARKS:

H-9608

Items for Future Presurvey Reviews

The following soundings located on the present survey should be investigated to determine least depth over these shoal features:

<u>Sounding (feet)</u>	<u>Latitude</u>	<u>Longitude</u>
13	18°00.31'	61°51.66'
16	18°00.37'	61°51.59'
14	18°00.83'	65°50.68'

The bottom in the immediate vicinity of latitude 17°59.4', longitude 65°52.32' should be thoroughly developed in order to determine the extent of coral reefs in the area.

Inshore sounding lines should be run in areas around rocky points of land which fall on the present survey.

The sunken rock charted at latitude 17°59.45', longitude 65°52.49' from H-2583 (1902) should be adequately investigated to prove or dispel its existence.

<u>Position Index</u>		<u>Bottom Change Index</u>	<u>Use Index</u>	<u>Resurvey Cycle</u>
<u>Lat.</u>	<u>Long.</u>			
180	0655	2	2	50 years
175	0660	2	1	50 years
180	0660	2	1	50 years

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9608

FIELD NO. MI-10-4-76

Southeast Coast of Puerto Rico, Point Tuna to Point Yeguas

SURVEYED: March 29 through April 16, 1976

SCALE: 1:10,000

PROJECT NO.: OPR-423

SOUNDINGS: Ross and Raytheon DE-723
Fathometers

CONTROL: Del-Norte

Chief of Party CDR W. V. Hull
Surveyed by LT A. J. Potok
..... LTJG S. R. Iwamoto
..... ENS D. L. Terry
..... ENS R. Mann
..... ENS N. Konchuba
..... ENS W. T. Dewhurst
..... ENS D. R. Rice
..... ENS J.F. Bailey
Automated Plot by Calcomp Plotter #618 (AMC)
Verified and Inked by L. G. Cram *L.G. Cram*

1. Introduction

During verification it was noted that three lines were run around a feature described on the chart as "Arrecife Sargent", approximate latitude 17° 59' 20", longitude 65° 52' 20". An attempt was made to delineate a coral reef in this area by this verifier using the soundings from the inner most of the three lines and from one detached position (#44).

The field unit attempted to delineate the submerged ledge and breaker line along the shoreline. Standard procedures were used to verify and change these features on a mylar overlay of the boatsheet. When this mylar overlay is compared with the paper boatsheet numerous disagreements appear between hydrographic and topographic information. No apparent attempt was made by the field unit to resolve these disagreements. During office verification the dashed line symbol was moved to bring the sounding and topographic information into agreement with each other.

The field unit crossed the baseline in at least one case and at other times they were running in the "banana" of the control stations, causing very weak positional control in the north-east area.

In one case the field unit ran a line around a feature described as "coral awash" and elsewhere in the records, it is described as "lines around rocks awash". No attempt was made to estimate a distance from vessel to feature and no attempt was made to estimate size or number or resolve the difference between the descriptions. For references to this feature see Volume 2, page 5 and raw data printout for day 089, positions 147-148.

The seventeen foot Monark Skiff, vesno 2227, was found to be without TC/TI or TRA tape listings in the Descriptive Report. No information could be obtained for the use of a 1.0 foot draft or the 0.1 TC/TI. After talking to personnel from the field unit and the researching of values used for the Monark on other surveys it was decided that this 1.0 foot draft and 0.1 foot TC/TI could be valid.

The field did not list descriptions of certain positions in any of the survey notes (6015-6021). During verification it was determined these detached positions were an attempt to locate a submerged rock, (Pre-survey Review Item #12) approximate latitude $17^{\circ} 59' 25''$, longitude $65^{\circ} 52' 27''$. The rock was shown on the smooth sheet using position number 6021.

A new projection parameter form was added to the survey at the time of verification. Under Section L, "Comparison with Chart", chart numbers and dates were changed. The Electronic Corrector Abstract (page 13) was changed to make it agree with the tapes and positions, as submitted by the field. Under "Abstract of Corrections to Echo Soundings" a printout of the TC/TI and TRA tape was added to the Descriptive Report for Vessel #2227 (Monark Skiff).

2. Control and Shoreline

a. The control is adequately described in the Descriptive Report. Also see Section 1, the first two paragraphs, of this report.

b. The shoreline for this survey was transferred from unreviewed, Class I maps T-12151 and T-12161 of, 1976).

(1970-
There were numerous differences between the hydrographic and topographic information on this sheet. The most important of these items were described under Section 1 of this report. Worthy of mention here is that the shore-

line from the T-sheets and from the chart (25659) have significant differences. Differences exist over 90% of the shoreline. The shoreline should be charted from the final reviewed T-sheets listed above.

3. Hydrography

- a. The agreement at crossings on this survey is good; in the area of the drop-off there are some differences, but these can be attributed to the steep slope of the bottom.
- b. The depth curves appear adequate to delineate the bottom configuration in most areas. Some problems were encountered in completing curves, particularly in areas of steep slopes, i.e. ledges and continental slope areas, due to the wide line spacing. One hundred meter line spacing would have been highly desirable throughout the surveyed area to ascertain that the least depths were obtained.
- c. A shoal area apparently exists at approximate latitude $18^{\circ} 00' 20''$, longitude $65^{\circ} 51' 40''$. No development was run in the area of a 13 foot sounding that lies in from 21 to 24 feet of water.
- d. No delineation of the low water line was accomplished; however, a statement was made to the effect that, "heavy surf conditions and small range of tides made it impossible". There was a line run close in to shore that could be a breaker line. No description exists as to what the field unit intended this line to represent, nor were there enough notes to show how far the vessel was from breakers, reef, or whatever.

4. Condition of Survey

With reference to the Provisional Hydrographic Manual:

- a. Under Section 5, paragraph H, "Shoreline", pages 5-19 and 5-20, there exists numerous discrepancies between topographic and hydrographic locations of certain features. In one area on a dashed line topographic feature the field went into great detail to revise the T-sheet (T-12161). Once this was done apparently no attempt was made to bring the revised information and the hydrographic information into agreement. It was assumed at the time of verification that this line represented a breaker line, but could not be determined due to lack of notes by the field unit.
-

b. Under paragraph K, "Comparison with Prior Surveys", page 5-21; no position numbers and at times bad descriptions were noted. See page 6 of the Descriptive Report. The development run on Presurvey Review Item #10 was described as a rock awash. Both the chart and Presurvey Review show this to be a sunken rock. Recommend this item be charted as a rock awash.

c. It is believed that this survey does not conform to the requirements of the Provisional Hydrographic Manual, Sections 4.3.3 (Inshore Limits of Surveys) and 4.3.4 (Spacing Sounding Lines).

5. Junctions

Junctions were made with three surveys as follows:

H-9595 (1976) to the south
H-9607 (1976) to the west
H-9609 (1976) to the north

The junctions were made without difficulty and agreement was good within the common areas.

6. Comparison with Prior Surveys

This survey was compared with H-2584 (1902), H-2805 (1906), and H-4740 (1927), as these are the most recent surveys that cover the entire survey area. All three appear to be in agreement within three to four feet. The prior surveys appear to be shoaler by this amount. *See Quality Control Report.*

Numerous differences occurred in shoreline, starting at Punta Tuna and going eastward; it would seem that in areas of points of land the shoreline has eroded on the southwest and built up on the southeast side of these points. The two best examples of this are Punta Tuna and Punta Yeguas. This is believed to be due to natural causes as this coast is exposed to heavy surf conditions as described in the Descriptive Report.

The present survey is considered an adequate ~~basic~~ survey to supersede the prior surveys.

7. Comparison with Charts 25659 (C&GS 924), 5th Edition, August 23, 1975 and 25650 (C&GS 904), 20th Edition, August 9, 1975

Chart #25659 covers approximately 95% of the survey and #25650 covers the remaining 5% of the survey area.

A list of unresolved discrepancies are as follows:

a. A ledge symbol located at approximate latitude 18° 00' 30", longitude 65° 52' 00" shows a ledge awash; the T-sheet (12161) refers to this as a submerged ledge. Personnel from the field unit that ran the survey state that it is a submerged ledge. The field unit ran a hydro line close to, and in some cases inside, the symbol as shown on the chart. The field unit did not make any statement other than showing a dashed line on the mylar boatsheet, with the words "ledge inside the line". Recommend with existing information the limits of this feature be charted as breakers and submerged ledge.

b. A small island or big rock is shown on the chart at approximate latitude 17° 59' 27", longitude 65° 52' 25". Detached position #44 was taken with the description, "coral awash", in the location of this feature. As numerous rocks and coral heads appear in this area and no other information was available, the smooth sheet shows this as coral awash. There remains a question that this might be an island or have ^{bare} rocks.

The charted information comes entirely from four prior surveys: H-4740 (1927), H-2805 (1906), H-2584 (1902), and H-2583 (1902).

This survey appears adequate to supersede the charted information, except in nearshore reef areas and most of the nearshore areas of and around Punta Tuna to Punta Yeguas.

8. Compliance with Instructions

Sections 4.8 and 4.9, page 3 of the Project Instructions dated October 1, 1975, OPR-423-MI-76 state that extensive development of "foul" areas is not required. It states that such areas should be adequately defined. Due to the lack of notes, information, and the 200 meter spacing of the sounding lines, it is felt that these instructions were not complied with.

9. Additional Field Work

It is felt that this survey is inadequate in areas of shoals and alongshore features. If possible additional field work is needed as follows:

a. A development should be run on the 13 and 16 foot soundings located at approximate latitude 18° 00' 22", longitude 65° 51' 40".

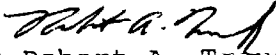
- b. An investigation should be done on the shoal of 14 feet at latitude $18^{\circ} 00' 50''$, longitude $65^{\circ} 50' 40''$.
 - c. An investigation should be done at latitude $17^{\circ} 59' 20''$, longitude $65^{\circ} 52' 22''$ to delineate the extent of the reef awash and to verify the fact that a small island does or does not exist there.
 - d. Some attempt should be made to delineate the low water line and to clear up the extent of the ledge and along-shore coral and rocks that exist in the survey area.
 - e. It is recommended that at an opportune time additional hydrography be accomplished in the area north and east of Punta Yeguas because of the sparseness of soundings within this area during the present survey and the prior surveys.
-

The poor quality of some aspects of this survey caused a great deal of concern and discussion within the Hydrographic Inspection Team. This concern centered on whether or not the survey is to be considered "a basic survey adequate to supersede". It really cannot be said that it is the consensus of Hydrographic Inspection Team members that this is a basic survey. It is the consensus of the Hydrographic Inspection Team that most of the survey is adequate to supersede, but the northeast corner and most of the nearshore work is only adequate to supplement.

The Project Instructions were not specific enough with regard to line spacing. The area between Punta Tuna and Punta Yeguas inshore of Arrecife Sargent: Is it regular or irregular? All work in Puerto Rico, up until the year of this survey, was considered irregular. If that is the case, then 100 meter spacing of lines in this area was required.

Survey H-9608

Examined and Approved:
Hydrographic Inspection Team
Date: May 8, 1977

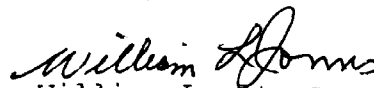


CDR Robert A. Trauschke, NOAA
Chief, Processing Division



CDR Jeffrey G. Carlen, NOAA
Chief, Coastal Mapping Division

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



William L. Jonns
Chief, Verification Branch

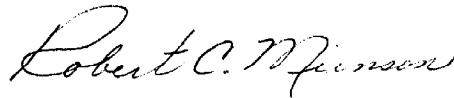


Guy F. Trefethen
Verification Branch

* On leave

Under conditions noted by HIT

Approved/ Forwarded



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



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

C352

June 20, 1977

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

FROM: *G. K. Myers*
G. K. Myers
Chief, Quality Control Branch

SUBJECT: Quality Control Report, H-9608 (1976), Puerto Rico, Southeast Coast, Punta Tuna to Punta Yeguas

A quality control inspection of H-9608 (1976) has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom configuration, determination of least depths and navigational hazards, transfer of topographic information, decisions and actions by the verifier, and cartographic presentation of data.

Junctions with H-9607 (1976) on the west, H-9595 (1976) on the east and south, and H-9609 (1976) on the north will be evaluated during the quality control of those surveys.

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

1. A sounding, some bottom characteristics, and sunken rocks from prior surveys were carried forward to the present survey during quality evaluation. With these, the present survey is considered adequate to supersede the prior surveys in the common area.
2. In a few cases, bottom characteristics were incorrectly described in the survey records. The hydrographer mistakenly identified some bottom samples containing coral as "Co Hd."
3. Some rocks and ledges observed alongshore at low water were not shown on the smooth sheet of the present survey.
4. Small block shapes charted along the shoreline at Punta Tuna and Punta Yeguas appear on H-4740 and H-2583, respectively. These shapes are not shown on the present survey as such, but fall within areas described from present topographic information as rocky and submerged ledge. The

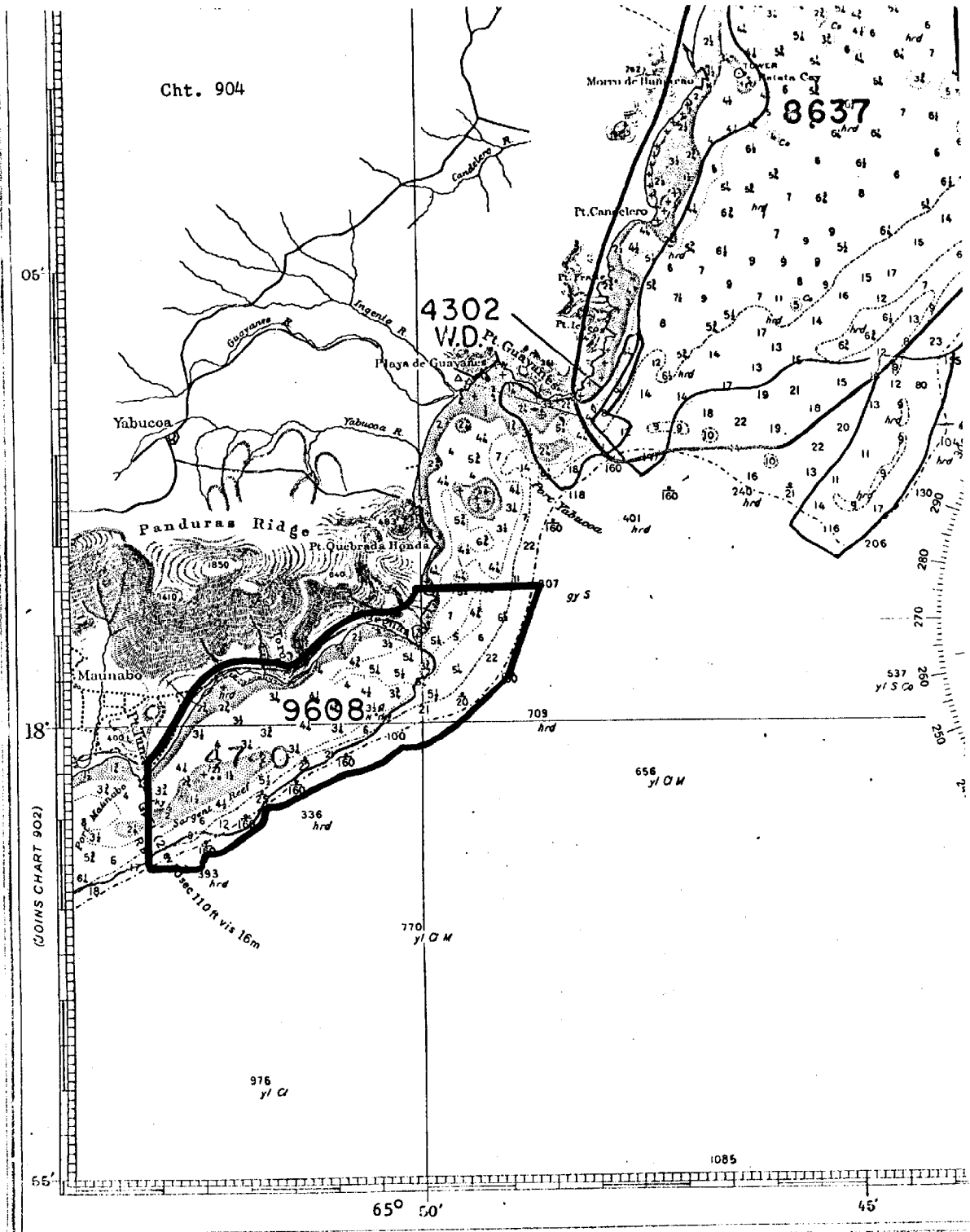


character of the bottom within these inshore areas is considered properly annotated on the smooth sheet. It is recommended that these shapes be expunged from the chart.

5. Dates of photography and field edit of Class I photogrammetric manuscripts that cover the area of the present survey were not properly indicated in the Verifier's Report.

6. A comparison between prior and present depths during quality evaluation reveals variable differences of 2-3 feet, except in areas along the offshore slope. Here deeper soundings substantially differ in depth. These differences are attributed to different survey methods.

CC:
C351



30-11/21, 32-9/12, 34-1/25, 10/1, 35-10/17, 37-11/29, 12/30, 38-10/11, 39-4/13, 40-2/19, 10/29, 41-8/26, 42-7/13, 43-1/21, 9/11, 44-11/29, 45-8/4, 46-7/13, 47-5/5, 48-3/8, 49-8/5

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9608

INSTRUCTIONS

- A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
 2. In "Remarks" column cross out words that do not apply.
 3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
25659 (924)	07/13/89	Andy L. Simon	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>QUALITY CONTROL</u>
25650	3-9-83	E. Bedovian	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>31 Part applied thru 25659 & Part direct Q.C.</u>
25646	8/18/83	B. Fernandez	Full Part Before After Verification Review Inspection Signed Via Drawing No. <u>34 Q.C.</u>
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.