9597

Diag. Cht. No. 902

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-10-2-76
Office No.: H-9597

LOCALITY

State: PUERTO RICO
General Locality: S.E. COAST
Locality: PTA. BARRANCAS TO PTA. VIENTO

19 76

CHIEF OF PARTY
Wesley V. Hull

LIBRARY & ARCHIVES

DATE: October 4, 1977

☆ U.S. GOV. PRINTING OFFICE: 1976—669-441

9597

Apm 3

Charts
25640 (922)
25677 (902)
25689 (922)

FORM C&GS-537
(5-66)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REGISTER NO.

H-9597

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

FIELD NO.

MI 10-2-76

State Puerto Rico

General locality S.E. Coast

Locality Pta. Barrancas to Pta. Viento

Scale 1: 10000 Date of survey March 10 - April 16 1976

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

MH. MITCHELL

Vessel Launches 2223, 2224, 2225, 2226, 2227

Chief of party Wesley V. Hull, CDR, NOAA, Commanding Officer

Surveyed by Lt Potok, LTJG Iwamoto, ENS Mann, ENS Terry, ENS Rice, ENS Bailey ENS Dewhurst, ENS Konchuba

Soundings taken by echo sounder, ~~hand lead or pole~~ Ross Fineline, Raytheon DE-723D,719 B

Graphic record scaled by RW, PS, FL, EM, WD, FS, AP, SI, RM, DT, WD, DR

Graphic record checked by AP, SI, RM, DT, WD, NK, DR, JB

Protracted by — Automated plot by CALCOMP 618, AMC

Soundings penciled by — Verified by: B.J. Stephenson, AMC

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

REMARKS:

Appr'd to standards
3-22-78 WJ

USCOMM-DC 37009-P66

DESCRIPTIVE REPORT

TO ACCOMPANY

HYDROGRAPHIC SURVEY MI 10-2-76(H-9597)

OPR-423-MI-76

S.E. Coast Of Puerto Rico

Scale 1:10,000

NOAA Ship MT. MITCHELL (MSS-22)

WESLEY V. HULL CDR, NOAA

COMMANDING OFFICER

A. PROJECT

(MI-10-2-76) 1:10,000 (1976)
Survey H-9597 was conducted in accordance with project instructions dated October 1, 1975, supplemented by change No. 1 dated January 16, 1976. The project number is OPR-423-MI-76.

B. AREA SURVEYED

This survey was bounded on the north by shoreline along the southeast coast of Puerto Rico between Punta Barrancas and Punta Viento. The eastern limit was approximately Longitude 65°59'00"W, the western limit Longitude 66°07'30"W. The southern limit was the 115 fathom curve or Latitude 17°55'20"N.

Survey operations were conducted from March 10, 1976 (J.D. 70) to April 16, 1976 (J.D. 107).

C. SOUNDING VESSEL

The following launches were used to obtain soundings:

Launch No:	Hull No:	Pos. No:
2223	1207 (Pacific Plastic Launch)	1 - 1751
2224	1204 (Pacific Plastic Launch)	3000 - 3105
2225	1002 (Jensen)	2000 - 2908
2226	1004 (Jensen)	4001 - 6143
2227	17' Monarch Skiff	9001 - 9160

Launches 2223, 2225 and 2226 were completely automated.
Launch 2224 and Skiff 2227 were unautomated.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

Soundings were obtained from Launches 2223, 2225, 2226 and 2227. Launch 2224 was used for bottom samples only. Skiff 2227 was used for shallow water soundings and areas in which range-range control was not practicable.

The launches were unable to maintain a definable trace below about 130 feet. Launch 2226 operating in the fathom mode, with output in feet, was used to develop the 115 fathom curve.

The initial setting on all launches was checked and reset to zero on line as necessary. Any variation from zero was corrected for during scanning.

Phase calibrations were taken several times each day on the Ross Fathometers. Speed count, stylus arm length, and A-F scale checks were performed on the Raytheon recorders. Tide and draft adjustments on all recorders was kept at zero and stylus belt motor speed was kept for a speed of sound of 800 fathoms per second.

The following equipment was used in the launches:

VesNo:	Recorder:	Model:	Ser. No:
2223	Raytheon	DE-723	37010
2224	Raytheon	DE-723	1285
2225	Ross	5000	1053
2226	Ross	200A	1039
2227	Raytheon	DE-719B	3947

Fathograms were scanned by trained survey personnel, and checked by the Officer-in-charge of a particular launch.

Predicted tides from Arroyo were applied on the final boat sheet plot.

Velocity corrections were determined from the following Nansen Casts taken aboard the NOAA Ship Mt Mitchell (VesNo 2220):

Cast No:	Latitude:	Longitude:
4	17°15.0'N	65°51.6'W
5	17°51.6'N	65°57.3'W
6	17°52.5'N	65°50.8'W

Velocity table No. 1 was derived from the mean of casts 4 and 5. Cast 6 was taken later as a check, no significant change was apparent.

Bar checks were taken daily by each launch provided sea conditions were calm. Bar check data for launches 2223, 2225, and 2226 were meaned separately, and compared with velocity table 1. This comparison was used to determine instrument error. A separate velocity table (Velocity Table II) was prepared for skiff 2227, with instrument error included. Velocity corrections were applied to the final plot.

Settlement and squat tests were done at AMC in January 1976. Corrections to draft, instrument error and settlement and squat were compiled on TC/TI tapes for each launch, however, they are not applied to smooth plot. A TC/TI tape was not necessary for skiff 2227 because instrument error was applied via velocity table II, and the speed was kept slow enough that settlement and squat corrections were negligible.

Records of settlement and squat, bar checks, and nansen casts will be forwarded in a separate file accompanying this report.

E. HYDROGRAPHIC SHEETS

Two field sheets were necessary to cover the survey area. The sheets were prepared and processed aboard the NOAA Ship Mt Mitchell. Mainscheme, crosslines and splits are contained on the field sheets. Two overlay sheets were prepared, one with developments and the other with shoreline, bottom samples, presurvey review items, prior survey

soundings, and notes from sounding volumes. Shoal soundings from development lines which split mainscheme lines were plotted on the field sheets.

All field records will be forwarded to the Atlantic Marine Center, Norfolk, Virginia for final smooth plotting.

F. CONTROL STATIONS

All stations are at least third order accuracy. Reference Horizontal Control Report accompanying OPR-423-MI-76, for details on the source of stations. A list of stations used during this survey is included in the appendix.

G. HYDROGRAPHIC POSITION CONTROL

Control for this survey was primarily range-range using Del Norte positioning equipment. Range-azimuth was used for some inshore soundings. Launch 2224 used visual sextant fixes for bottom samples. Positions were scaled from the boat sheet and transferred to the Log-M sheets. (see Hit Report) Record of sextant angles was not kept. A master tape was generated from the Log-M sheet for automated plotting of the bottom samples.

Del Norte units were calibrated along a geodimeter distance at the beginning and end of each trip. Each master-DMU system was calibrated with each remote. Correctors were kept at zero on-line and were applied on the final plot. A summary of calibration results is included with the field records.

On J.D. 75 skiff 2227 was used in a range-range mode. The helmsman steered arcs and data was recorded in a sounding volume. Range-azimuth control was used with skiff 2227 on J.D. 75, 106, and 107. Either a sextant or a T-2 theodolite and remote Del Norte were positioned on a known station. The T-2 or sextant was initialed on some other known point and distance was measured to a master-DMU unit aboard the skiff. All data was recorded on-line in a sounding volume and later logged into a range-azimuth master tape format for automated plotting.

The following equipment was used:

VesNo:	DMU-Master:	DMU-Master :
2223	179 169	
2225	219 188	
2226	277 190	263 159 (JD 106)
2227	263 159 (JD 75)	277 190 (JD 106, 107)

H. SHORELINE

Shoreline was transferred from manuscripts T-13358, T-13359, T-13360, T-13361 and T-13362. Shoreline was verified by range-azimuth or by running a launch along shore. OJS

Field edit was done by ship personnel during the current season. Field notes from hydrographic sounding volumes were transferred to the mylar overlay. The field notes on the mylar overlays were of very little value to the verifier.

Shoreline changes were noted at the new marina construction in Arroyo.

Engineering drawings were submitted with field edit data.
Shoreline changes noted at Punta Figuras were located by the field editor and shown on T-13360, 1:5000 scale.

I. CROSSLINES

Crosslines were run at 10% of the regular sounding lines. Agreement was good, generally within one foot.

J. JUNCTIONS

This survey junctions everywhere with contemporary surveys. On the west and south junction occurs with survey H-9596. Agreement is fair, soundings tend to be one foot deeper on this survey. This discrepancy is due to the difference in TC/TI correctors between VesNo 2226 which sounded on survey H-9596 and VesNo 2223 which sounded on this survey.

This survey junctions along the 115 fathom curve with survey H-9595. Agreement is good considering the large difference of scale between the two surveys. Junction on the east is with survey H-9607. Overlap soundings were not necessary because launch 2226 ran sounding lines at the boundary of the two sheets. The contours junction well between these two surveys.

K. COMPARISON WITH PRIOR SURVEYS

Comparison was made with prior surveys H-2424 (1899), H-2583 (1902), H-2737 (1905-06) and H-4726 (1927). Agreement was good, generally within one foot.

There were no numbered pre-survey review items in the survey area. The following unnumbered pre-survey review were investigated and found to be accurate as charted within one foot:

PSR:	Latitude:	Longitude:
13'	17°56'45"N	66°06'52"W
16'	17 55 45	66 06 56
36'	17 56 28	66 04 52
28'	17 56 42	66 04 16
18'	17 57 27	66 03 54
28'	17 55 51	66 03 54
14'	17 56 36	66 02 55
28'	~~17 55 22~~	~~66 03 31~~
16'	17 55 54	66 03 26
13'	17 56 39	66 02 50
14'	17 56 38	66 02 40
17'	17 56 38	66 02 37
~~17'~~	~~17 55 39~~	~~66 03 50~~
19'	17 56 10	66 06 09
24'	17 55 45	66 05 20
12'	17 57 41	66 01 48
31'	17 55 38	66 04 48
13'	17 56 05	66 03 14
13'	17 56 09	66 02 39
17'	17 56 39	66 02 37
24'	17 55 31	66 06 15
10'	17 57 50	66 06 06

Cont-	PSR:	Latitude:	Longitude:
	34'	17 55 24	66 05 09
	20'	17 56 50	66 04 54
	18'	17 57 00	66 03 05
	~~27'~~ 31'	~~17 55 32~~ 17 56 39	~~66 06 42~~ 66 04 53

The following unnumbered PSR items were investigated and not found. The least depth in the immediate vicinity is listed:

PSR:	Latitude:	Longitude:	Least Depth Found:
28'	17 56 ~~12~~ 9	66 05 32	39' Carried forward
28'	17 56 ~~12~~ 8	66 05 28	38' " "
16'	17 56 40	66 06 12	28' " "
~~27'~~	~~17 55 32~~	~~66 06 42~~	~~35'~~
29'	17 55 30	66 05 24	33' " "
11'	17 57 26	66 05 30	14' Carried forward
33'	17 55 28	66 05 00	38' Carried forward
~~31'~~	~~17 56 30~~	~~66 04 53~~	~~36'~~
03'	17 57 56	66 04 18	10' —
05 1/2'	17 57 21	66 04 24	11' Carried forward
16'	17 57 15	66 04 15	19' - 17' 125M W Carried forward
17'	17 57 06	66 04 12	22' - 18' ~~200M~~ 250 SW " "
20'	17 56 48	66 04 28	23'
20'	17 56 45	66 04 10	~~31~~ 15 ~~Carried forward~~ BJS (see HIT report)
28'	17 56 47	66 04 06	30'
23'	17 56 51	66 04 00	33' Disregard - disproved
~~22'~~	~~17 55 44~~	~~66 03 44~~	~~28'~~ *

The following unnumbered presurvey review items were investigated and shoaler depths found at the same locations listed:

PSR:	Latitude:	Longitude:	Shoaler Depth:
24'	17 56 00	66 07 28	21'
22'	17 55 44	66 03 44	19' * 100M SE
24'	17 55 36	66 06 28	22'
24'	17 55 31	66 06 06	21'
26'	17 56 48	66 05 09	24'
24'	17 56 41	66 05 30	2~~0~~ 60M NW (24' in same location)
11'	17 56 54	66 05 28	9'
13'	17 57 00	66 05 28	9'
13'	17 58 00	66 01 47	5'
15'	17 57 37	66 01 30	11'

L. COMPARISON WITH THE CHART

Comparison with NOS Charts 925 (1:20,000) and 902 (1:100,000) showed good agreement with depth curves, some soundings on the current survey tended to be one foot deeper than the chart. The following is a list of least depths found in areas of shoaling:

Least Depth:	Pos. No:	Latitude	Longitude:
04'	9382	17 58 32	65 59 56
18'	4409-4410	17 57 32	66 00 16

BJS

Least Depth:	Pos. No:	Latitude:	Longitude:	
26'	4186	17 56 54.6	66 00 17	
22'	4132-3	17 56 59	66 00 41	
24'	4108	17 56 48	66 00 34	
18'	5071-82	17 57 49	66 00 56.8	
16'	6047-48	17 57 45	66 00 05	
12'	6140-41	17 57 39.2	66 01 20.6	
11'	2978-79	17 57 36	66 01 28	
12'3	6070-71	17 58 09	66 01 24	
06'	2949-50	17 57 56.7	66 01 36.7	
14'	6106-07	17 57 35.3	66 01 51	
14'	1869-70	17 57 24.6	66 02 12	
11'	1880-81	17 57 21.2	66 02 18.9	
22'	2050-51	17 57 02	66 02 29	
13'	2736-37	17 56 18.9	66 02 51	on Excess Sheet
17'	2307-08	17 56 57.8	66 03 06.5	
11'2	2395-96	17 56 07.4	66 03 17.4	
13'	205-206	17 55 57	66 03 07	
19'	431-432	17 55 42	66 03 42	
17'6	276-277	17 57 21	66 03 50	
9'8	318	17 57 27	66 03 30	
28'	2625-2626	17 55 20.2	66 04 30	
23'	222-223	17 56 48	66 04 24	
11'	2548-2549	17 57 20	66 04 22	on Excess Sheet
10'9	1763-1764	17 57 15	66 04 47	
19'	2465-66	17 56 48	66 04 56	
30'	2645-46	17 55 38	66 04 56	
26'	4347-48	17 55 47	66 05 24	
27'	4333-4334	17 55 42	66 05 33	
24'	4323-24	17 55 47	66 05 38	
28'10	698-9	17 56 39.41	66 05 30	
16'	4219-4220	17 56 38	66 05 50	
10'9	479-480	17 56 31	66 06 12	
20'	4260-61	17 56 12.1	66 06 06.7	
9'	561-562	17 57 18	66 06 05.3	
21'	4311-12	17 55 31	66 06 06.5	
23'2	70-71	17 55 31	66 06 13	
22'0	860-861	17 55 36.5	66 06 29	
17'	4274-75	17 55 52.4	66 06 30	
18'6	781-782	17 55 48.4	66 06 50.1	
16'5	26-27	17 55 47.4	66 06 54	
17'5	754-755	17 55 23.6	66 07 12.09	
17'6	757-758	17 55 20.2	66 07 05.4	
17'6	3 - 4	17 55 56.7	66 07 18.21	
13'2	623-624	17 56 43.4	66 06 50	
20'18	66-67	17 55 40	66 06 20	
33'	4325-4326	17 55 24.5	66 05 42.1	
7'	1251	17 56 30	66 07 17	

M. ADEQUACY OF THE SURVEY

This survey is complete and adequate to supersede previous surveys.

N. AIDS TO NAVIGATION

There were no floating aids to navigation within the survey limits.

O. STATISTICS

	2223	2224	2225	2226	2227
Linear Nautical Miles of Sounding Line	140	0	109	82	11
Square Nautical Miles Area Surveyed	12	0	7	5	1
Number of Positions	1169	105	1016	827	161
Number of Bottom Samples	36	105	-	-	-

Three Tide Stations were operated during this survey.

P. MISCELLANEOUS

All times and dates used during this survey are Greenwich Mean Time.

Strong easterly winds prevailed during the survey, preventing near shore and shallow water development.

Bottom samples were forwarded to the Division of Sedimentology, Smithsonian Institute, Washington, DC.

Q. RECOMMENDATIONS

None

R. AUTOMATED DATA PROCESSING

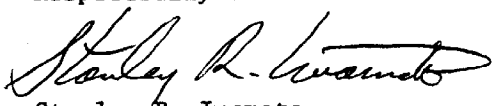
The following programs were used to collect and process data on this survey:

Number:	Title:	Version:
RK111	Range-Range Real Time Hydroplot	1/30/76
RK201	Grid and Lattice Plot	4/18/75
RK211	Range-Range Non-Real Time Plot	1/15/76
RK216	Range Azimuth Non-Real Time Plot	2/05/76
RK212	Visual Station Table Load and Plot	4/01/74
AB602	Elinore Line Editor	5/21/75
PM360	Electronic Corrector Abstract	2/02/76

S. REFERENCE TO REPORT

1. Horizontal Control Report OPR-423-MI-76
2. Field Edit Report OPR-423-MI-76

Respectfully Submitted



Stanley R. Iwamoto
LTjg, NOAA

APPROVAL SHEET

Field Number MI 10-2-76
Registry Number H-9597

This field work and processing from this survey were under my daily supervision. The sheet and records have been reviewed and approved by me.

Wesley V. Hull
Captain, NOAA
Commanding Officer
NOAA Ship Mt Mitchell MSS-22

05/23/77 H 9597
CONTROL LISTING

STATION ID	LATITUDE	LONGITUDE	SYMBOL	CARTO CODE	ELTV	FREQUENCY	LOCATION
1	17 57 26.125	66 6 48.556	0	~~253~~ 254	0.0	0.000	
2	17 57 15.900	66 2 54.670	0	253	0.0	0.000	
~~3~~	~~17 57 21.698~~	~~66 3 33.272~~	~~0~~	~~253~~	~~0.0~~	~~0.000~~	
9	17 55 49.830	66 9 36.300	0	250	12.0	0.000	NW
13	17 57 4.082	66 6 46.070	0	250	9.0	0.000	NW
14	17 56 55.304	66 7 47.245	1	254	2.0	0.000	NW
15	17 58 6.992	66 4 49.629	1	254	4.0	0.000	NW
18	17 57 15.897	66 2 54.675	0	~~250~~ 254	6.0	0.000	NW
19	17 57 48.025	66 2 8.955	1	254	1.0	0.000	NW
21	17 58 51.831	66 0 6.942	1	254	20.0	0.000	NW
~~23~~	~~17 58 17.415~~	~~65 59 5.197~~	1	254	2.0	0.000	SF
29	17 58 21.047	65 57 18.861	1	254	2.0	0.000	SF
62	17 58 53.924	66 1 5.956	1	254	3.0	0.000	NW

SIGNAL TAPE PRINTOUT
OPR 423- 76 SE COAST P.R.

009	7	17	55	49830	066	09	36300	250	0012	000000
013	7	17	57	04082	066	06	46070	250	0009	000000
014	7	17	56	55304	066	07	47245	254	0002	000000
015	7	17	58	06992	066	04	49629	254	0004	000000
~~017~~	~~7~~	~~17~~	~~57~~	~~15451~~	~~066~~	~~02~~	~~54796~~	~~243~~	~~0002~~	~~000000~~
018	7	17	57	15897	066	02	54675	250	0006	000000
019	7	17	57	48025	066	02	08955	254	0001	000000
021	7	17	58	51831	066	00	06942	254	0020	000000
023	7	17	58	17415	065	59	05197	254	0002	000000
062	7	17	58	53924	066	01	05956	254	0003	000000
029		17	58	21047	065	57	18861			

SIGNAL NAMES PRINTOUT

009	OLE GRANDE 1975	AMC RECORDS, 1975
013	BARR, 1965-75	Q170661, 1003
014	TREE	PHOTO PT, T-16363
015	BR-01	AMC RECORDS, 1975
~~017~~	~~BR-02~~ ARROYO BEACON LIGHT	~~AMC RECORDS, 1975~~
018	~~(ARROYO BEACON LIGHT FIGG 1966-75~~	Q170661, 1002
019	I-75	AMC RECORDS, 1975
021	BR-03	AMC RECORDS, 1975
023	2-75	AMC RECORDS, 1975
062	FENCE	VOL 1, P 10
029	BR-05	AMC RECORDS, 1975

OK

BJS

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
NOAA SHIP MT MITCHELL MSS-22
439 West York Street
Norfolk, Virginia 23510

Date : 11 May 1976 Reply to Attn. of:

To : The Director, National Ocean Survey

From : Commanding Officer, NOAA Ship Mt Mitchell MSS-22

Subject: Tidal Data for OPR-423-MI-76 Southeast Coast of Puerto Rico
Surveys H-9595, H9596, H9597, H9607, H9608, H9609, H9610

It is requested that verified hourly heights for the following gages be forwarded to The Director, Atlantic Marine Center (CAM-3). Please note that all times are requested to be GMT:

Arroyo, Puerto Rico	Lat 17°57.9'N	Long 66°03.9'W
Playa de Naguabo	18°11'20"N	65°42'40"W
Yabucoa Harbor	18°03'20"N	65°50'10"W

From 3 March 1976 through 18 April 1976

A copy of the Progress Sketch for OPR-423-MI-76 is enclosed as an aid in your evaluation of this request.

Wesley W. Hull
Commander, NOAA
Commanding

8/27/76

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): Arroyo

Period: March 3 - April 18, 1976

HYDROGRAPHIC SHEET: H-9597

OPR: 423

Locality: Off the southeast coast of Puerto Rico

Plane of reference (mean ~~lower~~ diurnal low water): 0.82 ft.

Height of Mean High Water above Plane of Reference is 0.8 ft.

Remarks: Zone direct.

James R Hubbard
for Chief, Tides Branch

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9597

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
ARRECIFE ALGARROBO ✓										1
ARRECIFE CORONA ✓										2
ARRECIFE GUAYAMA ✓										3
ARROYO ✓										4
LAS FIGURAS ✓										5
PUERTO ARROYO ✓										6
PUERTO PATILLAS ✓										7
PUNTA BARRANCAS ✓										8
PUNTA FIGURAS ✓										9
PUNTA GUILARTE ✓										10
RIO CHICO ✓										11
RIO GRANDE DE PATILLAS ✓										12
PUNTA VIENTO (TITLE) ✓										13
BAJO GUILARTE ✓										14
										15
										16
						APPROVED				17
						Chas. E. Harrington				18
						STAFF GEOGRAPHER - C5 x2				19
						16 Dec. 1977				20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

✪ U.S. G.P.O. 1972-769-565/516 REG. #8

APPROVAL SHEET
FOR
SURVEY H- 9597

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: Sept 19, 1977

Signed: William L Jones

Title: Chief, Verification Branch

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-9597

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	8
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	2

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES	[redacted]			[redacted]		82
CAHIERS	2		12-with			
VOLUMES	4		[redacted]			
BOXES	[redacted]		1-Final P/O			

T-SHEET PRINTS *(List)*

SPECIAL REPORTS *(List)*

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS: PRE-VERIFICATION	AMOUNTS: VERIFICATION	AMOUNTS: TOTALS
POSITIONS ON SHEET	[redacted]	[redacted]	3278
POSITIONS CHECKED		313	
POSITIONS REVISED		78	
SOUNDINGS REVISED		376	
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
[redacted]	*TIME – HOURS*		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	8	0	
VERIFICATION OF CONTROL		0	
VERIFICATION OF POSITIONS		80	
VERIFICATION OF SOUNDINGS		64	
COMPILATION OF SMOOTH SHEET		52	
APPLICATION OF TOPOGRAPHY		32	
APPLICATION OF PHOTOBATHYMETRY		0	
JUNCTIONS		16	
COMPARISON WITH PRIOR SURVEYS & CHARTS		40	
VERIFIER'S REPORT		24	
OTHER			
TOTALS	8	308	

Pre-Verification by F. L. Saunders	*Beginning Date* 06/22/76	*Ending Date* 06/22/76
Verification by M. W. Johnson, B. J. Stephenson	*Beginning Date* 05/31/77	*Ending Date* 09/15/77
Verification Check by G. F. Trefethen	*Time (Hours)* 10	*Date* 09/09/77
Marine Center Inspection by Hydrographic Inspection Team, (AMC)	*Time (Hours)* 19	*Date* 09/19/77
Quality Control Inspection by Y. K. Myers	*Time (Hours)* 56	*Date* 12/14/77
Requirements Evaluation by J. B. Baumgartner	*Time (Hours)* 4	*Date* 2/17/78

Contains 2 DPS 2/9/78

REGISTRY NO. H-9597

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. H-9597

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 12/4/80 TIME REQUIRED_____ INITIALS PEK

REMARKS:

Information for Future Presurvey Reviews

No noteworthy changes have occurred in the area covered by the present survey.

Position Index Lat.	Long.	Bottom Change Index	Use Index	Resurvey Cycle
175	0660	1	0	50 years
175	0661	1	0	50 years

ATLANTIC MARINE CENTER
VERIFIER'S REPORT

REGISTRY NO. H-9597 FIELD NO. MI-10-2-76

Puerto Rico, Southeast Coast, Punta Barrancas to Punta Viento

SURVEYED: March 10 through April 16, 1976

SCALE: 1:10,000 PROJECT NO.: OPR-423

SOUNDINGS: Raytheon DE-723
Ross Fineline Depth
Recorders

CONTROL: Del-Norte
Range=Range,
Range-Visual,
and Visual

Chief of Party ..... CDR W. V. Hull
Surveyed by ..... LT Potok
..... LTJG Iwamoto
..... ENS Mann
..... ENS Terry
..... ENS Dewhurst
..... ENS Konchuba
..... ENS Rice
..... ENS Bailey
Automated Plot by ..... Calcomp-618 (AMC)
Verified and Inked by ..... B. J. Stephenson B J Stephenson
September 19, 1977

1. Introduction

a. The radical course changes encountered during the development of certain Presurvey Review Items were not in accordance with Section 1.4.3, paragraph 4 of the Provisional Hydrographic Manual. The method used by the hydrographer made it very difficult to verify.

b. The projection parameter was revised during verification. The red changes in the Descriptive Report were made by the verifier.

2. Control and Shoreline

a. The control for this survey is adequately described in Section F of the Descriptive Report and in the Horizontal Control Report of 1976.

b. The shoreline originates with Class I, unreviewed Photogrammetric Manuscripts T-13358, T-13359, T-13361, and T-13362 of 1970-76 and T-13360 of 1970-75 and 76, supplemented by hydrographic information. Several of these manuscripts were 1:5,000 and had to be reduced before applying to the Smooth Sheet.

3. Hydrography

a. Depths at crossings are in adequate agreement.

b. The standard depth curves could not be adequately delineated. Additional lines are necessary to adequately delineate the bottom configuration and subsequent curve delineation.

c. The development of bottom configuration and the investigation of least depths does not meet the standards for hydrographic surveys. Numerous indications of shoaler depths on the regular system of lines used to develop this survey were not investigated.

4. Condition of Survey

The Smooth Sheet and accompanying overlays, hydrographic records, and reports are adequate to conform to the requirements of the Provisional Hydrographic Manual, with the following exceptions:

a. The sounding volumes were not properly annotated.

b. The development of Presurvey Review Items did not meet the Presurvey Review requirements.

c. The hydrographer failed to comply with paragraph 4.7 of the Project Instructions. The shallow-water depth recorder was not adequate to portray an accurate profile of the bottom along the continental shelf. The verifier attempted to scale depths for the misses. The use of a deep-water depth recorder would have eliminated this problem and provided accurate depths.

d. The sextant fixes for the bottom samples should have been made part of the present survey. (Refer to Section G of the Descriptive Report.)

e. The field scanning was less than adequate. Some peaks and deeps were missed and peaks were moved as much as eight minutes and read at the regular sounding interval, instead of the actual time. See Quality Control report

f. The field sheet did not provide sufficient descriptive notes to delineate the topographic features.

seconds probably

5. Junctions

Adequate junctions have been effected with the following surveys:

H-9596 (1976) to the south and west
H-9595 (1976) to the south
H-9607 (1976) to the east

6. Comparison With Prior Surveys

H-2424 (1899) 1:20,000
H-2583 (1902) 1:20,000
H-4726 (1927) 1:20,000
H-2737 (1905-06) 1:40,000

These surveys, taken together, cover the common area of the present survey. A comparison between the prior and present surveys reveals differences in both shoreline and bottom configuration. Present survey depths differ from the prior survey depths by varying amounts, depending on their location. These differences can, in part, be attributed to minor changes and differences in survey methods; however, the inadequate development of the present survey and lack of thoroughness in the investigation of least depths of the prior surveys makes difficult an adequate comparison. The bottom configuration, as evidenced by the graphic records, is irregular and numerous indications of pinnacles were found. Unless thoroughly investigated, lesser depths on many shoals cannot be disposed of by the present survey; therefore, it was necessary to bring forward depths from the prior surveys.

The following topographic features, which originated with information prior to the date of the present survey, are not considered adequately verified or disproved and should be retained as charted.

Topo. Feature	Latitude	Longitude	Source
Reef symbol along shoreline	17° 56' 55" to	66° 06' 40" to 66° 07' 40"	Hydrographic information supplemented by prior surveys
Reef symbol	17° 57' 10"	66° 05' 20"	Hydrographic information supplemented by prior surveys

Topo. Feature	Latitude	Longitude	Source
Reef symbols along shoreline	17° 57' 10" to 17° 57' 30"	66° 02' 30" 66° 03' 02"	Hydrographic information supplemented by prior surveys
Submerged rocks	17° 56' 50"	66° 07' 24"	Hydrographic information supplemented by prior surveys

The present survey is not considered adequate to supersede the prior surveys in their entirety. Therefore, the above prior surveys should be considered when representing the bottom configuration.

7. Comparison With Charts 925 (4th Edition, March 24, 1973) and 902 (13th Edition, December 13, 1975)

a. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration.

The Presurvey Review Items were adequately described in Section K of the Descriptive Report.

The 20 foot unnumbered Presurvey Review depth charted at approximate latitude 17° 56' 45" N and longitude 66° 04' 10" W, with source unknown, was apparently misplotted. The present survey has developed this area and no indication of this depth was found. The depth should be deleted from the chart unless Quality Control can find a valid reason to retain it on the chart. *See Quality Control report.*

The present survey is adequate to supplement the charted information within the common area.

b. Aids to Navigation

There are no floating aids to navigation within the limits of this survey. Punta Figuras Light (Light List No. 1379) has been reestablished on the abandoned lighthouse structure and is no longer considered a geodetic position. Arroyo Beacon Light is the name assigned in the field for electronic signal No. 18 and should not be mistaken as an aid to navigation.

8. Compliance With Instructions

This survey is not in compliance with the Project Instructions. See paragraphs 3, 4, and 6 of this report for details.

9. Additional Field Work

This is not an adequate basic survey. Additional field work would be necessary to make it a basic survey as outlined by the Provisional Hydrographic Manual.

With the addition of sdgs carried fwd from the prior surveys this survey is adequate to supersede prior surveys within the common area.

No! Not adequate!

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

File No: D6-5
Ser. No: 77-123

September 9, 1977 CAM3/RAT

TO: RADM Robert C. Munson, CAM
Director, Atlantic Marine Center

FROM: CDR Robert A. Trauschke, CAM3
Chief, Processing Division

SUBJECT: Hydrographic Inspection Team Report, H-9597 (1976)

This 1976 MT. MITCHELL survey was accomplished in general compliance with Project Instructions, OPR-423-MI-76, dated October 1, 1975.

FIELD WORK

The survey sounding line spacing does not meet basic requirements for hydrographic surveys at a 1:10,000 scale, in an inshore area with an irregular bottom configuration. Numerous indications of shoaler depths along sounding lines run were not investigated or developed. "Record of Shoal Examinations" were not prepared by the hydrographer as required by Section 4.5.9.3 of the Provisional Hydrographic Manual. It is not evident from the hydrographic records or Descriptive Report that the development and examination of shoals is in compliance with Section 4.5.9.2 of the Provisional Hydrographic Manual. Because of this deficiency, numerous investigations cannot be considered adequate to verify or disprove chart and prior survey information.

Because of the above serious deficiencies, this survey should not be considered a basic survey for charting purposes. It is, however, adequate to supplement the presently charted hydrography and then supersede it where the survey information warrants. Additional work, consisting of supplemental sounding lines and developments of shoal indications, would be necessary to make this a basic survey as per Sections 4.1.1, 4.3.4, and 4.3.2 of the Provisional Hydrographic Manual.

VERIFICATION

The Hydrographic Inspection Team returned this sheet to the verifier for a large number of changes in depth curves, signal names, and shoreline.

The HIT Team spent 19 hours on this survey.

H-9597

Examined and Approved:
Hydrographic Inspection Team
Date: 9-19-77

CDR Robert A. Trauschke, NOAA
Chief, Processing Division

CDR Charles H. Nixon, NOAA*
Chief, Operations Division

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

R. D. Sanocki
Technical Assistant
Processing Division

Guy F. Trefethen
Verification Branch

* Absent

Approved/Forwarded

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

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

C352

December 13, 1977

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

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

SUBJECT: Quality Control Report, H-9597 (1976), Puerto Rico, Southeast Coast, Pta. Barrancas to Pta. Viento

A quality inspection of H-9597 (1976) has been accomplished to evaluate the accuracy and adequacy of the survey with respect to data acquisition, delineation of the bottom, determination of least depths and navigation hazards, transfer of topographic information, decisions and actions by the verifier, and cartographic presentation of data.

The junction with H-9607 (1976) on the east was completed during the evaluation of the present survey. The junction with H-9596 (1976) on the south and west was completed during the evaluation of that survey. Soundings in the area of overlap from H-9595 (1976) at a scale of 1:100,000 agree with the development on the present survey and fall within the appropriate curves delineated on the large scale. Depth curves should be charted from H-9597 within the overlapping area.

The 20-foot sounding charted at lat. 17°56.75', long. 66°04.16' from a merchant ship report (CL281/27) was not proved or disproved on the present survey and should be retained on the chart.

The present survey was found to conform to National Ocean Survey standards and requirements except for the following deficiencies:

1. Digital readings were not compared with the analog trace during hydrographic operations.

2. The discrepancy mentioned in the Verifier's Report concerning the displacement of certain soundings scaled in error at unequal intervals from the analog trace by as much as eight minutes was not found during quality control. However, a displacement of eight seconds in time was noted for some soundings.

3. The limits of uncovering coral reefs located in the immediate vicinity of lat. 17°58.4', long. 65°59.6' from the boat sheet were mistakenly delineated by black dashes on the smooth sheet. These were revised to reef symbols during quality control. (See Provisional Manual - Section 7.3.7.2 and Figure B-4).

4. The 1- and 4-ft. soundings plotted in the vicinity of lat. 17°58.37', long. 65°59.59' were inadvertently considered to be a 14-ft. sounding during verification. Depth curves were subsequently revised to adequately show the bottom configuration in this area.

5. The 5 1/2-ft. sounding located at lat. 17°57.35', long. 66°04.4' carried forward from H-2424 (1899) during verification was revised to 5^5 on the smooth sheet.

6. Additional descriptions of bottom samples indicated on the boat sheets were inked on the smooth sheet during quality evaluation.

7. Additional soundings were brought forward from the prior surveys in areas between sounding lines to better represent the size and character of significant features found on the present survey.

8. Portions of a reef at lat. 17°57.06', long. 66°05.68' and lat. 17°57.08', long. 66°05.62' from H-2424 (1899) were carried forward to supplement present hydrography. The sounding records noted the launch hit bottom at low water in these locations.

9. Coral reef symbolization was appropriately added to the smooth sheet in areas where notations in the sounding volumes identified features awash at low water.

10. FIGG, 1966 was added to the name, ARROYO BEACON LIGHT, at electronic signal no. 18. This name was confirmed by descriptions from miscellaneous data which accompanied the survey records.

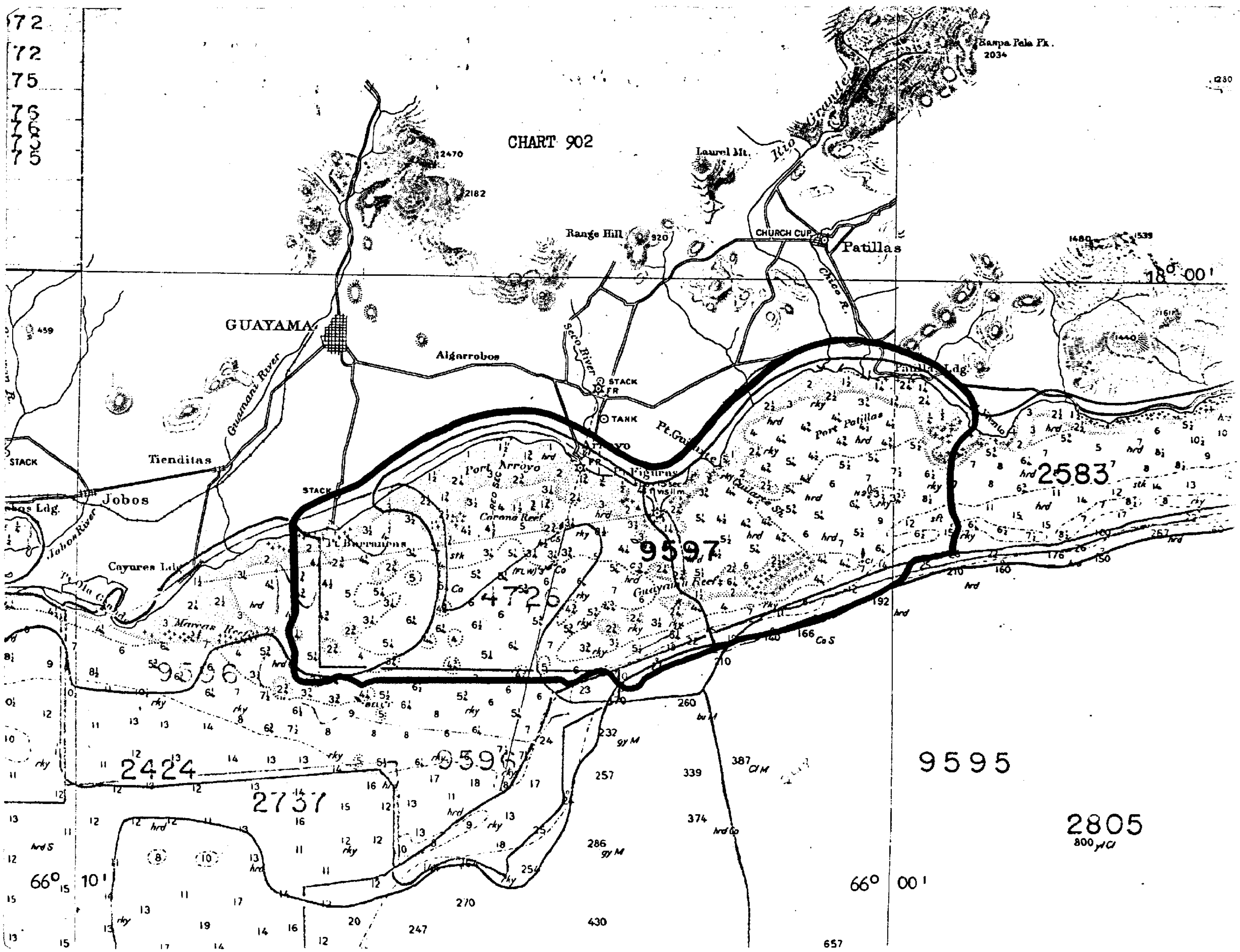


CHART 902
GUAYAMA
Jobos
Tienditas
Cayures Ldg.
Jobos River
Guamani River
Algarrobos
Seco River
STACK
TANK
Range Hill
920
Laurel Mt.
Rio Grande
CHURCH CUP.
Patillas
Chico R.
Rampa Pala Pk.
2034
2470
2182
459
Port Arroyo
Arroyo
Corona Reef
Pt. Barrancas
Mareas Reef
Pt. Guilarte
Port Patillas
Patillas Ldg.
Guayama Reef
18° 00'
66° 10'
66° 00'
9597
4726
9596
2424
2737
9595
2583
2805

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. 9597

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
25689	14 Apr. 80	B. Fernandez	~~Full Part Before~~ After Verification Review Inspection Signed Via
			Drawing No.
			~~[illegible]~~
25677	11/10/80	B. Fernandez	~~Full Part Before~~ After Verification Review Inspection Signed Via
			Drawing No.
25640	6-28-82	R. Ritter	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. Quality Control
			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.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63