

8985

Diag. Cht. No. 901-2.

FORM C&GS-504

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

DESCRIPTIVE REPORT

Type of Survey **HYDROGRAPHIC**

Field No. **WH 10-2-68** Office No. **H-8985**

LOCALITY

State **PUERTO RICO**

General locality **SOUTH COAST**

Locality **CABO ROJO TO PUNTA TOCON**

19 68-69

CHIEF OF PARTY

CDR. WAYNE L. MOBLEY

LIBRARY & ARCHIVES

DATE **May 20, 1971**

USCOMM-DC 37022-P66

901
920

8985

DESCRIPTIVE REPORT

To Accompany

HYDROGRAPHIC SURVEY H-8985 (Field No. WH-10-2-68)

1:10,000

1968

USC&GS WHITING

Wayne L. Mobley, CDR., USESSA, Commanding

A. PROJECT

The authorization for this project is contained in the revised instructions for Project OPR-423, dated 24 January 1968, which superseded all previous instructions.

B. AREA SURVEYED

This coastal line survey of the western end of the southern coast of Puerto Rico was started on 10 April 1968 and completed on 8 May 1968. The area surveyed lies between Latitude $17^{\circ}54'45''N$ and the shoreline (approximately $17^{\circ}58'15''N$ Lat.) and Longitudes $67^{\circ}05'15''W$ and $67^{\circ}11'35''W$.

The survey junctions on its eastern edge H-8984 (Field No. WH-10-1-68) and on its southern edge with H-8988 (Field No. WH-10-5-68) and H-8986 (Field No. WH-10-3-68).

This survey was covered by the prior survey, registry number 2638 (scale 1:20,000), the field work for which was carried out between the inclusive dates of 12 February to 20 May 1903.

C. SOUNDING VESSELS

The sounding vessels used were two survey launches (WH-I No. 1206 and WH-II No. 1207), which obtained all echo soundings and bottom samples while a skiff was used for pole soundings. Launch WH-I was used to

obtain position numbers 1-1560 while Launch WH-II used position numbers 5000-7125. Bottom samples obtained by Launch WH-II were numbered 8000-8029 while those brought up by Launch WH-I were included in the previously mentioned fix numbers for that launch. The pole soundings obtained using the skiff were numbered 7500-7522 and 9080-9125.

D. SOUNDING EQUIPMENT

The echo sounding equipment used on both survey launches were Raytheon model DE-723 survey fathometers. Launch WH-I used fathometer No. 251 and WH-II used fathometer No. 250. Two bar checks were normally taken daily so that velocity corrections could be obtained. The velocity correction curve was drawn from the mean of the bar checks. See the fathometer report for more detailed information.

Pole soundings from the skiff were obtained using standard sounding poles with 1-foot graduations.

E. SMOOTH SHEET

The boat sheets were plotted almost entirely by the computer plotter system on board the USC&GSS WHITTING. This system incorporates a Digital Computer (Model PDP-8) and a Calcomp Plotter (Model 502).

Less than one per cent of the soundings were hand plotted, since it was utilized only when adjusting boat sheet errors.

For further information see the computer plotter report.

F. CONTROL

Decca HI-FIX in the hyperbolic mode was used almost exclusively for control. Visual control (3-point fixes) were used for calibrating the HI-FIX and at the inshore end of regular HI-FIX hydro lines where HI-FIX distortion was encountered (i.e., in the vicinity of high bluffs).

Visual signals, excluding triangulation station MOLINO (1966, over which a signal was built) and Cabo Rojo Lighthouse, were located photogrammetrically. They were pricked through to the boat sheets from topographic sheets (i.e., incomplete manuscripts) numbers T13118, T13119, and T13120 (November 1966).

The three shore stations were located using third order triangulation methods, using a theodolite (Serial No. T2-85668) and electro-tapes (Serial Nos. 231 and 232). The shore stations were:

<u>Name</u>	<u>Location</u>	<u>Latitude</u>	<u>Longitude</u>
Master	Isla Maquey	17°58'15.89"	67°02'44.41"
Slave (1)	Cabo Rojo	17°56'07.50"	67°11'32.85"
Slave (2)	Punta Vorobado	17°56'25.71"	66°57'20.33"

Along shoreline areas which were at the base of high bluffs or close to the master or slave stations, using Decca HI-FIX control results in a distortion (nearly uniform for any particular area). The project instructions (OPR-423, dated 24 January 1968) recommended that we end each hydro line with strong visual fixes on the inshore end. This procedure was followed throughout; but in Bahia Sucia (Lat. 17°57'30", Long. 67°10'30"), it proved impractical. This bay is almost semi-circular in shape, which made it quite difficult to obtain a fix which did not result in a swinger. Though we were unable to obtain a large number of solid fixes, we acquired enough to enable us to determine a HI-FIX correction which, when applied to the fixes obtained by HI-FIX, positioned them within a few meters of the positions simultaneously acquired using visual methods (where accurate visual fixes were obtained). This correction was applied to all HI-FIX positions in the area. *See plotter Note dated 12/14/70 and position overlay.*

For further information see the HI-FIX report.

✓ G. SHORELINE

The shoreline and topographic details were transferred from the above mentioned manuscripts. The shoreline was verified and no inconsistencies were found.

The offshore topographic details were frequently inconsistent with our results. Many of the "shoals" located photogrammetrically were in reality areas of sparse vegetation surrounded by regions of dense growth or similarly contrasting bottom materials. These misinterpretations necessitated numerous revisions of the incomplete manuscripts. The revisions were noted in the field edit prepared by the photogrammetrist.

The tidal range along the southwest coast of Puerto Rico averages less than one foot, making it impossible to obtain shoreline soundings with launches which draw 3.5 to 4.0 feet of water. The bottom along most of the shoreline was either fouled by dense seagrass or rocks,

making the shallow draft (1 to 2 feet) skiffs useless in obtaining shoreline. We were successful in obtaining detached positions using outboard skiffs.

✓ H. CROSSLINES

Ninety-five per cent of the crossline soundings agreed, within one foot or less, with the sounding lines they intersected. Soundings which varied by more than one foot were in areas having irregular bottom characteristics. Crosslines constituted 5.5 per cent of the lines run.

✓ I. JUNCTIONS

The survey (H-8985) makes a junction with three contemporary surveys which border it on its eastern and southern edges. The sheets, field numbers WH-10-5-68 (H-8988) and WH-10-3-68 (H-8986), which make a junction with the southern edge of the survey where the bottom is relatively flat with few irregularities, indicated depths which were in almost complete agreement with those indicated, differing by more than a foot only where the bottom was irregular. On the ~~western~~^{eastern} edge of the sheet, which was bordered by field number WH-10-1-68 (H-8984), there was an area (Lat. $56^{\circ}45'00''$, Long. $67^{\circ}05'00''$) where the bottom was irregular. In this area soundings varied considerably. Within an area one-half mile in radius in this area, the junction was inconclusive. Junctions agreed within a foot or less along the rest of the ~~western~~^{eastern} edge of the sheet.

Junction fair in a very irregular bottom.

✓ J. COMPARISON WITH PRIOR SURVEYS

Soundings on boat sheet H-8985-BS WH, when compared with corresponding soundings on H-2638, agreed within 1.5 feet. The soundings on H-2638 being generally the deeper of the two. The discrepancies were due in part to the fact that fathometer (TRA) corrections have not been applied. Also in one area, Bahia Salinas (Lat. $17^{\circ}57'00''$, Long. $67^{\circ}10'30''$), considerable filling in has occurred, resulting in shallower water and considerably altered depth curves. There have also been numerous changes in bottom contour throughout the area.

The presurvey review contained numerous areas which required development and/or verification. The items (all of which were encircled by broken lines) on page 1 of the review (in the vicinity of Cabo Rojo Lighthouse) were verified. Due to insufficient time, a thorough development of the area on page 3 of the presurvey review was not possible. Though most of the shoal areas were developed, detached

positions of rocks and coral heads were not obtained. The presence of a boiler (Lat. 17°55'19", Long. 67°07'47") was not verified either. Further development in this area is highly recommended due to the extremely irregular nature of the bottom. *Boiler Not visible on photos -*

✓ K. COMPARISON WITH THE CHART

The largest scale chart which covers the area in this survey is C&GS 901 (scale 1:100,000, 9th Ed., March 1, 1965), which had soundings in fathoms. It agreed favorably with the smooth sheet though, as a result of the small scale of chart 901, a detailed comparison was not possible.

✓ L. ADEQUACY OF THE SURVEY

The survey is complete and adequate for charting.

✓ M. AIDS TO NAVIGATION

Cabo Rojo Lighthouse is located on Cabo Rojo. Position has been located by triangulation. There are no floating aids within the survey area.

✓ N. STATISTICS

Launch 1	Positions	<u>1736</u>
	Miles	<u>176.3</u>
Launch 2	Positions	<u>2080</u>
	Miles	<u>233.0</u>
Skiff	Positions	<u>69</u>

Hydro Signals List - signal numbers located photogrammet-
rically on manuscript

<u>T13120</u>	<u>T13119</u>	<u>T13118</u>
191	173	138
190	172	137
187	170	136
186	169	135
185	168	131
184	167	130
183	166	123
182		122
181		121
180		120
179		119
178		118
176		117
175		116
174		

✓ O. MISCELLANEOUS

The eastern half of the survey contains many coral reefs. The western half has a more uniform, sandy bottom.

The majority of this sheet was plotted using electronic control. Inshore hydro was run using both visual and electronic control. The visual positions were plotted and compared with the electronic positions plot. The inconsistencies in the visual, due to poor control and inexperienced anglomen, warranted the plotting of the inshore hydro using electronic control to the beach. The HI-FIX calibration corrections which were applied were based in general on the more consistent visual fixes. Some areas may need more correction before the final smooth sheet is produced.

✓ P. RECOMMENDATIONS

Additional work may be required in the areas around the reefs.

Q. REFERENCES TO REPORT

Reference should be made to the following reports for obtaining pertinent data:

1. Fathometer Report, Puerto Rico 1968
2. HI-FIX Report, Puerto Rico 1968
3. Computer Plotter Report

Respectfully submitted,

Wayne L Mobley

for
Clarence W. Tignor
ENS, USESSA

LIST OF SIGNALS COMPILED BY AMC FOR H-8985
(WH 10-2-68) SEASONS 1968 & 1969

SIGNAL NO.	LATITUDE			LONGITUDE			NAME OF STATION
	DEG.	MIN	MTR	DEG.	MIN	MTR	
097	17	57	0443	067	12	1360	AQUILA, (WEST OF POINT OF ORIGIN) ¹⁹⁶⁶
098 (1968)	17	56	0249	067	11	0982	CABO ROJO L.H., 1952
099	17	57	0743	067	09	0732	MOLINO, 1966
*997 (1969)	17	56	0249	067	11	0982	CABO ROJO L.H., 1952
*998 (1969)	17	56	0079	067	11	0340	SUCIA (USN), 1966
140	17	57	1538	067	11	0152	XXX
144	17	57	1759	067	10	0561	XXX
153	17	57	0651	067	09	0994	XXX
160	17	57	0733	067	08	1740	XXX
165	17	57	0558	067	08	0668	XXX
166	17	57	0480	067	08	0451	XXX
167	17	57	0456	067	08	0336	XXX
169	17	57	0222	067	08	0035	XXX
172	17	57	1726	067	07	1207	XXX
173 (H)	17	56	1657	067	07	1017	XXX
175	17	56	1717	067	07	0474	XXX
177 (H)	17	56	1732	067	07	0090	XXX
181	17	56	1580	067	06	0910	XXX
183	17	56	1601	067	06	0441	XXX
185	17	56	1770	067	05	1724	XXX
188	17	57	0275	067	05	1211	XXX
189	17	57	0408	067	05	1042	XXX
190	17	57	0380	067	05	0917	XXX
191	17	57	0439	067	05	0672	XXX
192	17	57	1168	067	05	0475	XXX
193	17	57	1394	067	05	0523	XXX
197	17	57	1139	067	04	1200	XXX
230	17	57	1032	067	04	0758	XXX
*400	17	56	1144	067	04	1141	XXX
*420	17	56	0896	067	05	0235	XXX
*421	17	56	0339	067	06	0190	XXX
*422	17	55	0794	067	05	1687	XXX
*423	17	55	0470	067	06	1397	XXX
*424	17	55	0433	067	07	0867	XXX
*426	17	56	1723	067	06	1561	XXX
*427	17	57	0226	067	08	0035	XXX
*430	17	57	0272	067	11	1043	XXX
*431	17	56	1688	067	11	0757	XXX
*432	17	56	0627	067	11	0102	XXX

* = 1969 Signals

Comp by BJS
✓ by W.F.J.

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HI*FIX CORRECTIONS
 WH 10-2A-68
 LAUNCH #2

DAY	POS #	PAT I	PAT II	TIME
102	5000-5188	+.05	+.05	091530-132145
	5188-5391	+.05	+.05	132145-164700
103	5392-5678	+.05	+.05	085315-163715
104	5679-6052	+.05	+.05	083345-154145
105	6053-6300	+.05	+.05 +.06	092030-162600
106	6301-6423	-.02	+.09	090230-133900
	6424-6444	+.14	+.18	133930-154645
	6445-6473	-.09	+.05	154715-162315
107	6474-6567	-.09	+.08	094330-150700
115	6568-6605	+.10	+.05 +.05	111645-161200
116	6606-6681	-.17	+.03	090645-134445
	6682-6735	+.06	+.06	135015-161800
117	6736-6886	-.02	+.05	095415-154730
	6887-6904	-.33	+.05 +.05	155100-161030
119	7014-7125	+.05	+.05	091645-143400

WH 10-2B-68
 LAUNCH #1

101	0001-0216	+.08	+.10	111000-161015
102	0217-0241	+.08	+.10	091830-094245
	0242-0478	+.14	+.10	094345-155145
103	0479-0613	+.14	+.10	092400-114830
104	0614-0901	+.14	+.10	084945-150745
105	0902-0966	+.02	.000	093630-112830
	0967-1057	+.12	+.04	112900-154630
106	1058-1101	+.18	+.11	085700-094845
	1102-1125	+.30	+.08	102300-131615
	1126-1133	+.06	+.08	132915-133715
	1134-1205	+.15	+.07	133800-152330
107	1216-1276	+.10	+.09	111945-140015
115	1284-1315	+.08	+.09	111415-120015
	1316-1416	+.14	+.10	120030-150430
118	1419-1452	-.02	+.14	094000-110900
	1453-1475	-.08	+.14	111115-115230
	1476-1556	+.14	+.14	115645-152845

VELOCITY TABLE NO. (S) 0,4,7
OPR-423 PUERTO RICO 1968
USC & GSS WHITING
USE WITH: H-8985

099999 01 0000 0000 000 0 000000 000000

000030 01 1006 0004 000 0 000000 000000 Lch # 1
000048 01 1004
000060 01 1002
000080 01 0000
000105 01 0002
000135 01 0004
000170 01 0006
000215 01 0008
000265 01 0010
000313 01 0012
000355 01 0014
000400 01 0016
000443 01 0018
000490 01 0020
000540 01 0022
000588 01 0024
000635 01 0026
000686 01 0028
000738 01 0030
000790 01 0032
000845 01 0034
000900 01 0036
000956 01 0038
001010 01 0040
001068 01 0042
001120 01 0044

000030 01 1008 0007 000 0 000000 000000 Lch # 2
000044 01 1006
000055 01 1004
000068 01 1002
000082 01 0000
000102 01 0002
000122 01 0004
000143 01 0006
000170 01 0008
000195 01 0010
000223 01 0012
000252 01 0014
000282 01 0016
000314 01 0018
000346 01 0020
000380 01 0022
000420 01 0024
000460 01 0026
000500 01 0028
000545 01 0030
000590 01 0032
000635 01 0034
000682 01 0036
000730 01 0038
000780 01 0040
000830 01 0042
000882 01 0044

8110

000933 01 0046
000986 01 0048
001035 01 0050

8110

TRANSDUCER, VELOCITY TABLE INDICATOR

H-8985

WH 10-2-68

LAUNCH ²/₁

000000 00 0000 0004 102 0 000000 000000

000000 00 0000 0004 103 0 000000 000000

000000 00 0000 0004 104 0 000000 000000

145145 00 0004

15171⁵# 00 0000

000000 00 0000 0004 105 0 000000 000000

000000 00 0000 0004 106 0 000000 000000

090230 00 0002

111645 00 0000

111800 00 0004

111930 00 0000

094430 00 0002 0004 107 0 000000 000000

1507⁸00 00 0000

111645 00 0002 0004 115 0 000000 000000

161215 00 0000

093900 00 0002 0004 116 0 000000 000000

111315 00 0000

133915 00 0002

141600 00 0000

8110

000000 000000 0004 117 0 000000 000000

000000 00 0000 0004 118 0 000000 000000

000000 00 0000 0004 119 0 000000 000000

TRANSUCER, VELOCITY TABLE INDICATOR

H-8985

WH 10-2-68

LAUNCH 11

000000 00 0000 0007 101 0 000000 000000

143515 00 1002

161115 00 0000

091830 00 1004 0007 102 0 000000 000000

155145 00 0000

092400 00 1002 0007 103 0 000000 000000

094130 00 0000

102915 00 1002

114⁹830 00 0000

132500 00 1002 0007 104 0 000000 000000

150⁸745 00 0000

142615 00 1002 0007 105 0 000000 000000

154⁷830 00 0000

114930 00 0002 0007 106 0 000000 000000

152330 00 0000

000000 00 0000 0007 107 0 000000 000000

144630 00 0002 0007 115 0 000000 000000

15580000 0000

110745 00 1002 0007 118 0 000000 000000

114700 00 0000

132015 0000002

133215 00 0000

131300 00 0002 0000⁷ 128 0 000000 000000

143⁵45 00 0000

TIME AND TIDE NOTE

H-8984

H-8985

1968 Season

Prior to commencing hydro on day 100, 1968, the clocks were set to 45th meridian time zone to take advantage of early morning weather conditions.

Hydro prior to day 100 was recorded on 60th meridian. However, to eliminate confusion, survey records were referenced to 45th meridian after day 99.

Tide corrections were also logged after day 99 on the 45th meridian time zone.

Tides were referenced to standard guage located at Magueyes Island, which was centrally located in survey area.

Tide plane of reference - MLW. Staff reading at MLW = 3.5 feet.

TIDE NOTE FOR HYDROGRAPHIC SHEET

February 11, 1969

~~Name of Chart or Book~~ Pacific Marine Center

Plane of reference approved ~~in~~
~~volume of sounding records~~ for

HYDROGRAPHIC SHEETS 8984-89

Locality: South coast of Puerto Rico

Chief of Party: W. L. Mobley, 1968

Plane of reference is mean low water

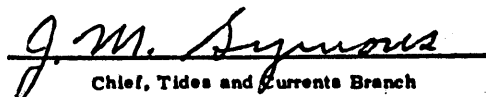
Tide Station Used (Form C&GS-681):

Magueyes Island

Height of Mean High Water above Plane of Reference is as follows:

0.6 foot

Remarks


Chief, Tides and Currents Branch

APPROVAL SHEET
H-8985 (WH 10-2-68)
1968 Field Season

Supervision was made periodically on the plotter sheets; but due to the excessive number of signals, poor signal location, and a poorly designed visual program, many replots were made and a reasonably good plot was not obtained until after the close of the Puerto Rico field season.

The final printouts were checked and approved for submission to P.M.C. for automatic plotting of the preliminary sheet. However, since there are several errors on the last sheets and poor photogrammetric compilation of the manuscripts, it is felt that the preliminary plots should be returned to the ship for additional checking.

Also it is felt that further investigation and development must be made this next season in several areas on these sheets to ascertain the reliability of the survey, as well as complete the development on questionable soundings.

The factor, other than photography and poor computer programming, that contributed to the questionable adequacy of this survey was the time limitation placed upon the ship to survey a priority area for purposes of charting. There was time for only a basic system of lines.

After verification and additional development, this survey will be adequate for charting.

Albino L. Mabley

PART II
DESCRIPTIVE REPORT
HYDROGRAPHIC SURVEY

H-8985

WH-10-2-68

1:10,000

1969

USC&GSS WHITING

Wayne L. Mobley,

CDR, USESSA

Commanding

✓ A. PROJECT

Continuation of this project was under authorization in Revised Instructions project OPR-423 - Puerto Rico, CFN2, 23 January 1969.

✓ B. AREA SURVEYED

This survey was principally involved with developing shoal areas and delineating the off shore reefs that were not satisfactorily surveyed in 1968.

✓ C. SOUNDING VESSELS

	<u>Positions</u>	<u>Day</u>
Launch II	2001-2226	91
	2234-2310	92
Large Whaler	9200-9275	91
	9289-9371	93

✓ D. SOUNDING EQUIPMENT

Launch II had the Digital Fathometer Raytheon DE-723D, serial number 37018.

The large whaler used pole and hand lead.

Corrections were determined by daily bar checks and serial temperature observations (see 1969 Fathometer Report).

✓ E. SMOOTH SHEET

The smooth sheet will be plotted by Pacific Marine Center.

✓ F. CONTROL

Control was visual; signals were located by T-2 and electro-tape traverse.

Natural objects (i.e., houses) that were recoverable from 1968 photogrammetric locations were used for some inshore development.

✓ G. STATISTICS

Launch II:	Positions	303
	Miles of soundings	21.8
Large Whaler:	Positions	159

Area surveyed includes several developments scattered throughout survey area.

✓ H. MISCELLANEOUS

Development lines were run over as many of the indicated shoal areas as time permitted.

✓ I. RECOMMENDATIONS

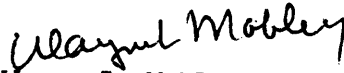
Additional time could have been spent in this area. However, the majority of this area is more uniform (sandy, smooth bottom) than the adjoining area to the east; thus, less work was required.

✓ J. REFERENCE TO REPORTS

Reference is made to the following reports and data submitted under separate cover:

1. Fathometer Report, 1969
2. Fathograms and sounding volumes and/or printouts for
 - a. Launch II, days 91 and 92
 - b. Large Whaler, days 91 and 93
3. 1969 Control OPR-423 Traverse

Respectfully submitted,


Wayne L. Mobley
CDR, USESSA

1969
Signals

VISUAL SIGNAL TAPE

OPR 423

SOUTH COAST OF PUERTO RICO

BTA NUM	0	'	"	0	'	"	
097	17	56	0803 ⁹	067	11	33 ³⁷ 42	Cabo Rojo (USAF), 1966
098	17	56	0253	067	11	1154	SUCIA (USN), 1966 ✓
099	17	57	2418	067	09	2487	MOLINO, 1966 ✓
241	17	58	3874	067	03	3830	✓
242	17	58	4505	067	03	3232	✓
243	17	58	3728	067	03	3541	✓
244	17	58	3685	067	03	3337	✓
245	17	58	3497	067	03	3035	✓
246	17	58	3347	067	03	2763	✓
247	17	58	3097	067	03	2406	✓
248	17	58	3097	067	03	2216	✓
249	17	58	3123	067	03	1944	✓
253	17	58	2859	067	03	1257	✓
254	17	58	3383	067	03	1628	✓
256	17	58	3123	067	03	1424	✓
257	17	58	3175	067	03	1101	✓
258	17	58	3123	067	03	0581	✓
259	17	58	3376	067	03	0030	✓
262	17	58	2231	067	02	5356	✓
263	17	58	1958	067	02	4554	✓
265	17	58	1899	067	02	3874	✓
268	17	58	3028	067	02	5747	✓
269	17	58	3236	067	02	5526	✓
270	17	58	2794	067	02	5139	✓
271	17	58	2492	067	02	4816	✓
272	17	58	2459	067	02	4309	✓
273	17	58	2439	067	02	3792	✓
274	17	58	2492	067	02	3358	✓
276	17	58	2879	067	02	2909	✓
277	17	58	3191	067	02	2491	✓
278	17	58	2908	067	02	2076	✓
386	17	56	3038	066	57	2708	✓
387	17	56	2775	066	57	2324	✓
388	17	56	2505	066	57	1930	✓
391	17	56	1464	066	57	2368	✓
392	17	56	1128	066	57	2541	✓
393	17	56	0751	066	57	2412	✓
400	17	56	3720	067	04	3876	✓
401	17	56	3342	067	03	4746	✓
402	17	56	2194	067	03	0531	✓
403	17	56	2828	067	02	3040	✓
404	17	56	2106	067	01	1654	✓
405	17	56	4918	067	00	5884	✓
406	17	56	5410	067	00	0874	✓
407	17	56	5799	066	59	3916	✓

408	17	56	5370	066	58	3710
409	17	55	5482	066	58	2703
413	17	58	1565	067	03	1767
415	17	57	4803	067	02	1159
416	17	57	4708	067	00	3652
417	17	56	4368	066	58	1221
418	17	56	3494	066	57	4841
420	17	56	2915	067	05	0799
421	17	56	1104	067	06	0644
422	17	55	2583	067	05	5731
423	17	55	1528	067	06	4747
424	17	55	1409	067	07	2946
425	17	57	0626	067	05	4753
426	17	56	5603	067	06	5303
427	17	57	0735	067	08	0119
428	17	57	2437	067	09	0732
430	17	57	0886	067	11	3545
431	17	56	5491	067	11	2573
432	17	56	2040	067	11	0346
450	17	56	2775	066	57	2324
451	17	56	0751	066	57	2412
452	17	56	1527	066	57	1967
453	17	57	2316	067	02	4839

Destroy

TIME AND TIDE NOTE

H-8984

H-8985

1969 Season

Prior to start of field season, ship's clocks were set to 45th meridian time zone to take advantage of early morning weather.

However, all survey records were referenced to 60th meridian time zone (standard time). Tides were also referenced to 60th meridian time zone.

Tide plane of reference - MLW. Staff reading at MLW = 3.5 feet.

1969 DEVELOPMENT
LAUNCH II
TC/TI TAPE
H-8984 (WH-10-1-68)
H-8985 (WH-10-2-68)

000000 0 0002 0002 071 000000 000000

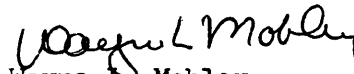
28 May 1970

APPROVAL SHEET

H-8985

Only three days of additional development was accomplished in this area due to lack of time; and since the main survey was accomplished principally by electronic control, it resulted in a better system of lines and the bottom characteristics were less irregular.

Survey records were inspected by me and are approved for verification and smooth processing.


Wayne L. Mobley
CDR, USESSA

NOTE

HI-FIX FREQUENCY

USC&GSS WHITING

During 1968 and 1969 Hi-Fix frequency was maintained
at 1799.6.

Wayne L Mobley
W. L. Mobley
CDR, USESSA
Commanding

ATLANTIC MARINE CENTER

PROJECTION PARAMETERS

POLYCONIC OR MODIFIED TRANSVERSE MERCATOR

- 1. Project No. OPR 423
- 2. Reg. No. H-8985
- 3. Field No. WH-10-2-68
- 4. Requested By Verification Branch
- 5. Ship or Office AMC
- 6. Date Required ASAP

7. Polyconic Modified Transverse Mercator

8. Central Meridian of Projection 67° 08' 00"

9. Survey Scale: 1:10,000

10. Size of Sheet (check one):

36 x 54 36 x 60 Other Specify _____

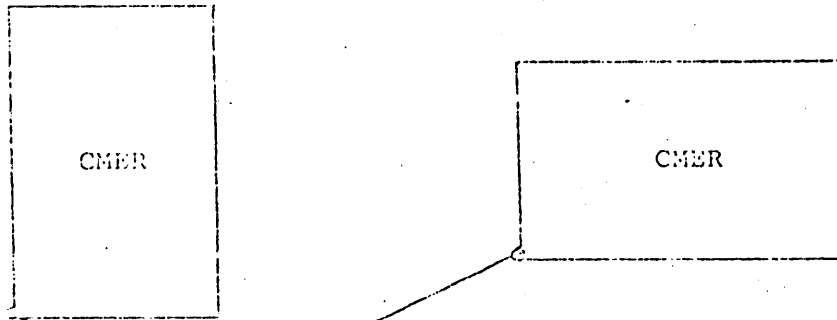
11. Sheet Orientation (check one):

NYX = 1

NYX = β

N

N



12. Plotter Origin: S.W. Corner of Sheet (not necessarily a grid intersection)

Latitude 17° 54' 00"

Longitude 67° 12' 30"

13. G.P.'s of triangulation and/or signals attached

14. Material Desired: Tracing Paper Mylar

Smooth Sheet Other Specify Smooth overlay

15. Remarks: Master Isla Maquey 17° 58' 15.890" 67° 02' 44.410"
Slave (1) Cabo Rojo 17° 56' 07.500" 67° 11' 32.850" Slave (2)
Punta Morobado 17° 56' 25.710" 66° 57' 20.330" Hi-Fix frequency
1799.6 kc

1013

- 9093

GEOGRAPHIC NAMES

Survey No. H-8985

Name on Survey											
	A	B	C	D	E	F	G	H	K		
Arrecife Margarita											1
Bahia Sucia											2
Cabo Rojo											3
El Palo											4
Isla Cueva											5
Isla Guayacan											6
Mar Caribe											7
Punta Molino											8
Punta Tocón											9
Roca Ola											10
											11
											12
											13
											14
											15
											16
											17
											18
											19
											20
											21
											22
											23
											24
											25
											26
											27

PREPARED BY

Frank W. Lickert
CARTOGRAPHIC TECHNICIAN

APPROVED BY

A. Joseph Wright
CHIEF GEOGRAPHER

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-8985 (WH-10-2-68)

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT			
SMOOTH SHEET	1	BOAT SHEETS	2			
DESCRIPTIVE REPORT	1	OVERLAYS	7 + 11			
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS / SOURCE DOCUMENTS
ENVELOPES	33					
CAHIERS			32			
VOLUMES	28					
BOXES			5			

T-SHEET PRINTS (List) T-13118, T-13119 & T-13120

SPECIAL REPORTS (List)

Fathomstar, Hi-Fix & Computer/Plotter Reports -

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS			TOTALS
	PRE-VERIFICATION	VERIFICATION	REVIEW	
POSITIONS ON SHEET				3691
POSITIONS CHECKED		396		
POSITIONS REVISED		105		
DEPTH SOUNDINGS REVISED		208		
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		10		
		TIME (MANHOURS)		
TOPOGRAPHIC DETAILS		42		
JUNCTIONS		6		
VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS	130			
SPECIAL ADJUSTMENTS <i>Compiling & logging Vol. Corr.</i>	32			
ALL OTHER WORK		441		
TOTALS	162	589		
PRE-VERIFICATION BY <i>F. Bean, W.L. Johns, B.T. Davis</i>	BEGINNING DATE <i>4/20/70</i>		ENDING DATE <i>3/2/71</i>	
VERIFICATION BY <i>B.J. Stephenson, G.F. Trefethen</i>	BEGINNING DATE <i>4/19/71</i>		ENDING DATE <i>5/6/71</i>	
REVIEW BY <i>W.W. Feezel, B.T. Davis</i>	BEGINNING DATE		ENDING DATE	

FIG. 18.

DESCRIPTIVE REPORT DATA RECORD			
PART I SMOOTH SHEET PREPARATION		PREPARED BY/OPERATOR	DATE
A. PLOTTER OPERATOR		EDAT	
B. DISTORTION MARKS PLOTTED		EDAT	
C. PROJECTION INTERSECTIONS PLOTTED		EDAT	
D. POINTS OF ELECTRONIC CONTROL ARCS PLOTTED		EDAT	
E. OVERLAYS PREPARED BY		EDAT	
1. POSITION NUMBER		EDAT	
2. EXCESS SOUNDINGS		EDAT	
3. PRELIMINARY SMOOTH PLOT		EDAT	
4. LIST OTHERS			
A.			
B.			
F. SOUNDING SELECTION BY		EDAT	
G. PLOTTER INPUT	PREPARED	EDAT	
H.	CHECKED	EDAT	
I. DESCRIPTIVE REPORT ADDENDUMS			
PART II SMOOTH SHEET COMPLETION		CARTOGRAPHER	DATE
A. DISTORTION SCALE TICKS IDENTIFIED BY NOTE		BTD	4/9/71
B. PROJECTION INTERSECTIONS VERIFIED BY		BTD	4/9/71
C. PROJECTION LINES RULED BY		BTD	4/9/71
D. ELECTRONIC CONTROL ARCS RULED AND LOCATION VERIFIED			
E. OVERLAYS COMPLETED BY		BTD	
1. POSITION NUMBER LEADERS ADDED		BTD	4/26/71
2. EXCESS SOUNDING OVERLAY COMPARED		BTD	4/16/71
3. PRELIMINARY SMOOTH PLOTS COMPARED		BTD	4/22/71
4. OTHERS UTILIZED			
A.			
B.			
F. DESCRIPTIVE REPORT ADDENDUM		BTD	5/7/71
G. CONTROL STATIONS VERIFIED		GFT & WLJ	5/22/70
H. POSITIONS MANUALLY PLOTTED		FB & BTD	6/24/70
I. MANUAL PLOT VERIFIED		FB & BTD	4/16/71
J. SHORELINE APPLIED		BTD	4/12/71
K. BOTTOM CHARACTERISTICS ADDED		BTD	4/21/71
L. NOTES AND DEPTH CURVES ADDED		WWF & BTD	4/22/71

H- 8985

- A. Additions and corrections have been furnished the plotter
center by the verification unit. ^{Except those marked for correction} by Review.

Date May 17, 1971

Signed *Alfred J. Puffin*
Title Chief, Verification Br., AMC

- B. Additions and corrections have been added to the survey
records and the final smooth sheet forwarded to the ~~verification~~
~~unit~~ ^{REVIEW} unit.

Date May 17, 1971

Signed *Alfred J. Puffin*
Title Chief, Verification Br., AMC

- C. The smooth sheet has been inspected, is complete, and
meets the requirements of the General Instructions for
automated surveys and the Hydrographic Manual. (Note:
All exceptions are listed in the verifier's report).

Date May 17, 1971

Signed *Alfred J. Puffin*
Title Chief, Verification Br., AMC

- D. Smooth sheet and records forwarded to Rockville, Maryland
Office.

Date May 18, 1971

UNITED STATES GOVERNMENT

Memorandum

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

TO : Chief, Hydrographic Processing Branch , CFN 31

DATE: May 6, 1970

In reply refer to: CFS 32

FROM : Chief, Electronic Data Processing.

SUBJECT: Surveys H-8984 and H-8985

I am only sending the 1969 PNOs for these sheets. A problem arose with the 1969 signals on 8984. As you know, one signal tape was cut for both surveys. I separated the signals as to survey, and found the following signals (among others) do not fit on 8984: 421, 422, 423, 424, & 426. They were needed to process skiff 2's work, day 91, positions 9200-9275 on 8984. *See Plotter Note dated 7/4/70*

We processed the positions using the signals; however, I am certain they are in error. The computer program calculates visual positions based on the Cartesian coordinates of the signals rather than geographic positions. If a signal lies exterior to the limits of the coordinate system, a point will be computed, but it will be in error.

I have two suggestions by which you might resolve the problem.

1. The positions in question may indeed lie on 8985, and can be easily transferred to that sheet. We will merely change the registry number and recompute the fixes using the correct signals on 8985.

2. If the positions do lie on 8984, the problem gets a bit sticky. Maybe you can align the west end grid of 8984 with the east end grid of 8985, and manually plot the positions. This will require great caution. You will have two meridians complimentary with each sheet. I realize the procedure is not quite cricket, but can't think of much else to do. Maybe you will have a better solution after looking the situation over. Let's hope for case one.

I am sending a listing of the signals. Note the Cartesian coordinates are included, and I have noted those not falling on the particular sheet.

Sincerely yours,



Larry W. Mordock
LT, USESSA



BUY U.S. SAVINGS BONDS REGULARLY ON THE PAYROLL SAVINGS PLAN

AMC PLOTTER NOTE TO EDAT
SURVEY H-8985

This Note applies to 1968 Work only - N.L.P.

This office has completed the verification of the control overlay for this survey and we find that some additions and corrections are needed on the signal list.

The following is a list of the additions and corrections needed:

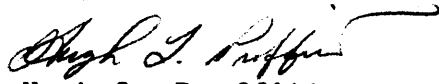
<u>SIGNAL NO.</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	
158	17-57' 0746 M	067-09' 0215 M	Correction
172	17-56' 1726	067-07' 1207	"
173	17-56' 1657	067-07' 1017	"
175	17-56' 1717	067-07' 0474	"
177	17-56' 1732	067-07' 0090	"
125	17-55' 1816	067-11' 0178	"
180	17-56' 1593	067-06' 1111	Addition
255	17-58' 1276	067-03' 0511	"
163	17-57' 0681	067-08' 1156	"
099	17-57' 0743	067-09' 0730	Correction
154	17-57' 0676	067-09' 0881	Addition

After these corrections have been made to the control stations, please furnish this office a new overlay showing the positions of all stations and on the same overlay make a plot of the visually controlled positions only. We cannot use the overlay on hand because of the signal displacement.

The numbers of the positions to be plotted are:

1564 thru 1639; 7500 thru 7522; 9080 thru 9125

The Julian Day on positions 7500 thru 7522 should be changed from Day 129 to Day 128. It was logged incorrectly in the field. New sounding cards will have to be made as this change will affect tide and velocity corrections.


Hugh L. Proffitt
Chief, Hydro Branch, AMC

VERIFIER: Fred Bean

Norfolk, Va.
July 6, 1970

AMC PLOTTER NOTE TO EDAT
SURVEY H-8985

Enclosed is the position printout for visually controlled work done during the 1969 season. Please furnish a position overlay for this work.

Needed corrections are marked on the printout in red pencil. In addition to the routine corrections the following actions should be taken:

(1) Add positions 9200 thru 9275 as attached to the printout. (Refer to your letter dated May 6, 1970, Ref: CFS-32)

(2) Also add positions 9276 thru 9288 as attached to the printout. these position were not logged with the original raw data.

(3) Change all position cards using signal 097 and the signal card itself to 997 for the 1969 visual work only. The same signal number (097) was used during the 1968 season for a different station. *Not done by EDAT - 1968 & 1969 seasons work plotted separately.*

When the above changes have been made, please furnish a visual position overlay for the 1969 work only.

We have verified the electronic position overlay for this survey but are holding the printout for the final merging for a sounding overlay.

Also, on April 22, 1970 we requested a position overlay for the 1968 visual work. This we have not received to date.

When, and if, we are able to straighten out the visual work for the 1968 and 1969 seasons, we will forward all position printouts for merging for a sounding overlay.


Hugh L. Proffitt
Chief, Verification Br., AMC

AMC PLOTTER NOTE TO EDAT
SURVEY H-8985

This office has completed the preliminary verification of the position overlays for this survey. We are returning the visual and electronic position card printouts for the 1968 season and the visual position printout for the 1969 season. Applicable corrections are marked in red.

Among these corrections are the following:

extra

Destroy/cards for duplicate positions appearing on the printouts at positions 513 thru 613, 1564 thru 1582, 5230 thru 5391 and 5679 thru 5914.

Destroy positions 9276 thru 9287, 9250 and 9251. We were unable to plot these positions because of confusion in the control stations in the field.

Destroy signal number 425. It is incorrectly plotted on the control overlay and was not used for control purposes.

Control stations 097 and 098 were renumbered 997 and 998 for the 1969 seasons work. This was done to avoid duplication of numbers used in the 1968 season. *Not done by EDAT. 1968 & 1969 Seasons work plotted on separate overlays.*

Julian Day should be changed from 129 to 128 on positions 7500 thru 7522, 1968 visual printout.

When the applicable corrections have been made, please furnish a sounding overlay for this survey. Due to the large number of control and positional changes it may be considered desirable to generate new sounding cards. In any event a new edit should be made.

Please furnish a printout of control stations used in both seasons.


Hugh L. Proffitt
Chief, Verification Br., AMC

AMC PLOTTER NOTE TO EDAT
SURVEY H-8985

The position card printouts are being returned with approximately 35 positions marked for correction. Most of these are Hi-Fix positions falling behind a large land mass from the master station, and presumably the signal was affected to the extent that gross displacement occurred. Some simultaneous visual fixes, most of which were very weak, were used to avoid leaving a holiday in the area. In order to keep these positions in the electronic grouping, geographic positions were scaled and entered on the printout for use in computing coordinate positions. These positions fall in the area of Lat. 17-5⁷'-15" and Long. 67-11'-15".

We are also returning the sounding card printout. During the verification of the preliminary sounding overlay it was found there were about 375 positions on which incorrect velocity corrections were applied to the soundings. This happened on Julian Days 102, 103 and 128, positions 217 thru 435, 531 thru 613 and 1564 thru 1639. The reasons for the discrepancies are not understood in this office, however, we have corrected the printouts to show the velocity corrections needed.

Scattered TRA errors were found thru-out the survey. They have been corrected on the sounding printout in red.

Change the Julian Day on positions 7500 thru 7522 from 129 to Day 128 on the sounding printout only. The position printout ϕ is correct.

Changes to raw soundings were made on Day 118, positions 1419 thru 1560. These changes were needed because of gross scanning errors in the field.

In addition to the above, please make other scattered changes as they are marked in red on the printouts.

Continued

Because most of the approximately 1200 sounding errors mentioned in the preceding paragraphs are East of Long. 67-08'-30" W, it is requested that a new reedited sounding overlay of all soundings East of this Longitude be furnished. Your card decks should be corrected for all changes West of 67-08'-30" but we will hand correct these items on the existing overlays. The new reedited sectional overlay must show all position dots, control stations and reedited soundings for the 1968 and 1969 seasons.



Hugh L. Proffitt
Chief, Verification Branch, AMC

Verifier: Bernie T. Davis

Norfolk, Va.
March 4, 1971

AMC PLOTTER NOTE TO EDAT
SURVEY H-8985

This office has completed verification of the preliminary sounding overlay for this survey and we are returning the sounding card printout with needed changes marked in red pencil. These changes are mostly routine except for most of those on Day 115 where the field scanned "in-between" soundings at the wrong interval.

We are also returning the two position card printouts, one each for the 1968 and 1969 seasons. Needed changes are listed on the front of the printouts and are corrected in the listings in blue pencil. Changes marked in red were made on a prior plot.

Please destroy the card for signal 255. This station belongs on adjoining survey H-8984.

The electronic control on this survey was Hi-Fix in the hyperbolic mode. The overlay showing the hyperbolic lattice will be made by AMC at a later date.

When the above corrections have been made, please furnish this office a smooth plot of this survey.


Hugh L. Proffitt
Chief, Verification Br., AMC

VERIFICATION NOTES
SURVEY H-8985

GENERAL

A number of problems were experienced during the verification of this survey. Please refer to the enclosed "Plotter Notes to EDAT" for a listing of these problems and the methods used to resolve them.

BOAT SHEETS

Hi-Fix and visually controlled work done during the 1968 season was machine plotted on a conventional boat sheet. The additional developments done in 1969 are shown on 7 boat sheet overlays, most of which are machine plots on tracing paper.

ALONGSHORE AREAS

As mentioned in paragraph G. wide areas, alongshore and around the offshore coral reefs, were left undeveloped. The Photogrammetric Division is presently working on a program to contour these shoaler depths from air photographs.

POSITION DOTS

Because of machine error many of the red position dots on the smooth sheet are out of position. Those on the Mylar overlay and prior preliminary plots are correct.

DETACHED POSITIONS

A great many detached positions were observed on this survey for various purposes and none of them had check angles. All positions that appeared to be questionable or were in conflict with other data were rejected. A listing of rejected positions follows.

Positions 8000 thru 8029 located bottom samples. Position 8009 was rejected.

Positions 7500 thru 7522 and 9080 thru 9125 located detached soundings with no check angles or remarks. Positions 7511, 7514, 7515, 7518 and 7520 thru 7522 were rejected.

Positions 9200 thru 9275 were skiff positions with one or two soundings between. Numbers 9236, 9249, 9270 and 9273 were rejected.

Positions listed below were destroyed because they could not be plotted.

5678, 6572 thru 6573, 6701 thru 6703, 7014 thru 7016 and 7017 thru 7018

Norfolk, Va.
May 14, 1971


Hugh L. Proffitt
Chief, Verification Br., AMC

