

4205

Diag. Cht. No. 903 & 904 - 2

4205

<p>Form 504 DEPARTMENT OF COMMERCE U. S. COAST AND GEODETIC SURVEY</p>
<p>State: <i>P. R.</i></p>
<p>11-5013</p>
<p>DESCRIPTIVE REPORT.</p>
<p><i>Hyd.</i> Sheet No. <i>4205</i></p>
<p>LOCALITY:</p>
<p><i>North Coast of Porto Rico. Morro Pt. to Cape San Juan</i></p>
<p>1921</p>
<p>CHIEF OF PARTY:</p>
<p><i>Peters, J. H.</i></p>

DESCRIPTIVE REPORT
to accompany
HYDROGRAPHIC SHEET NO. 1.
U. S. RANGER 1921.
J. H. Peters, Commanding.

AUTHORITY. Paragraph three of Director letter dated June 24, 1921, subject "INSTRUCTIONS" reads as follows: "If possible, fill in the hydrography between the high water line and the hydrography already executed on Hydrographic Sheets 2874-2876-2877-2883. As will be noticed, there is a large blank area where hydrography was probably omitted owing to the heavy swell which prohibited the work being carried in closer to the beach. It is hoped that you will be able to fill in the gap at this season of the year, when the trade wind is reported to blow with less force than during the winter months."

GENERAL DESCRIPTION OF THE COAST. On the east side of the entrance to San Juan Harbor is Merre Point, an abrupt headland surmounted by the city of San Juan, with its old fortification walls reaching down about to the water's edge. To the eastward of this headland, the immediate coast line is low and generally covered with cocconut groves to some distance from the beach where these give way to the foothills and to agricultural areas. Cangrejos Pt. and Pt. Vasla Telegas are low rocky headlands slightly higher than the adjacent areas. Cangrejos Point is fringed with a reef practically bare at low water and extending about five hundred meters from the point in a northwesterly direction and on the outer edge of which is a large rock islet of about ten feet height. From the edge of this reef the bottom drops off abruptly to depths of about five fathoms. A barrier reef extends from this point westward to Merre Point. Inside of this reef the area is very foul and of practically no importance since the seas break for a greater part of the year on the outer reefs, making access to the inner areas impossible. Such sounding as was done shows only the character of the area and dragging would be necessary to develop the area but there is at present no occasion for such development.

Points Uvero, Miquille, Picudias, Babarenderes are low and covered with cocconut groves with sandy beaches flanked by extensive reef areas, bare or breaking, the exact limits of which are shown with considerable accuracy on the sheet. Between these headlands, there are bights into the reefs. These are very foul and at present of no importance. During heavy northerly swell, which is quite prevalent in these waters, a continuous line of breakers extends from Merre Point to Cape San Juan in depths of from three to five fathoms, making close approach to the reef extremely hazardous. The approximate position of the line of breakers in heavy weather is shown on the boat sheet by broken blue line, having been secured by steaming along the coast during heavy weather.

Cape San Juan is a prominent rocky headland on the top of a green hill of which is situated the lighthouse, a large square masonry building painted blue and with central tower for the light. This headland is sea-

ected with the main island by a low isthmus making it stand out as an island when seen from any distance to the westward.

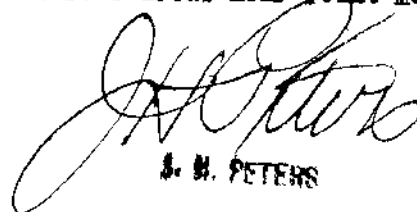
Back of the immediate coast line are scattered hillocks some grass covered and some wooded before the foothills are reached. These latter are mostly cultivated with cane and are towered over by the peaks of El Yunque and Lequillo Mts.- wooded peaks of over three thousand feet elevation.

CURRENTS: No current observations were made along this coast. The currents are not of very great velocity and are known to be variable. Their exact character is not known. In San Juan Passage, the currents reach considerable velocity and the westerly set appears to be the stronger. Tide rips of minor magnitude have been observed near Cape San Juan in San Juan Passage. Rivers along the coast emit discolored water at times which lies on the surface of the salt water and extends at times a mile or so from shore. In extremely heavy northerly swell, breakers have been observed on the fifteen foot spot marked by the whistle buoy off Pisudias Point. Vessels generally pass outside the whistle buoy and although the area inside has been thoroughly sounded, it must be looked upon as of uncertain depth until it has been dragged as has been shown by dragging the areas immediately to the eastward.

Along the edges of the reefs, large coral heads rise from depths of three to five fathoms to within a few feet of the surface and in depths greater than five fathoms there are undoubtedly rocky patches rising several feet above the depths shown by the lead survey. From the whistle buoy off Pisudias Point to San Juan Passage during heavy northerly swell the rollers are somewhat larger than elsewhere along the coast. From Embarraces Point to Cape San Juan the area has been dragged and several small soundings found which were not shown by the lead survey which immediately preceded it.

ANCHORAGES. There are no anchorages for vessels of any size between San Juan Harbor and Fajardo Harbor but small craft can find refuge behind the barrier reefs if taken in during quiet weather.

SURVEY METHODS. These differed from those customarily followed in making inshore developments, principally in the matter of the direction of the sounding lines. It was desired to make as complete a survey as possible without delaying the drag work on which the principal effort of the party was being expended and hence it was necessary to do most of the work with the ship as the other vessels which were large enough, even in favorable conditions, to weather the outside coast, were needed for drag work. It was decided then to run a few lines of soundings with the launches along the edge of the reef when they were enroute to the base for repairs and follow this up with lines by the ship to complete the development. These had then to be run parallel to the shore line and this could be done at small cost as the vessel returned to the drag field from her base. During repairs to the drag launches at San Juan, the tender was used to develop the reef areas near Point Morre.



J. H. PETERS

HYDROGRAPHIC SHEET NO.
 SAN JUAN ENTRANCE TO CAPE SAN JUAN.
 U.S.S. RANGER - J. H. Peters, Comdg.

List of triangulation or intersection stations.

Name of station	Latitude		Longitude		Description or Remarks.	
	°	minutes	°	minutes		
Rat	18	22	1614	231	65 35 68 1694	Triped on Ratones Cay.
Les	24	10	1835		35 1718 43	Western most of rocks.
Cape San Juan LH	23	20	1824		37 196 1562	San-Light
Reach	24	258	1587		36 1242 519	Las Cucarachas Light
Hill	21	1470	374		37 1394 364	Sharp weeded hill
Sol	22	1757	88		38 1198 563	White wash rock
Neb	19	1764	80		40 540 1218	Highest point weeded peak
Peak 2	19	1696	149		41 347 1415	Pala tree on sharp peak
Der	22	168	1677		41 1593 168	Black derrick
Bex	22	834	961		42 1363 398	Small concrete building
Cruz 1902	22	1090	754		42 1409 349	Site of destroyed station
Flag	22	1226	619		42 1585 176	West flag pole on school
Bar 2	23	681	964		43 540 1221	Banner in tree
Pec 2	24	1754	91		46 587 1175	Off lying mangrove tree
Mig 2	25	762	1083		47 761 980	Tallest of two coconut
Ure	26	151	1694		50 330 1440	Triped on beach
Telegas	27	368	1476		54 293 1465	Recovered station
Pt. Cangrejos	27	1301	543		59 305 953	Recovered station
Rock No. 1.	28	75	1769	66 02	1310 448	Off lying rock
Apex Club House	27	996	848	03	1722 36	Recovered foundation
Club 1902	27	968	856	04	188 1570	Recovered station
Jail	27	1717	127	05	973 785	Dome of tobacco factory
Staff	28	348	1496	06	1208 550	Signal pole with yard
Merre	28	699	1145	07	773 985	El Merre L. H.

HYDROGRAPHIC SHEET NO. 1
 SAN JUAN ENTRANCE TO CAPE SAN JUAN L. H.
 USS RANGER --- J.H. Peters, Comdg.

List of objects located with plane table methods.

Name of station	Latitude		Longitude		Description or Remarks
	°	'	°	'	
Flat	18	27 140	65	53 1141	617 Centre line of small flat rock
Tel 2	27	383 1482	54	333 1425	Prominent leafless tree
Pla	27	603 1241	54	1076 682	Sharp pinnacle rock on reef
End	27	1368 476	58	1103 575	Centre line of small flat rock
Mid	27	1764 80	59	705 1053	Highest point of off lying rock
Nec	28	75 1769	59	1734 24	Pinnacle on large off lying rock
Stack	27	738 1107	66	04 1006 752	Northern of two stacks at power Ho.
Cond	27	1209 635	04	1050 708	Lookout tower on Condado Hotel
Her	27	1634 210	05	140 1618	Gable of battery building on point
Cross	28	138 1708	66	06 62 1696	Cross on spire of large cathedral

List of objects located by sextant cuts from ship

Keege	18	21 162 1682	65	39 1425 333	Red reef
Keng	21	1080 764	40	1165 593	Red reef
Kea	21	1464 680	41	740 1018	Red reef
Stack 1921	21	704 1140	42	83 1675	Square brick stack at old sugar mill
Busy	26	1074 770	46	16 1642	Whistle busy
Ho	25	262 1562	47	1413 345	House near beach
Riv	24	1414 460	48	578 1180	Banner in tree at river's mouth
Ren	25	609 1236	49	575 1183	Banner on point
Ope	25	1044 800	52	1011 747	Tree on hill
Day	26	682 982	52	1328 430	Tripod on sand dune near river
Coco	26	1566 276	55	1646 112	Very prominent cocconut tree
Shack	27	348 1496	57	688 900	House back of sand dunes on beach
Red reef	26	1346 498	66	00 646 1112	Red reef at head of bay
Tree	26	1164 680	00	1712 46	Ferkea tree back of point
Reef	26	1442 402	01	1408 350	Double reef in grove of trees
Small	27	60 1784	01	56 1702	Large cocconut on small island
Tower	26	1839 5	04	406 1352	Builder's wooden tower at new theater.
Gum	28	552 1292	05	839 919	Highest point of large offlying rock
Wire 1	28	140 1704	05	1226 532	Northwestern of two wireless towers
Wire 2	27	1841 3	05	1141 617	Southeastern of two wireless towers
Buoy No. 1	28	745 1099	07	1128 630	At entrance to San Juan

USS RANGER
30 Nov. 1921.

SAN JUAN P. R. TIDE STATION.

	B.M. No.1.	B.M. USE No.3.	B.M. No.4.
MTL from data of 1907	6.30		9.39
MTL from Spanish data		3.57 $\frac{1}{2}$	
Height of benchmarks above water			
when gauge reads zero October 1921	6.15	3.395	9.16
MTL on gauge of October 1921	-0.15	-0.19	-0.23

The mean tide level at San Juan on the gauge of October 1921 as secured by comparison with Fajardo (B.M. No. "FM"1907 Elev. above MTL 5.9 $\frac{1}{2}$ ft.) from simultaneous observation of 56 highs and 56 lows during month of October 1921 was found to be -0.28 ft.

The value used for MTL on the gauge at San Juan 1921 is -0.19 ft.
" " MLW " " " -0.74

Benchmarks Nos. 2 and 3 of 1907 have been destroyed and benchmark No. 5 is not accessible. The U. S. Engineer Department has established another benchmark No. USE 3 described in Vol. 1 of leveling record 1921.

USS RANGER
Sept. 1, 1921.

TIDAL STATION FAJARDO, P.R.

Computation of Plane of Reference.

	Staff 1921	B.M. No. "E" Above	B.M. No. 1 - 1914 Above
MTL from data of 1907		5.92	
MLW from data of 1907		6.46	
Zero of staff August 1921		11.175	13.035
MTL August 1921	5.255	5.92	7.78
MLW August 1921	4.715	6.46	8.32

Benchmark No. "D" has been destroyed.

The mean tide level on the staff at Fajardo in October 1921 as secured by comparison with San Juan (B.M. No. 1 above MTL 6.30 ft.; B.M. USE No. 3 above MTL 3.575 ft.; B.M. No. 4 above MTL 9.39 ft.; using mean of these values on gauge of October corresponding to MTL of -0.19 ft.) by simultaneous observation of 56 lows and 56 highs during the month of October 1921 was found to be 5.54 ft. and the mean low water on the staff at Fajardo in October corresponding to this value for MTL is 4.80 ft.

The use of 4.7 ft. for the value of mean low water in the reduction of soundings was continued.

STATISTICS, SHEET NO. 1.

<u>Date 1921.</u>	<u>Letter</u>	<u>Vol.</u>	<u>Positions</u>	<u>Sdgs.</u>	<u>Miles stat.</u>	<u>Vessel</u>
August 22 -----	A	1	56	427	23.5	Ranger
23 -----	B	2	45	250	9.3	"
24 -----	C	2	22	111	6.4	"
26 -----	D	3	92	657	37.0	Marindin
	E	4	75	612	37.0	Mitchell
	F	5	157	720	37.0	Edna M.
September 6 ----	G	6	92	647	37.5	Ranger
12 ----	H	6	88	423	35.0	"
26 ----	J	6	89	422	35.0	"
28 ----	K	6	57	425	18.0	"
	"	7	24	146	5.0	"
October 3 -----	L	7	85	513	35.0	"
17 -----	M	7	77	368	35.0	"
21 -----	N	3	14	83	4.0	Marindin
	O	4	11	68	3.0	Mitchell
24 -----	P	5	49	167	8.0	Edna M.
25 -----	Q	5	82	318	14.0	"
26 -----	R	5	63	225	13.0	"
27 -----	S	5	44	133	11.0	"
	"	8	29	93	4.0	
November 14 ----	T	7	114	615	21.0	Ranger
28 ----	U	9	93	621	50.0	"
December 5 -----	V	9	29	108	2.5	"
Total -----			1487	8152	461.2	

Unit for soundings -- feet. Plane of reference -- MLW.

- Lat. N. Long. W.
- 1) Auto. tide gauge, U.S.C. & G.S., Pajardo (La Playa) --- 18-20-12 65-37-48
 Plane of ref. on staff = 4.7; lowest tide, staff = 4.7; highest tide = 6.9
 Used for all sdgs east of Pt. Telegas, & for sdgs west thru Oct. 3rd.
 - 2) Auto. tide gauge, U.S.B.D., San Juan --- Lat. 18-27-54N. Long. 66-06-56W.
 Plane of ref. on staff = -0.7; lowest tide, staff = -0.9; highest = +1.4
 Used for all sdgs west of Pt. Telegas from Oct. 17, 1921.

COPY TO FIELD RECORDS.

April 14, 1922.

E.A.L.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
9 volumes of sounding records for

HYDROGRAPHIC SHEET 4206

Locality: **North Coast of Porto Rico**

Chief of Party: **J. H. Peters in 1921**

Plane of reference is **mean low water reading**

***4.9 ft. on tide staff at Fajardo, P. R., (Automatic gauge)**

*** Allowance made for difference in tide at place of soundings.**

For reduction of soundings.

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

Hammner

Acting Chief, Division of Tides and Currents.

Hydrographic Sheet No. 4205
"Porto Rico."

The work covered by this sheet would appear to be only sufficient for a general development of this locality and that additional work either by "lead line" or "wire drag," if the latter is possible, to develop the bottom with any degree of accuracy.

There are many open spots which should be developed and it would appear necessary to run cross lines to check the lines of this survey.

The coral reefs should be more accurately defined. All this would appear necessary if this shores is to be used for commerce.

The sheet was completed by the "Field Party" up to verification and inking. The projecting and pencil plating was found practically accurate. Signal "Cross" was found not properly located and the one line using this signal had to be replatted. The position numbers are too large and badly placed. The bottom character is practically nil. Paper not good and too hard pencil used in plating and running curves. Reports not up to standard.

John D. Torrey.
5/18/22.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
WASHINGTON

SECTION OF FIELD RECORDS.

Report on Hydrographic Sheet No. 4206.

Surveyed in 1921.

Instructions dated June 24, 1921.

Chief of Party: J. H. Peters

Surveyed by party of Str. Ranger.

Protracted by R. R. Moore and R. W. Woodworth.

Soundings plotted by R. W. Woodworth

Inked and verified by J. D. Torrey.

1. The records conform to the requirements of the General Instructions except that:
 - The boats courses were generally omitted.
 - Bottom characteristics almost entirely omitted.
 - Notes concerning rocks and shoals unusually profuse, but the description frequently failed to give sufficient data to plot the danger.
2. The development departs from the General instructions in that there are practically no cross lines, and the system adopted (lines parallel to the coast) is less likely than any other system to reveal the coral reefs which so frequently parallel the coast. Numerous instances of such reefs are shown on this survey. It is altogether probable therefore that more reefs exist than were revealed by this survey, and that the least water was not found on the ridges that were discovered.
3. The plan and extent of development satisfy the specific instructions.
4. The sounding line crossings (and comparisons of parallel lines) are not good.

5. Owing to the very uneven character of the bottom and the lack of development in some places it was not possible to draw the curves completely.
6. The field plotting was completed to the extent prescribed in General Instructions and was found to be accurate. The work should have been plotted on Whatman's paper. The position numbers and day letters are twice as large as they should have been.
7. The junctions with adjacent work are satisfactory.
8. The area covered by this survey is very much broken up by coral reefs, and only a very complete survey supplemented by drag work will adequately show it. This survey has numerous vacant areas adjacent to the shores and unsurveyed shoals east of Pt. Vacia Talega and Pt. Miquillo. In addition there are a number of lines having eccentric soundings which are difficult to account for, except upon the theory that the leadsman was at fault. For instance, on the lines 18 to 22 D, 34 to 37 D and 45 to 52 D in 18 places the depths are markedly shoaler than those on the parallel line inshore to it. There are other instances of similar eccentricities although they are not so marked.
9. In view of the great difficulty of surveying this coast and the fact that there is little inshore navigation this survey may be considered adequate for present needs, but a more complete one should be made when the locality is developed.
10. The character of the surveying is fair and the field drafting good.
11. Reviewed by E. P. Ellis, September, 1922.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

The finished Hydrographic Sheet is to be accompanied by the following title sheet, filled in as completely as possible, when the sheet is forwarded to the Office.

U. S. Coast and Geodetic Survey.

Register No. 4205

State . . . Porto Rico

General locality . . . North coast of P.R.

Locality . . . ~~Shore line soundings between~~ Morro Pt. & Cape San Juan. ^{to} ^{inshore}

Chief of party . . . J.H. Peters

Surveyed by . . . Star Ranger, assisted by launches. ^{Field Party}

Date of survey . . . August 22 - December 5, 1921.

Scale . . . 1:20,000

Soundings in . . . Feet.

Plane of reference . . . Mean low water.
Moore

Protracted by Woodworth. Soundings in pencil by Woodworth

Inked by J. D. Torrey. Verified by J. D. Torrey

Records accompanying sheet (check those forwarded):

- Des. report, Tide books, Marigrams, Boat sheets,
- Sounding books, Wire-drag books, Photographs.
- Data from other sources affecting sheet

Remarks:

[Handwritten scribbles]