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Diag. ch. No. 054

Department of Commerce and Labor
COAST AND GEODETIC SURVEY

Superintendent.

State: *Canal Zone*

DESCRIPTIVE REPORT.

Hyd. Sheet No. *3360*

LOCALITY:

Canal Zone Panama Road
Offshore

1902

CHIEF OF PARTY:

M. H. Heck

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Hyd. Sheet A

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Coast of Panama

Canal Approaches

Wire Drag Examination

Chief of Party - N. H. Heck, Assistant

Officers Directing Drags

Geo. Olsen, W. O.

M. L. Butten Aid

G. C. Mattisen "

Scale 1/40000

Jan. 16 to May 7, 1912

Tide observations at Taboga Island. Observer O. Liguas , Hand

Highest tide observed	staff reading	17.8
Lowest " " " "	" " " "	- 0.4
Mean Lower Low water, staff		3.4 (by comparison with Naos Island.

Officers M. L. Butten, G. C. Mattisen, J. A. Daniels

H. T. Kelsh, Aids Geo. Olsen, W. O.

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U.S. COAST & GEOD. SURVEY
NO. 1111
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All area lying outside of the 45 foot curve was dragged to +5 feet or more at mean lower Low water. This curve was found to extend further to the northward than indicated on the existing chart. In fact the chart was found to be useless as a basis for wire drag work so soundings were made to govern the depths or later on were obtained from the Str. Patterson. Over the remaining area the drag depth was arranged so that a part of the drag should at all times be within two feet of the bottom, and this requirement was followed as closely as the unusual range of tide would permit. In some cases where the surface was sloping a long drag was used and the two parts of the drag were set at different depths. While this does not give quite so definitely the actual depth obtained it meets the requirement that it shall be proved that no pinnacles or shoals extend above the bottom. In considering the work and the depths it should constantly be borne in mind that there was extreme difficulty in getting the right depth of drag in shoal water with a great range of tide.

The area outside the Taboga Group of islands was found to be free from obstructions. This includes the deep water eastward of Taboguilla Id. and the comparatively shoal water westward of Taboga. The former is the principal approach to the Panama canal, while the latter is obstructed as described below. The principal shoals were found in the vicinity of San Jose Rock. A small 31 ft. shoal was found about 1/2 mile North (distances are in statute miles, bearings true), a 40 ft. shoal lies 3/4 mile ENE from San Jose, SE 'ly are the various shoals with 14 to 32 feet already reported and published. A small 32 ft. shoal lies 2 1/2 miles ENE of San Jose Rock.

Note that the northern limit from San Jose Rock to Melones Rock is a little north of the south edge of the Dumping ground used by the Commission. This was the reason that the work was not extended farther to the northward. A number of small rocky pinnacles lie between this limit and the Taboga Group. In fact there were more in this vicinity than elsewhere.

A 38 ft. rock lies about $2\frac{1}{2}$ miles S'ly from Tortolita Id. L. H. and a 41 ft. rock $2\frac{1}{2}$ miles S'ly. A small pinnacle with 29 ft. lies about one mile north of the northern point of Morre Id. The rock near the H. S. buoy and the 18 ft. rock in mid channel have already been reported.

A shoal lying off the western part of Taboga Id. was developed. This was rather a bank and the development by the Patterson and the wire drag work completely develops it. The depths are from 39 to 46 feet.

A 41 ft. pinnacle was found about 1 mile westerly from Valledlid Rock. A rocky pinnacle with 45 ft. was found $\frac{3}{8}$ mile S'ly from southern point of Chame Id.

The channel eastward of the Taboga Group is free from obstructions to the entrance to the Canal, and is safe for the largest vessels. The channel between Taboga and Taboguilla Ids. is safe for the greatest drafts. The rock in mid channel, already charted, is a serious danger and vessels should not pass eastward of this as an 18 ft. rock lies $\frac{1}{4}$ mile eastward from this. In case of the development of Taboguilla Id. the 22 ft. shoal lying about $\frac{1}{4}$ mile S'ly of the most westerly Id. becomes of importance. The channels on both sides of the Farallon are safe and the east and north sides of Taboguilla are held except for an extensive sand bar on the northern side of Taboguilla which has undoubtedly been fully developed from by the party of the Str. Patterson.

The channel passing about 1 mile SE'ly from Chame Point and about 1 mile NW'ly from Taboga Id. is obstructed by the pinnacles above described.

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By using care in that part of the Channel a depth of 40 ft. can be brought in in the northern half of the dragged area and 35 ft. on the most direct course. The flat muddy bottom NW'ly from Chame Id. governs the depth that can be taken. There were no changes in the field or office methods except that the work field work was done on a much larger scale with less available launches than before. The apparatus was found to be well adapted for work in any locality.

Coast of Panama

Canal Approaches

date	letter	vel		Angles		Miles		Soundings		Drag length	Number launches
		A	B	A	B	A	B	Angles	number		
1912		A	B	A	B	A	B	Angles	number		
15	a	1	1	162		2 1/2		0	0	4000	2
16	b	1	1	93	99	6		0	0	4000	2
17	c	1	1	81	84	6 1/4		8	4	3500	2
18	c2							2	1		
19	d	1	1	15	12	3 1/2		0	0	4000	2
22	e	1	1	39	30	2		0	0	12000	3
23	f	1	1	75	77	5 3/4		0	0	12000	3
24	g	1	1	45	50	2 3/4		0	0	12000	3
25	h	2	1	42	36	4		0	0	12000	3
26	j	2	1	18	24	1 1/2		8	4	4000	2
27	j2							2	1		
29	k	2	1	72	69	3 1/2		2	1	8000	3
30	l	2	1	75	75	4		0	0	9900	3
31	m	2	1	86	95	6		0	0	9900	3
2	1	2	1	96	93	6		0	0	9900	3
3	o	2	1	51	42	3 1/2		0	0	9900	3
7	p	2	1	29	21	1 1/2		0	0	10000	3
8	q	3	2	9	9	1 1/2		2	1	10000	3
9	r	3		258		9		0	0	2000	2
10	s	3		246		7 1/2		4	2	2700	2
12	t	3		150		4 1/2		2	1	2700	2
13	u	3		60		1		2	1	3150	2
14	v	3		198		7		2	1	2700	2
15	w	4		156		6		2	1	2700	2
16	x	4		222		10		6	3	2700	2
17	y	4		48		1 1/2		0	0	2100	2
19	z	4	2	39	46	3		0	0	12000	3
20	a'	4	2	87	75	5		0	0	12000	3
24	b'	4	2	54		1 1/2		0	0	3000	2
26	c'	4	3	39	64	3		0	0	6000	3
27	d'	5	3	72	69	6 1/4		0	0	8000	3
28	e'	5	3	93	95	5		0	0	8000	3
29	f'	5	3	78	72	5		0	0	8000	3
3-	1	5		48		1		0	0	3000	2
4	h'	5	3	27	47	1 1/2		0	0	6400	3
5	j'	5		66		2		0	0	3000	2
6	k'	5	3	36	174	5 1/2		7	3	2800	3
7	l'	5	3	87	95	8		0	0	8400	3
8	m'	5	3	59	74	3 3/4		2	2	8000	3
9	n'		4		180	5 1/2		0	0	3200	2
11	o'	6	4	50	54	2 1/2		4	2	8000	3
12	p'	6	4	107	95	8 1/2		0	0	7500	3
13	q'	6	4	96	113	8 3/4		0	0	8500	3
14	r'	6	4	101	108	5		0	0	9500	3
15	s'	6	4	102	103	6 1/4		0	0	8500	3
16	t'	6	5	70	77	5		2	1	5600	3
18	u'		5		186	4 1/4		0	0	2800	2
19	v'	6	5	174		7		2	1	4000	2
20	w'		5		90	3		0	0	2400	2

Carried forward 3811 2635 1861 59 30

(2)

date	Letter	vel		Angles		Miles		Soundings		Drag length	No. launch
		A	B	A	B	A	B	Angles	number		
1912	Brought forward			3811	2635	186 1/2		59	30		
3-21	x'		5		72	1		4	2	2400	2
22	y'	7	5	132	84	3		0	0	2000	2
23	z'	7	5	80	83	5 3/4		4	2	5600	3
25	a	7	5	86	46	4		16	5	4800	3
26	b	7	5	192	59	10 1/8		2	1	4800	3
28	c	7		90		1 1/2		7	3	2800	2
29	d		6	48		2		4	2	2400	2
30	e	7	6	36	30	2		4	2	2800	3
4-1	f	7	6	89	97	10 1/4		0	0	4000	2
2	g	8	6	68	67	5 3/8		2	1	7000	3
3	h	8	6	71	77	5 3/4		0	0	6500	3
5	j	8		42		3 1/4		0	0	2400	2
6	k	8		192		7		2	1	2400	2
8	l	8	6	168	84	7 1/2		0	0	4800	3
9	m	8	6	113	108	8 3/4		0	0	5600	3
10	n	8	7	110	108	8 1/2		0	0	6000	3
11	o	8	7	113	108	8 1/2		0	0	6000	3
12	p	9	7	98	90	6		0	2	6300	3
13	q	9	7	93	92	7		0	0	7300	3
15	r	9	7	62	105	6 1/2		0	0	8000	3
16	s	9		126		3 3/8		4	2	4500	2
17	t	9		106		5 1/2		0	0	3500	2
18	u	9		144		5 3/4		4	2	4000	2
19	v	9	7	71	72	4 1/2		2	1	6000	3
20	w'	10		99		6		0	0	3200	2
22	x	10	7	84	84	7 1/2		0	0	7000	3
23	y	10	8	56	44	2 3/8		0	0	6000	3
24	z	10	8	71	72	5 3/4		n 2	1	6000	3
26	a		8		90	3 3/8		0	0	3000	2
27	b	10		252		8 1/2		2	1	3200	2
29	c		8		168	7 1/2		0	0	4000	2
30	d		8		186	6 1/4		0	0	4000	2
5 1	e	10		204		6 1/4		2	1	2800	2
2	f		8	k	126	2		0	0	2800	2
3	g	10		81		6		6	3	3200	2
4	h		8		210	6 1/4		2	1	3200	2
6	j	11		198		7		2	1	2400	2
7	k	11		36		2		0	0	2800	2
				7222	4995	394 3/4		128	64		

Total miles 395
Angles 12,345
Soundings 64
Square miles.

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VEC
July 9, 1912.

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HYDROGRAPHIC SHEET 3367. *Q 3360*

Panama Bay, Canal Zone, by Asst. H. W. Rhodes
in 1912.

TIDES.

	Taboga ft.	Naos I. ft.
Mean low water springs, or plane of reference on staff	2.4	5.1
Lowest tide observed " "	-0.5	1.1
Highest " " " "	17.8	23.8
Mean range of tide	12.5	12.6

Coast and Geodetic Survey
JUL 9 1912
TIDAL DIVISION

Hyd Sheet No 3360

June 22 1912

The area within the limits of the survey is well covered by the drag.

In plotting these drag sheets more care should be taken to make the position number clear and distinct.

H. L. Simmons