3653

Diag. Cht. No. 4116

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. ..... Office No. H-3653

LOCALITY

State HAWAIIAN ISLANDS

General locality LANIA ISLAND

Locality NORTH COAST

194~~7~~ 14

CHIEF OF PARTY

J. B. Miller

LIBRARY & ARCHIVES

DATE MAY 18, 1914

B-1870-1 (1)

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DEPARTMENT OF COMMERCE
Coast and Geodetic Survey

O. H. TITTMANN, Supt.

HAWAIIAN ISLANDS
NORTH COAST OF LANAI ISLAND.

Scale 1:60,000

A DESCRIPTIVE REPORT ON SHEET ~~E.~~ 3653.

Surveyed in January, February, and march, 1914
by the party on the C.& G.S.S.PATTERSON.

REPORT: LIMITS

1. I have the honor to report as follows on hydrographic sheet E, showing offshore sounding along the northern coast of Lanai Island, Hawaiian Islands. The sheet connects at its southeast side with the sounding by the steamer Pathfinder in 1899-1900, and on its northeast side with the sounding by this party in 1913: it extends northward halfway to Molokai Island, and westward to the longitude of the western point of Lanai Island. The sounding was done with the Steamer PATTERSON, and A.M.Sobieralski, Assistant, C.& G.Survey, was in charge of the hydrographic party.

2. METHODS: INTERVALS

The sounding connects in 20 to 25 fathoms with the inshore launch hydrography on sheet 80, along the coast of Lanai Island. Sounding lines were run in a general on and offshore direction, with a few cross lines parallel to the shore. From 20 to 100 fathoms the lines were spaced 1/3 mile apart and less, and the soundings1/6 mile apart along the lines: 100 to 200 fathoms the soundings were spaced 1 mile apart in both directions. Soundings less than 100 fathoms were made with Bassnett or Tanner-Blish pressure tubes, and the tubes were verified by a vertical cast each tenth sounding: the soundings with the Bassnett tubes are to be corrected by the amount thus shown; and those with the Tanner tubes are to be corrected plus 4 fathoms for stray line. In plotting soundings taken under way, a horizontal offset is to be applied backward along the line, equal to the distance from the ship's bridge to the lead at the bottom: this offset is given by a table submitted with sheets A & B, Maui Island, 1913. Soundings greater than 100 fathoms were made by vertical casts.

3. GENERAL FORM OF THE SEA BOTTOM

The sheet covers an extensive bank of sand and broken coral, with 18 to 30 fathoms over it on the Maui Island side and 30 to 50 fathoms northward of Lanai Island: a submarine valley of more

than 100 fathoms, which is the extension of the channel between Maui and Molokai, extends a short distance within the northern limit of the sheet; and westward of this valley the bank extends entirely across between Lanai and Molokai Islands. The bank is much more irregular than is indicated by the previous chart (No.4116), and there are several sand lumps of 18, 23, and 30 fathoms: but there are no dangers to navigation, except the shore reef along Lanai Island, which is shown on sheet 80 (1:20,000).

4. COURSES; AIDS TO NAVIGATION

Vessels can pass anywhere between Lanai, Molokai, and Maui Islands; but should not approach closer than 1 mile to shore. Vessels bound to windward Maui round the gas buoy at Kamalo; bound to Hawaii Island, keep 1 to 2 miles off Lanai; and bound to Lahaina, keep in mid-channel. There are no lights or buoys on Lanai, and the land-marks are all poor. On Molokai there is a range of occulting white lights at Kaunakakai, and a gas-buoy close to the edge of the reef, in 10 fathoms, off Kamalo. On Maui Island there is a white light with two red sectors at Lahaina, and a red lantern on a fairway buoy, at the anchorage.

5. ANCHORAGES; LANDINGS

There are no recommended anchorages on the sheet, and no landings. The landings at Lahaina, Kamalo, and Kaunakakai are outside the limits, and are not reported on here. A vessel can anchor in many places along the lee side of Molokai or the weather side of Lanai, according to choice and according to weather conditions.

6. TIDES AND CURRENTS

Tide reducers for the soundings are obtained from the automatic gauge of the U.S.Engineers at Hilo, Hawaii, and a copy of the record of this has been submitted. Current observations were made along the Lanai and Molokai coasts, and at Lahaina , and the record has been submitted. In mid-channel between Lanai and Molokai the current flows constantly westward while near Lanai there is a weak back-eddy in the opposite direction. At Kamalo, Molokai Island, the current divides, part going northward and part westward, and the exact dividing point is determined by the weather and the tide, so that this point is sometimes westward of the gas-buoy, and sometimes northeastward of it. At Lahaina the current flows constantly northward.

7. TRADE AND COMMERCE

Coasting steamers are passing through these waters constantly, as well as oversea vessels between Honolulu and ports of call on Maui and Hawaii. It is no doubt the most traveled channel in the Hawaiian Islands. Many fishing boats are also anchored on the bank, from all the neighboring islands.

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8. GEOGRAPHIC POSITIONS

Geographic positions for locating the soundings are obtained from topographic sheet Z, Lanai Island, 1914, from triangulation done by this party in 1914; and from the records of previous triangulation on Molokai and Maui Islands.

Respectfully submitted,

James B. Miller,
Assistant, C.& G.Survey,
Chief of Party.

To the Superintendent
Coast and Geodetic Survey,
Washington, D. C.

Honolulu, T. H.
April 29, 1914.

Corrected Tube

Wire run out

Fathoms	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80
10	39														
15	59	39													
20	71	63	39												
25	81	76	67	39											
30	91	87	80	69	39										
35		97	91	84	72	39									
40		107	102	96	88	75	39								
45			113	108	100	91	77	39							
50			123	119	112	104	94	79	39						
55				129	123	117	108	97	81	39					
60				139	134	128	122	112	100	83	39				
65					145	139	133	125	115	103	85	39			
70					155	149	144	137	129	118	105	87	39		
75					165	161	155	149	142	132	121	108	89	39	
80						170	166	160	154	146	136	124	110	90	39
85						180	177	171	165	158	149	139	127	112	91
90						190	187	182	176	169	162	153	143	130	114
95							197	193	187	180	174	166	158	146	132
100							207	203	198	192	185	177	169	160	149
105							217	213	208	203	197	189	182	173	164
110								222	218	213	208	201	194	186	177
115								232	228	223	219	213	206	198	190
120								242	238	233	229	224	218	210	202
125									248	243	239	235	229	222	214
130									258	254	249	245	240	233	226
135									268	264	260	255	250	244	238
140										274	270	265	261	255	249
145										284	280	276	271	266	260
150										294	290	286	282	277	271
155											300	296	292	287	282
160											310	306	302	297	292
165											320	316	312	307	303
170												326	322	317	313
175												336	332	328	323
180												346	342	338	333
185													352	348	343
190													362	358	353
195													372	368	364
200													382	378	374

Meters

OFFSETS FOR POSITIONS OF SOUNDINGS

Distance from bridge to stern of ship, (39 meters), plus horizontal offset from stern of ship to the lead at the bottom on an inclined cast. Computed from the right triangle uncorrected for catenary

S T A T I S T I C S

SHEET E — MOLOKAI, MAUI, and LANAI ISLANDS, T. H.

Date	Boat	letter	Vol.	Hours	Pos.	Sdgs.	Stat. Miles.
Jan. 3	PATTERSON	A	1	4.7	20	64	29.9
" 12	"	B	1	1.5	7	31	8.2
" 24	"	C	1	8.5	55	197	62.1
" 29	"	D	1	7.1	51	139	40.1
Feb. 14	"	E	1	5.8	44	200	25.0
" 16	"	F	1	6.8	47	238	32.5
" 17	"	G	1&2	9.6	73	283	47.2
" 18	"	H	2	9.7	73	276	55.3
" 19	"	I	2	10.0	68	211	52.1
" 20	"	J	2	8.9	64	249	42.5
Mar. 27	"	K	2&3	11.0	76	339	64.7
" 28	"	L	3	9.3	74	234	50.0
				92.9	652	2461	509.6

AREA SQ. STAT. MILES 193

VEC
July 20,1914

HYDROGRAPHIC SHEET 3653.

Maui, Molokai - Lanai, Territory of Hawaii, by Assistant J. B. Miller in 1914.

TIDES.

	Hilo ft.
Mean lower low water, or plane of reference on staff	0.1
Lowest tide observed	-0.9
Highest " " " "	3.5
Mean range of tide	1.5

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EXAMINATION OF HYDROGRAPHIC SHEETS
by the
DIVISIONS OF FIELD WORK AND FIELD RECORDS.

Sheet No. 3653

1. + Are numbers of hydrographic sheets adjoining limits of work shown? ..... partly .....

2. Are transferred soundings of adjacent hydrographic sheets made to show that ground has been covered? .. partly .....

3. + Is sheet of proper size? .....

4. + Is sheet well laid out, no additions required? .....

5. Are limits of hydrography regular? ..... No. .....

6. + Are positions of signals accentuated by light dot of black ink to assist plotting? ..... No .....

7. + Are tidal stations plotted on sheet? .....

8. Is area of work completely covered? ..... No. .....

.....

9. Are critical soundings and dangers shown distinctly? .....

.....

10. + Is the control good? .....

11. + Are positions of signals clearly shown? .....

12. Are soundings well distributed? .....

.....

13. Are shoals ~~carefully and~~ sufficiently developed? ..... No .....
16 fms. near Long 156 - 46 -

.....

14. Do soundings cross satisfactorily? .....

.....

15. Is existence or non-existence of a reported shoal determined? .....

16. Is least sounding over bar probably determined by check soundings or diagonal sounding lines crossing same? .....

.....

.....

17.+ Are projection and plotting checked? .....

18. Is the scale of this sheet sufficient to show the necessary details in the navigable channels? .....

.....

19. +Is the shoreline shown? No .....

20.+ Is there an accompanying list of plane table or sextant positions of signals? .....

21. Has sufficient attention been given to the development of channel? .....

.....

22. Are sufficient bottom characteristics shown? .....

.....

23. Are sounding lines normal to coast? .....

.....

24. Have suspicious soundings been investigated? .....

.....

25. Are ranges or bearings given for important shoals? .....

.....

26.. Are sailing directions given? ...Yes.....

27. Is the general hydrography in the entire area properly developed? .....

28. Are shallow channels for motor boats sounded? .....

.....

29. Is there a note as to coloration of water in or near mouths of rivers and bays? .....

30. Is there any information given as to obtaining fresh water? ..

.....No.....

31. Are there proper intervals between soundings? .....

.....

32. Are projecting points of land and reefs determined by sufficient lines with soundings at close intervals run at right angle to direction of points? .....

.....

33. Is there sufficient data to draw depth curves? ..No.....

.....

34. Are shoal areas remote from shore properly developed by independent system of buoy signals placed in the vicinity of shoal?

.....

35. Are soundings obtained at docks in harbor? .....

.....

36. Is there a full list of data effecting sheet given? ...Yes.

.....

37. Are description of hydrographic signals and marking of same recorded? .....No.....

38. Is there a list of land marks given? No.....

39.+ Does descriptive report give date of instructions? No

40. Are small islets and rocks distinctly shown? .....

41. Is information relative to anchorage given? Yes

42.+ Are survey methods explained sufficiently? Yes

43. Are geographical names given on sheet? .....

44. Are coast pilot notes given? .....

45. Is the unit of soundings given in title? .....

46. Are sufficient depth curves shown? .....

47. Are aids to navigation shown? .....

48. Are grass or kelp indications shown? .....

49. Are sailing courses shown on sheet? No

50. Is descriptive note given as to visibility of shoals? No

51. Are dangers fully described in descriptive report? .....

52. Is the character of reefs described on sheet? None on sheet

53. Are beaches indicated where vessels in distress could be safely beached? No

54. Are standard symbols used in drafting? .....

55. Is information relative to currents given? No

56. Is there a statement as to certainty or probability of least depth over dangers given? .....

57. Is the existence of certain shoals doubtful? .....

58. Is a general description of coast given? No

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59. Is information relative to commercial importance given? Yes

60. Does the descriptive report cover one or a moderate number of sheets? .....

61. Are descriptions of headlands given? .....

62. Is the nature of shoals whether coral rock or sand shown on sheet? ...No.....

63.+ Is the position of the tide gauge well selected? Is the tidal data sufficient for the reduction of soundings over the area of the sheet? .....

.....

64.+ Have projection lines been numbered around all the edges? ...

.....

65.+ Has the geographic position of one of the triangulation points on the sheet been inked near the bottom edge of the sheet?

.....

66. Was the speed of the sounding boat such as to allow vertical readings of the leadline? .....

.....

67. Were lines of soundings run along the axis of narrow channels?

.....

68. Have rocks or shoals seen from the sounding boat in passing been definitely located? .....

.....

69. Have charted shoals reefs, or rocks been investigated? .....

.....

70.+ Have sounding records been kept in approved form? .....

.....

71. Are Wire drag surveys required? .....

72. Is the area between the soundings taken and the shore indicated or described as being covered by reefs, etc. as the case may be?

.....

Other Remarks .....

.....

.....

The forgoing points marked by a cross (+) and the following additional points are to be considered for wire drag hydrographic sheets.

73. What additional areas, if any, in the locality covered by the sheet should be dragged? .....

.....

74. Number of small areas inside limits of work missed by drag (few, moderate number, numerous) .....

75. Are shoals discovered with drag clearly shown? .....

76. Were shoals later covered by drag set at suitable depth? .....

.....

77. Are all areas missed by drag clearly shown? .....

78. Are overlaps ample? .....

79. Do effective depths conform to instructions under which the work was done? .....

80. If work was done before present practice as regards effective depths was adopted, should the area be re-dragged to conform to the present practice? .....

.....

.....

81. Are all shoals discovered shown on current issue of chart? ....

.....

Hyd ≏ 3653

The work on this sheet shows the offshore hydrography along the northern coast of Lanai Island, H. D.

Soundings were plotted in the field, inked and verified in the office.

Sounding lines were run in an offshore direction and a few cross lines were taken parallel to the shore. The crossings do not agree very well.

On a number of places the abrupt changes to a considerably lesser depth may indicate the existence of shoals, and a closer development should have been made.

The records throughout the work were kept in good shape.

Soundings were plotted in fathoms.

J. B. McKean

Sept. 30 - 1914.

Hydrographic Sheet 3653

Transfer sufficient hydrography from 2459 and 3582 to develop the 20 fm. curve.

Revise 20 fm. curve.

Transfer adjoining hydrography from 3513 and 3518

The overlapping hydrography on 3653 should be transferred to 2457.

E. P. Ellis
12-29-15