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Diag. Cht. No. 4115 & 4116

Original

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

R.S. Patton, Director

State: ~~Terr. of Hawaii~~ Hawaii

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic

Sheet No. 4
~~Project 23~~

5052

LOCALITY

~~Hawaiian Ids.~~

North West Coast

~~Honokahau Bay to Keahea Hbr.~~

Alenuihaha Channel to Awaiki Bay

1929

CHIEF OF PARTY

K.T. Adams

U. S. GOVERNMENT PRINTING OFFICE: 1928

5052
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Form 537
Ed. Sept., 1929

Edmonston

REG. NO. 5052

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

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. 4.

REGISTER NO. 5052

State ~~Territory of~~ Hawaii

General locality ~~West Coast~~ N.W. Coast

Locality Alenuihaha Channel to Awaiki Bay ~~Honokahau Bay to Kookoa Harbor~~

Scale 1:80,000 Date of survey 12/13/28 to 2/2~~8~~, 1929

Vessel G U I D E

Chief of Party K. T. Adams

Surveyed by K. T. Adams

Protracted by M. G. Ricketts

Soundings penciled by F. G. Johnson

Soundings in fathoms ~~feet~~

Plane of reference M L L W

Subdivision of wire dragged areas by

Inked by J. G. Pond

Verified by J. E. L.

Instructions dated ~~March 26,~~ Nov. 3, 1927 - Oct. 8, 1928.

Remarks: No boat sheet received

U. S. GOVERNMENT PRINTING OFFICE: 1928

DESCRIPTIVE REPORT
to accompany
Hydrographic Sheet No. 4
Hawaiian Islands, T.H.

DATE OF INSTRUCTIONS: This hydrographic sheet was executed in compliance with your instructions dated November 3, 1927, and October 8, 1928.

SURVEY METHODS: All hydrography on this sheet was done by the ship with the Fathometer, the Fathometer being read by an officer. Red light soundings were carried out as far as practicable, on an average to about 350 fathoms. Beyond 350 fathoms white light soundings were made. Check vertical wire soundings were taken at intervals as specified by the instructions, except that on the outer ends of the long lines it was usually impractical due to the necessity of the ship returning to pick up shore parties.

All of the work was controlled by three point fixed positions on signals, natural objects or summits, except in a few cases where distance and clouds made it impossible. In these few cases generally one angle was obtained and the work tied in to two good three point fixes.

For control, hills and mountain peaks were used principally. A few triangulation stations located by this party were used, other natural objects such as mill stacks and mountain tops previously located by triangulation were used. These objects were supplemented by natural objects, such as churches, and mountain tops which were scaled from the topographic surveys of the Geological Survey.

Topographic surveys made by the U. S. Geological Survey were available over the entire land area and were of great value in picking off buildings and summits for use in our control. They were found to be exceptionally accurate and saved this party much time and labor. These locations taken from the topographic sheets were scaled off on a meter scale and reduced to a proper value for plotting on our sheets.

In a few notable cases the peaks were scaled from the topographic sheets, even although there was a triangulation station on the same peak. This was not done without investigation and in each case it will be found that the triangulation station was not on the summit.

This sheet was done in conjunction with the inshore work being carried on by shore parties and the scope of the work was constricted on account of almost all the working parties having to operate from the ship. It was very difficult at times to put out parties in the morning, then run a sounding line out as far as desired and yet return in time to pick up said parties. This also restricted the number of vertical cast obtainable although, a representative number were obtained. A surprisingly close check was obtained between the vertical casts and the Fathometer.

The outer limit was the 1000 fathom curve and this was easily reached in all places except latitude 20°-10' where the 1000 fathom curve could not be reached on this sheet. However, this area was joined by hydrography on sheet No.2 which will delineate the thousand fathom curve in this area.

In the north a junction was made with the hydrography shown on the chart No.4115 off Maui Island, thus making a completed survey of Alenuihaha Channel.

DISCREPANCIES: In a few places the three point fix control was comparatively weak, due to the small angles obtainable, or to the indefiniteness of the hills or to the faintness of the objects. These places, especially, in the vicinity of Longitude 156°-20' between Latitudes 20°-00 and 20°-10 were adjusted to a slight extent. Even the weakest location is infinitely stronger than if controlled by other means than three point fixes.

DANGERS: There are no dangers within the limits of this survey, it being an offshore survey.

COMPARISON WITH PREVIOUS SURVEYS: The current survey, in general checked very well with and made a good junction with older work adjoining it. There were however, a few cases where the work did not check, as noted following.

On sheet 3650, Northwest of Mahukina the old soundings 217,223,216,211 and 190 are all 10 to 20 fathoms deeper than the current survey. It is felt that the control could not be in error and I have the utmost confidence in the accuracy of our soundings. However, there is a very strong current in this vicinity, which could account for the vertical wire soundings on the older work being too deep. I advise the rejection of the older work. In general, throughout, at junctions where the discrepancy is slight, the older soundings are slightly too deep.

Recommend should be rejected

North by east of Kauhola Point, sheet 3651 sounding 276 appears to be in error by approximately 50 fathoms. It is possible that this sounding was originally 226. It scarcely

seems that the current work could be in error, although the control here was slightly questionable. However, the soundings on line 44 to 46K are nearly exactly proportional to the depths on each side of that line that they can scarcely be much in error. I advise the rejection of the 276 fathom sounding.

Off the Maui Coast it will be noted that the older soundings are again slightly deeper than the current soundings, but this discrepancy in general is so slight as to be probably explained by slight errors in verticality of the wire due to drifting while stopped. However, the comparison is made against soundings taken by the "white light" method which is subject to a possible ± 25 fathom personal error.

A comparison of depths is given following, based on the actual wire sounding against a probable fathometer sounding in that same position as determined by comparison with adjacent sounding lines:

Sounding from chart.	Probable fathometer sounding.	Wire minus fathometer.
989 (H-3519)	955	34
897	865	32
1054 (H-3519)	985	69
1022 (H-3519)	1000	22
908 "	880	28
1017 "	990	27
656 (H-3581)	630	26
995 "	970	25
723?(Fish Com.)	970	-247 ?
751 (Haw.G.Survey)	725	26
975q "	?	
1220 "	1230 ?	-10
1203 "	?	
1107 "	?	
1032 "	1025	7
1210 "	?	
885 "	862	23
892 (H-3581)	800 ?	92 ?
829 "	?	
860 "	820 ?	40 ?
864 "	?	

A study of the above along with the curves shown on charts 4115 and 4116 will show the following conclusions.

(a). In general the wire soundings are slightly too deep. This cannot be accounted for by personal errors in reading the Fathometer because with dirrerent orricers this should balance out. It can only be accounted for by the ract that a current caused the vertical casts to be too deep.

(b). The 723 fathom sounding is a flagrant error.

(c). The soundings 892, 829, 860 and 864, altnough the comparable Fathometer sounding cannot be well determined, are all much too deep.

(d). The old 1000 fathom curve adjacent to the Maui Coast, although based on vertical soundings, is too close to the coast.

(e). The old 1000 fathom curve north east of Hawaii Island, based on inadequate date, is too far off shore and does not make a closed depth curve with that off Maui Island.

(f). The slope off the coast of Maui Island is not great enough to account for the discrepancies in the old and the new soundings.

(g). The control cannot be questioned.

A serial temperature was obtained 10 miles north west of the northwest coast of Hawaii and this data was used for the correction of soundings. Another serial temperature was obtained on Sheet No. 1 to the southward 10 miles west south west of Keahole L. H.

The current survey checks well within itself, all crossings being well within the limits of reasonability and all depth curves being reasonable and normal, with the following two exceptions,

(a). It will be noted in the flat area northwest of the northern point of Hawaii Island that the four and five hundred fathom depth curves are not normal, each alternate line of soundings being too deep or too shoal in comparison with the two adjacent lines of soundings. No explanation for this can be given. The work was studied carefully, the discrepancy can not be accounted for by the direction the lines were run nor by the fact that different officers were on watch. It does not seem reasonable to suppose that the depth curves actually run like this.

(b). Position 71-R. While obtaining a vertical cast and serial temperature at 70-R the ship drifted. The line was resumed at 71-R and the 460 fathom sounding obtained was at least 65 fathoms shallower than the adjacent soundings, positions 12-R and 13-R. This was noted at the time and the officer at the Fathometer was questioned and he stated that he was sure of the depth. In spite of that it appears wrong.

Three soundings, positions 25-U to 27-U, are probably strays, they are too deep as compared to previous work. It is probable that the true depth was about 100 fathoms.

these soundings accepted with insufficient to reject them A.L.S.

SLOPES: Steep submarine slopes exist in certain areas, notably between the 600 fathom and 1000 fathom curves northwest of the northern point of Hawaii Island. In areas such as this the correction due to slope is very problematical and is no doubt the largest source of error in a Fathometer sounding. There is no doubt in my mind that the probable error of the slope correction here is greater than the probable error of observation.

CURRENTS: While no currents were observed, the following general observations may be made. While the northeast trade wind is blowing a strong southwesterly current is set up in Alenuihaha Channel. This evidently eddied around due to the fact that there is often an on-shore wind blowing toward the Kona coast of Hawaii Island. At any rate, violent tide rips are encountered about two miles north of Keahole Point L.H., and from this point the inshore current flows northward along the coast becoming very strong close inshore at Mahukona. There is practically no current at Kawaihae, the northerly current flowing outside of this wide bight . This vessel anchored at Mahukona for a good many days during an exceptionally strong trade wind. This trade wind blew from due east with a terrific force but not strong enought to make the ship head into the wind. The ship would lie heading about southeast on account of the northerly current.

WINDS: Along this stretch of coast from Keahole Pt. north to the northern point of the island of Hawaii the winds are very uncertain and deceiving. In some places the trade wind will blow over the plateau or through a valley with terrifically augmented force, similar to the Willy-waws of Alaska and at other places just a few ship lengths away it will be dead calm or there will be an on-shore wind blowing.

In the vicinity of Kiholo Bay this is particularly noticeable. At anchorage in this vicinity I have noticed these willy-waws comeand go a dozen times in a day.

Running sounding line offshore the wind will shift into the opposite direction two or three times on one line before getting far enough out to get the normal trade wind.

At Kawaihae, the influence of the trade wind is rarely ever felt, the customary wind here being a light onshore wind or a dead calm.

However, when the trade wind does come over the mountains and is felt close to the shore, it seems to be augmented and blow with considerably more force than out in the open.

The trade wind is influenced very much by the configuration of the land. During a light trade wind, starting with the ship at Kawaihae and proceeding around the north point of the island to Honokaa and steering courses parallel to the shoreline I have known the wind to remain constantly about two points on the starboard bow, although the course changes about 180°. In other words the tendency is for the trade wind to blow off shore.

Many miles off the western coast of Hawaii the normal trade will die out completely and a light southerly or even southwesterly wind will be encountered

BAROMETER: During runs around the north coast of Hawaii Island I thougnt I could detect a difference in barometric pressure between the windward and the lee side of the island. Not being able to accomplish this run instantly, of course, I could not be certain. I discussed this with the local Weather Bureau Observer at Honolulu. He thought it possible although no official observations are taken on the island of Hawaii, other than that at Hilo.

SIGNALS: Signals scaled from the Topographic Surveys of the Geological Survey have been given a special identifying legend as follows: indicated by a circle with name of object in purple ink.

CORRECTIONS TO SOUNDINGS: In the reduction of soundings, velocity corrections were applied to the red-light soundings only, in accordand with your authority in letter dated December 12, 1929, which authority was based on data submitted by me in letter dated December 5, 1929, which says in part:

"I give herewith a resume' of the reductions necessary on one sheet which has already been reduced.

From zero to 200 fathoms the reductions are plus and gradually increase from zero to three fathoms.

From 200 fathoms to 450 fathoms the reductions gradually decrease from plus three fathoms to zero.

From 450 fathoms to 1500 fathoms the reductions are negative and gradually increase from zero to seven fathoms.

From 1500 fathoms to 2250 fathoms the reductions are negative and gradually decrease from seven fathoms to zero.

From 2250 fathoms to 2635 fathoms the reductions are again positive and gradually increase from zero to eleven fathoms,

It is therefore to be seen that this reduction is always less than one half of one percent and is generally very much less than that. Also this reduction is always less than half of the probable error of observation of a whitelight sounding".

All soundings were corrected for slope, the correction being obtained in percentage by a celluloid scale originally made, I believe, by Lieutenant J. A. Bond

JUNCTION WITH OTHER WORK: This hydrographic survey makes a complete junction with the following sheets, as shown on the completed hydrographic smooth sheet.

On the north with soundings on Chart Nos. 4115 and 4116.

On the west with my field sheet No. 2.

On the southwith my field sheets Nos. 1 and 2

On the southeast with my field sheet No. 6.
On the east with sheets No. 3650 and 3651.

No additional work is necessary within the area of this sheet.

K. T. Adams

K. T. Adams,
Chief of Party,
Steamer GUIDE.

REPORT OF VERIFICATION

Hydrographic Sheet No. 4
Hawaiian Islands.

This is to certify that I have examined tne completed smooth sheet and records and hereby approve same.

The actual work was all done under my direct supervision and I myself was actually on the bridge whenever the work was difficult, that is, on the outer ends of the lines, or whenever the visibility made the obtaining of fixes difficult. All the work was laid out by myself and examined currently as it was executed.

K. T. Adams

K. T. Adams,
Chief of Party,
Steamer GUIDE.

Enter corrections on Sheet 4 around Kiholo Bay.

COMPARATIVE SOUNDINGS

Used to determine

CONSTANT REDUCTION TO RED LIGHT SOUNDINGS.

Sheets Nos. 2, 3, and 4, West Coast of Hawaii, T.H.
Dec. 1928 - Feb. 1929.

DATE	FATHOMETER READING	VELOCITY CORRECTION	CORRECTED FATHOMETER	HANDLEAD SOUNDING	HANDLEAD minus FATHOMETER +	HANDLEAD minus FATHOMETER -
1928						
Dec. 13	20.0	+ 0.4	20.4	20.5	0.1	
16	20.5	0.5	21.0	20.5		0.5
17	20.3	0.5	20.8	20.5		0.3
	20.0	0.4	20.4	20.3		0.1
18	27.3	0.6	27.9	28.0	0.1	
	56.0	1.2	57.2	57.0		0.2
1929						
Jan. 3	76.0	1.6	77.6	77.0		0.6
5	25.0	0.6	25.6	25.5		0.1
					+0.2	-1.8
						+0.2
					Sum (8)	-1.6
					Mean	-0.2

Subtract 0.2 fms. from all red light fathometer soundings on sheets Nos. 3 and 4; and from those in the vicinity of the west coast of Hawaii on sheet No. 2.

Tabulated by KTA
✓ JBQ

SHEET NO. 4.
WEST COAST HAWAII

Honokahau Bay to Keokea Harbor

Sample No. Date Time	Latitude Longitude	Therm. No. Reading Cor. Temp.	Haul No. Apparatus Depth	Salinity.
#101 12/17/28 8:07 a.m.	19-56.8 N 155-59.3 W	41798 8.2°C	228 fms.	34.33
#102 12/17/28 8:48 a.m.	19-58.0 N. 156-04.1 W	41798 6.5°C	Bottom 315 fms	34.38
#103 12/17/28 9:40 a.m.	19-58.3 N 156-09.5 W	41798 3.8°C	Bottom 639 fms.	34.60
#104 1/3/ 29 12:54 p.m.	20-00¾ N 156-01.6 W		312 fms	34.42
#105 1/3/ 29 2:08 p.m.	20-00.9 N 155-51.8 W	41798 24.2°C	77 fms	35.13
#106 1/5/ 29 9:06 a.m.	20-02.0 N 156-06.3 W	4.3°C	518 ½ fms	34.74
#107 1/5/ 29 10:05 a.m.	20-02.4 N 156-13.0 W	3.4	704 fms	34.76
#108 1/5/ 29 1:01 p.m.	20-03.9 N 155-56.6 W	7.6	235 ½ fms	34.69
# 109 1/9/29 3:04 p.m.	20-00.9 N 155-55.0 W	9.0	214 fms	34.47
#110 1/9/ 29 8:40 p.m.	20-06.0N 156-02.2 W	#4114 17.1	492 ½ fms	34.66
#111 1/9/ 29 9:46 a.m.	20-06.2 N 156-10.1 W	13.8	632 fms	34.69
#115 2/8/ 29 1:42 p.m.	20-13.9 N 156-09.4 W	#41798 4.0	574 fms	34.77
#116 2/10/29 11:24 a.m.	20-16.9 N 156-03.2 W	#4104 4.45° C	509 fms	35.21
#117 2/10/29 1:26 p.m.	20-21.4 N 156-06.3 W	2.8°C	880 fms	34.81

NOTE: Refer to copies of Salinity observations made by GUIDE, sent to the DIRECTOR by the Scripps Institute of Oceanography of the University of California, under dates of Feb. 14 and Sept. 18, 1929.

N.W. OF MAHUKONA, HAWAII.

DEPTH	TEMP. °C.	SUM	MEAN °C.	FACTOR	CORR. FMS.
13 1/3	23.3		23.30	0.0236	0.32
26 2/3	23.1	46.4	23.20	0.0234	0.62
40	22.6	69.0	23.00	0.0230	0.92
53 1/3	22.0	91.0	22.75	0.0225	1.20
66 2/3	21.0	112.0	22.40	0.0218	1.46
80	19.9	131.9	21.98	0.0210	1.68
93 1/3	18.6	150.5	21.50	0.0200	1.87
106 2/3	17.5	168.0	21.00	0.0190	2.03
120	15.8	183.8	20.42	0.0178	2.13
133 1/3	14.3	198.1	19.81	0.0167	2.22
146 2/3	12.8	210.9	19.17	0.0155	2.28
160	11.0	221.9	18.49	0.0143	2.28
173 1/3	9.9	231.8	17.83	0.0132	2.28
186 2/3	9.3	241.1	17.22	0.0119	2.22
200	8.7	249.8	16.65	0.0108	2.16
213 1/3	8.2	258.0	16.13	0.0098	2.09
226 2/3	7.7	265.7	15.63	0.0086	1.95
240	7.3	273.0	15.17	0.0074	1.78
253 2/3	6.8	286.9	14.34	0.0053	1.41
280	6.7	293.6	13.98	0.0045	1.26
293 1/3	6.4	300.0	13.64	0.0038	1.11
306 2/3	6.3	306.3	13.32	0.0032	0.98
320	6.0	312.3	13.01	0.0025	0.80
333 1/3	5.9	318.2	12.73	0.0020	0.67
346 2/3	5.7	323.9	12.46	0.0014	0.49
360	5.6	329.5	12.20	0.0009	0.32
373 1/3	5.4	334.9	11.96	0.0004	0.15
386 2/3	5.3	340.2	11.73	0.0000	0.000
400	5.2	345.4	11.51	0.0005	0.20
413 1/3	5.1	350.5	11.31	0.0009	0.37
426 2/3	5.0	355.5	11.11	0.0013	0.55
440	4.9	360.4	10.92	0.0017	0.75
453 1/3	4.8	365.2	10.74	0.0020	0.91
466 2/3	4.7	369.9	10.57	0.0024	1.11
480	4.7	374.6	10.41	0.0027	1.30
493 1/3	4.6	379.2	10.25	0.0030	1.48
506 2/3	4.5	383.7	10.10	0.0033	1.67
520	4.4	388.1	9.95	0.0036	1.87

DEPTH	TEMP. °C	SUM	MEAN °C	FACTOR	CORR. FMS.
533 1/3	4.3	392.4	9.81	0.0041	2.18
546 2/3	4.3	396.7	9.68	0.0045	2.46
560	4.3	401.0	9.55	0.0049	2.74
573 1/3	4.2	405.2	9.42	0.0052	2.98
586 2/3	4.21	409.4	9.30	0.0056	3.28
600	4.1	413.5	9.19	0.0059	3.54

SUMMARY

Depth	Corr.		Depth	Corr.
13			59.0	
	0.3			1.4
15.8			67.6	
	0.4			1.5
20.2			73.6	
	0.5			1.6
24.6			79.7	
	0.6			1.7
29.1			86.7	
	0.7			1.8
33.6			93.7	
	0.8			1.9
38.0			102.1	
	0.9			2.0
42.6			246.0	
	1.0			1.0
47.4			325.0	
	1.1			0.0
52.2			406.0	
	1.2			1.0
57.2			537.0	
	1.3			2.0
59.0			585.0	
				3.0

SHEET NO. 4.
WEST COAST OF HAWAII

Honokahau Bay to Keokea Harbor.
STATISTICS.

Date	Day	White Lt. Soundings		Red Lt. Sndgs.	V. C.	Total sndgs. for day.	Total Sta mi. for day.	Pos.
----	---	No.	Sta Mi.	Sta. mi				
12/13/28	A	7	3.1	8.6		7	11.7	17
12/16/28	B	55	20.0	33.0		55	53.0	68
12/17/28	C	116	45.4	28.0	3	119	73.4	104
12/18/28	D			57.1	3	3	57.1	95
12/19/28	E			20.3			20.3	24
1/ 3/29	F	9	1.6	26.5	3	12	28.1	48
1/ 5/29	G	100	41.9	29.3	4	104	71.2	97
1/ 9/29	H	132	59.8	24.6	4	136	84.4	97
1/21/29	J			40.6			40.6	53
1/28/29	K			43.1			43.1	54
1/31/29	L	48	22.3			48	22.3	24
2/ 7/29	M			4.6			4.6	7
2/ 8/29	N	116	48.0	8.5	1	117	56.5	67
2/ 9/29	P	136	51.5			136	51.5	60
2/10/29	Q	73	17.1	3.4	2	75	20.5	44
2/23/29	R	140	57.4	6.8	1	141	64.2	84
2/24/29	S	258	126.4	12.0		258	138.4	149
2/25/29	T	197	97.2	21.6	1	198	118.8	144
2/28/29	U			24.3	2	2	24.3	40
TOTAL		1387	591.7	392.3	24	1411	984.0	1276

SHEET NO. 4.
HONOKAHAU BAY TO KEOKEA HARBOR
Tidal

A reduction to Honolulu tides were used inasmuch as Kawaihae tides were not complete and the work on Sheet No.4 was offshore.

Ration of ranges 1.15 on Honolulu
Time - 35 minutes earlier than Honolulu.

No depths over 50 fathoms are reduced for tides.

SHEET NO. 4.
WEST COAST HAWAII

Honokahau Bay to Keokéa Harbor

Serial Temperatures
Lat. 20-22.6 N.
Long. 156-02.0 W.

DEPTH (in fms)	#4114	#4104
2	23.40	23.25
15	23.40	23.20
30	23.00	22.80
50	22.25	22.10
70	20.40	20.35
85	19.60	19.35
105	17.70	17.45
120	15.85	15.60
135	13.80	-- --
150	12.00	12.10
165	10.60	10.50
180	10.20	-- --
196 ½	8.80	8.75
230	7.60	7.65
480	4.60	4.60

Recorder --- G. W. Lovesee.

List of Signals

1. Kuiki *
2. Kaupo △
3. Alau *
4. Sharp *
5. Hole (Keyhole light) △
6. Kuili △
7. Pili (Puu Pili) △
8. Hand △
9. Light (Kawaihae L.H.) △
10. Hinai △
11. Noho *
12. Nawai △
13. Lahi (Kiola) △
14. Ula (Puu Ula) △ 1913
15. Pupa (Puu Pa) △
16. Kama (Puu Kamalii) △
17. Ana (Anahulu) △
18. Hual (Hualalai) △
19. Hana (Hanakaohi) △
20. Waa (Puu Waa Waa) *
21. Kaunu (o Kaleiookie) *
22. Hula (probably Ula) *
23. Kana (probably Hana)(or possibly Kama) *
24. Pack △
25. Puako △
26. Kool *
27. Kona (Mahukona L. H.) △
28. Waiele △
29. Mag *
30. Maka *
31. Wawa (same as Waa) *
32. Kau (Kauhola Pt. Lt.) △
33. Island △
34. Hoea (Hoea Stack - Easterly) △
35. Stack (Niuli St. most easterly)? △
36. Nale (Puu o Nale) △
37. Hola (Stack Kauhola)--(this should be Kohala Mill) △
38. 8423 Feet Peak *
39. Poli *
40. Iki *
41. Ahu *
42. Keaka (Keakaamanu) △
43. Make (Puu Loa -- named wrong) △
44. Maoe (Puu Mahoe) △
45. Iwi *
46. Kaupo (Catholic Church) △
47. Nui *
48. Pimeo △

List of Signals

49. Alau *
50. Kipa *
51. Kehe (West summit) *
52. Head (triangulation ▲ Kauiki) △
53. Pule *
54. Kauiki *
55. Union (Stack Union) △
56. Pu Iki *

* Scaled from Topographic Survey Quadrangles by the U. S. Geological Survey.

△ Triangulation Signals.

Division of Charts, File No.____

Department of Commerce
U. S. Coast and Geodetic Survey.

RECOVERABLE HYDROGRAPHIC SIGNALS.

Oakland, California,
January 6, 1931.

Director, U.S. Coast & Geodetic Survey:

The following determined objects are recoverable, and can be again used as hydrographic signals, from the following descriptions.

K. T. Adams, Chief of Party.

Name	Elevation ft.	Latitude D. M.	meters	Longitude D. P.	Meters	Method of Determtn.	Charts Affected.
1. Pu Iki		20-42	631.2	156-00	138.4	#	No. 4116.
2. Make	4112"	△Puu Loa----------				Tri.	No. 4115
3. Hand		△Hand----------				Tri.	" "
4. Sharp		19-46	1019.3	155-58	921.7	#	" "

N O T E :
Descriptions in order by number.

Tri.= Method of determination by triangulation
# .= Method of detemination by scaling from Topographic Survey Quadrangles, U. S. Geological Survey.

1. Pu Iki -White Church at Puuiki. Not exceptionally prominent.
2. Make -Puu Loa. Fairly sharp, but only seen in small radius from WNW to NW. Left hand side of peak, when seen from NW is the highest.
3. Hand -Highest point of a black conical spire of lava.
4. Sharp -Puu Nahaha. Very sharp symmetrical lava cone. Not conspicuous.

(FOR FILES OF FIELD RECORDS SECTION)

3

January 31, 1931

Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
volumes of sounding records for
3

HYDROGRAPHIC SHEET
5052

Locality
Honokahau Bay to Keokea Harbor, Island of Hawaii

Chief of Party:
Plane of reference Ks T. Adams, in 1928-1929
ft. on tide staff a mean lower low water, reading
3.5 ft. below ~~M. H. W.~~ tabulations at Honolulu
17.3 2

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 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.

Chief, Division of Tides and Currents.

H-5052

Chief of Party - K. T. Adams
Surveyed by - " " "
Protracted by - M. G. Ricketts
Soundings penciled by - F. G. Johnson
Verified and inked by - John G. Ladd

1. The records conform to the requirements of the general Instructions.
2. The plan and character of development fulfill the requirement of the general instructions.
3. The sounding line crossings are adquate.
4. The usual depth curves could be drawn.
5. The field plotting was complete to the extent prescribed in the general Instructions.
6. No part of the work had to be done over by the office draftsman.
7. There were no recent adjacent surveys with which to compare, altho the

descriptive report lists the discrepancies existing in the overlap with older adjoining sheets.

8. The field plotting of the sheet was very well done except that numerous soundings were penciled giving erroneous values and in cases where the line interval between soundings was irregular the plotted spacing was often found to be in error.

9 The Vertical Cast soundings checked very well with the fathometer soundings taken at same position. The V.C. sounding in general being a few fathoms deeper.

10. The positions most distant from shore object in general had very strong fixes and plotted very well. Position 13 to 25 "B" day had the weakest fixes and it was necessary to tie the line in with the adjacent positions on same line by means of course and time and in some cases with the aid of one angle.

11.

Position "71 R". appears to be in error as the 460 fath. sounding at position is approximately 60 fath. shoaler that the adjacent soundings between positions 12 and 13 R. It is equally possible that the sounding is in error as the position can be accounted for by the drift while taking the vertical cast at Position 70 R.

Respectfully Submitted
John S. Ladd
asst Coast Eng.
Nov. 16, 1931