

C. & G. SURVEY
L. G. A.
DEC 27 1928
A. G. B.

4818
4818a

Diag. Cht. No. 4117

DEN
10-16-98

Form 504

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
E. Lester Jones, Director

Hawaiian Is.
State: ~~Terr. of Hawaii~~

DESCRIPTIVE REPORT

Topographic } Sheet No. 17 4818
Hydrographic }

LOCALITY 4818A
D.E.N.

Hanapepe Bay

(Port Allen)

Hawai, I. H.

1928

CHIEF OF PARTY

K. T. Adams.

4818

DESCRIPTIVE REPORT
to accompany
HYDROGRAPHIC SHEET 17.
PORT ALLEN, KAUAI I., TH.
Scale 1:5,000

K. T. Adams, Chief of Party.
H. C. Warwick, Hydrographer.

Instructions dated May 25, 1928 and
June 23, 1928.

Object:- The object of this survey is to supplement work shown on Hydrographic Sheet no. 4605 and Chart no. 4108, and to furnish additional information not shown on the aforesaid sheet and chart.

Before beginning this survey the hydrographer consulted Capt. W. M. Gorham of Port Allen, manager of the Kauai Railway and Harbor Master of the port. I may state here that this gentleman was pleased to co-operate and lend any assistance possible to assist in the progress of the work. From Capt. Gorham and his engineer much valuable information was gotten.

The wreck marked PD on chart 4108 in latitude 21-54-06, longitude 159-35-40 no longer is in the position marked, but at the present time is well up on the beach on the north shore of the bay. This wreckage is buried out of sight in the sand and can only be seen at times when southerly weather makes heavy seas wash this beach, and then it is partially uncovered. Capt. Gorham informs me that it is his intention to have this wreck blown out and destroyed at his first opportunity, when it becomes partially uncovered. Aside from this information, which may be considered authentic, a thorough search was made for this wreck, or parts of it, with no results, so it is my opinion that this symbol should be stricken from the chart.

Evidence of another wreck was found on the south side of the breakwater. Part of the wreck is laying on the south slope of the breakwater and part of it is in the water very close to. It is so close and is disintegrating so rapidly that it cannot be considered a menace.

Positions Nos. 90 to 96 C (motorsailer) are omitted from the sheet for the reason that the positions of two of the signals used in these positions are not at hand. These signals "next" and "low" are, and correspond to signals "Nev" and "Minn" respectively on Topographic Sheet No 4230. Since the locations of these signals are not at hand it is left to the office to plot these positions.

Capt. Sobieralski
Note these
paragraphs

E 04

The hydrography on this sheet was extended a little farther east than the instructions called for, for those in authority at Port Allen were very desirous to have the limits of the proposed chart include the new stack at the McBryde Sugar Mill. In the event that this stack is included on the chart it was thought that any additional soundings on the sheet would be of value.

This stack at the McBryde Sugar Mill is a fine land mark which can be seen from 15 to 20 miles off shore. This stack was located by triangulation by a party from this vessel during the time hydrography was in progress. If the proposed chart is not extended to include this stack, the latter should be added to Chart No. 4117 "Oahu to Niihau".

Survey Methods:- This survey was made entirely with hand lead and line using visual three point sextant fixes for positions. Both pulling whaleboat and motorsailer were used, The complement of the pulling boat consisted of one officer in charge plotting and right angle, one officer steering and left angle, one recorder, one leadsman and three oarsmen. This system was not entirely satisfactory due to the caliber of the crew and the fresh prevailing winds. The three areas outlined in the instructions were thoroughly developed, but in the bight southeast of the bay it was unsafe to approach the beach any nearer than was done. The same applies to the bight on the west side of the bay. The area in the bight southeast of the bay is foul, filled with coral rocks and breaking in almost all weather. In the bight on the east side of the bay it breaks across it in almost all weather. To approach the beach any closer than was done would have endangered life and property.

The complement for the motorsailer consisted of two officers (performing same duties as mentioned above), one recorder, one engineer and three leadsmen. This boat was used to extend the survey farther east and west and out to ten fathoms.

Control for this survey was furnished by the topography executed by Lt. F. B. Quinn, during the progress of the work. The two signals "Next" and "Low", mentioned above, may be obtained from topographic sheet #4230, these signals, on this sheet, are called "Nev" and "Minn" respectively.

The tidal data used for the reduction of the soundings was obtained from an automatic field gauge installed on the breakwater at Port Allen.

Discrepancies:- The 26 foot spot on chart 4108, at latitude 21-53-33 and longitude 159-35-53 was investigated and could not be found. It is recommended that this sounding be supplemented by soundings shown on this sheet.

Dangers:- On approaching the bay from the west, care should be taken to give plenty of berth to the point on the west side of the bay. A coral reef projects off this point about 150 meters, sunken coral rocks on this point make the area foul out to that distance off shore. However the edge of this reef is well defined by breakers and there is no danger approaching the bay if ordinary precaution is taken.

There are two nine foot soundings, one at position 67B (motorsailer) and the sounding preceding it. This position is 250 meters 79°(T) from signal "Ore." Additional lines were run in this area to verify these soundings, but that depth could not be gotten again. The swells making up right at this area make the water muddy and consequently the bottom cannot be seen, so it is possible that these soundings were taken on top of small coral heads.

Anchorages:- This bay affords anchorage for small vessels only. The holding ground is good and excellent protection from the N.E. trades may be had. However a swell continually runs in the bay. Mooring buoys, maintained by the Kauai Railway, are anchored in the bay for the convenience of ships discharging and taking on cargo. Stevedoring facilities here are very adequate considering the natural features of the bay.

Statistics:-

Statistics for Sheet, Field No. 17.

DATE	LETTER	MILES OF			BOAT USED
		SOUNDING LINE	SOUNDINGS	POSITIONS	
1928					
Oct. 22	a	0.8	110	17	whaleboat
23	b	4.1	619	90	"
24	c	3.0	345	64	"
25	d	2.2	296	50	"
26	e	2.4	308	47	"
26	a	3.2	129	30	motorsailer
27	b	15.8	740	155	"
28	c	11.2	509	110	"
TOTAL	7	42.7	3,057	563	2

Respectfully submitted,

H. C. Warwick

H. C. Warwick, Jr. H. & G. E.
Hydrographer.

Approved,

K. T. Adams

K. T. Adams, H. & G. E.
Chief of Party.

SPECIAL REPORT ON SURVEY AT PORT ALLEN,
KAUAI ISLAND,
T. H.

In accordance with your instructions dated May 25, 1928, and June 23, 1928, a topographic and hydrographic revision survey has been made of Port Allen at Hanapepe Bay, Kauai Island, T. H.

Inasmuch as some work was done in addition to that specified the following explanation is hereby made:

It was found that the shore line differed slightly between the Chart and the DISCOVERER'S survey in additional places to those indicated by you. New signals had to be located and it was deemed advisable to completely rerun the shoreline. This was done very carefully so that there should be no question about the accuracy of the shoreline of our latest survey.

The buildings were indicated as correct or incorrect on the chart and photostat supplied by your office, which are being returned to you. No attempt was made to get complete detail on our topographic sheet back of the shore line.

Mr. W. M. Gorham, General Manager of the Kauai Railway Co., whose office is at Port Allen, and who acts as Harbormaster, has urgently requested that the new edition of the chart include in its limits the lighthouse and the large prominent smokestack east of the port and located by our party. To include this would extend the eastern limit of the chart beyond that indicated by you. Mr. Gorham informs me that they are going to erect a privately maintained light on this stack.

In case that you might comply with his request, both the topographic and the inshore hydrography were run far enough east to cover this farther limit.

Mr. Gorham also requests the use of the name "PORT ALLEN" on the chart, as this name is more familiar to the seafaring men. I have attached his letter to me on this subject to this report. *(Filed in des. report of T. 4364) C.P.S.*

K.T. Adams
K. T. ADAMS,
Commanding
Steamer GUIDE

KTA/h

*Note
etc*

Copy for Section of Field Records files.

January 8, 1929.

11 Field Records

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
volumes of sounding records for

HYDROGRAPHIC SHEET

4818

Locality: Hanalei Bay, Kauai, T.H.

Chief of Party:

K. T. Adams in 1928.

Plane of reference is M L L W reading,
1.4 ft. on tide staff at Port Allen, Island of Kauai.

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.

Paul C. Whitney

Chief, Division of Tides and Currents.

IN REPLY ADDRESS THE DIRECTOR
U. S. COAST AND GEODETIC SURVEY
AND NOT THE SIGNER OF THIS LETTER

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

AND REFER TO No. 25-EF

WASHINGTON

February 13, 1929.

To: The Chief,
Division of Tides and Currents.

From: L. P. Shidy,
Associate Mathematician.

Subject: Soundings in Hanapepe Bay, Kanai Island, T. H.,
at various dates.

The plane of reference for the Hawaiian Islands is mean lower low water, which reads on the various tide staffs under consideration as follows:

Hydrographic Sheet	Mean LLW	Number of tides observed	
		HW	LW
2670 (1904)	1.1 ft.	45	44
4605 (1926)	0.4 "	40	41
4818 (1928)	1.4 "	12	12

The plane used in 1904 was carried forward to 1926 and 1928 by spirit levels from bench marks and it seems improbable that any important error could be traced to this source. The mean range of tides, or rise and fall, at Port Allen (Eleele), Hanapepe Bay, is only 1.1 ft., which is so small that no errors of importance are likely to have occurred in the tide reducers.

Two tracings showing contour lines for H. 2670, and H. 2818 were placed on other sheets, and the soundings on each sheet crossed by the various traced depth curve noted. The extreme differences observed by me are as follows:

Depth curve on H. 2670 feet	Soundings on H. 4605 feet	Difference 4605-2670 feet	Remarks
6	6	0	In numerous places
6	9	+3	Middle top of tracing
12	9	-3	Loop at top of tracing
12	15	+3	West middle of tracing
18	22	+4	Near east beginning of tracing
18	15	-3	West middle of tracing
24	17	-7	Near east end of top of tracing
24	41	+17	Near middle top of tracing
30	24	-6	Near top on west of tracing
30	35	+5	Near 36 ft. curve on tracing
36	29	-7	Near east beginning of tracing
36	51	+15	East tip of large loop near end of tracing

Depth curve on H. 2670 feet	Sounding on H. 4818 feet	Difference 4818-2670 feet	Remarks
6	10	+4	Middle top of tracing
6	5	-1	West at loop of tracing
12	8	-4	Sharp bend on west of tracing
12	17	+5	Small loop on west of tracing
18	23	+5	Near west end of tracing
18	14	-4	" " " " "
24	30	+6	Lower part of bend on west of tracing
24	17	-7	Middle west of tracing
30	24	-6	Near east end of tracing
30	36	+6	Indentation on west of tracing
36	28	-8	West near top of tracing
36	41	+5	West near end of tracing

Depth curve on H. 4818 feet	Sounding on H. 4605 feet	Difference 4605-4818 feet	Remarks
6	6	0	In many places
6	9	+3	Near east end of tracing
12	11	-1	Middle top of tracing
12	19	+7	loop on west near top of tracing
18	15	-3	West loop of tracing
18	27	+9	" " " "
30	47	+17	Near east end of tracing
30	28	-2	loop on west side of tracing

There may be even more extreme differences than are noted in the above three comparisons, but these suffice to show that sizable differences occur between the countour lines on each of the three hydrographic sheets for Hanapepe Bay, T. H. These discrepancies must be due to undetected errors somewhere along the chain of operations necessary to obtain soundings, including the "time mean", the sounding line, the leadsman, the angle observers, the recorders, and the person who plotted them, etc.

The work on H. 2670 appears to be well checked by cross lines of soundings; H. 4605 is quite indefinite, owing to its few parallel lines; and H. 4818 covers the ground quite irregularly; many of its lines are far from being the straight courses supposed to be run.

Placing the tracing of H. 4818 on H. 2670, shows that for the most part there is a satisfactory agreement between the two shore lines, the differences being usually in unimportant parts of the coast. The Wharf at Port Allen near Δ Ele, shown on H. 4818, was not filled in and terminated by a wharf in 1904, when the survey for H. 2670 was made.

The tracing for H. 4818 when placed on H. 4605, also shows in the main quite satisfactory agreement between the two shore lines.

The tracing for H. 2670 when placed on H. 4605, shows a quite satisfactory agreement of the two shore lines, with the exception of that portion near the eastern end of the tracing, which on the earlier sheet is marked "breakers", and on that for 1926 it is called "foul area", thus indicating that the precise location of the shore line there is not important.

I suggest that for the chart to be constructed from these three surveys, a mean shore line be adopted; also that a weighted mean be taken of the various contour lines, giving most weight to those on H. 2670, as being the best checked work. Then, having an adjusted shore line, and adjusted contour lines for various depths, change the location of soundings slightly, so as to agree with the contour lines. The necessary changes in position of most soundings, will not be noticeable upon the reduced scale of the chart.

The hydrographic sheets and soundings books have already been returned.

L. P. Shidy

*Forwarded
Hammer*

Section of Field Records

Report on H. 4818 - Surveyed in 1928.

Chief of Party H. T. Adams. - Surveyed by H. C. Warwick
Extracted by G. W. Lovelee - Soundings by W. H. Bainbridge
verified and inked. J. Fleming

- ① The records conform to general instructions except that changes in boat course were not always indicated.
- ② The plan and character of the development fulfill the requirements of G.I.
- ③ Field plotting was quite accurate but incomplete with respect to plotting of soundings and transfer of rocks shown on boat sheet and Topo sheet. In most cases only every other sounding was processed.
- ④ Time interval between soundings was invariably uniform and in the few exceptions errors in sounding positions had to be corrected. - agree with time
- ⑤ Depth curves cannot be completely drawn owing to gaps in the development and shoal areas.
- ⑥ The outline of the Coral Reef N.W. of O Pit and the rocks WEST of O Pit are taken from the boat sheet. The Sunk rock near O Pit was taken from the Topo sheet. The three Sunk rock S.E. of O Pit were taken from the boat sheet.
- ⑦ at position 49-b Vol. #1 the fix is ^{ELL} ^{OFF} ^{BAY} but in the field plotting the fix used was ^{ELL} ^{ORE} ^{ISLAND}. Position 48-b was out of position also. note faint outline of original plotting. The fix for Pos. 66-b is undoubtedly erroneous and the position using the given signals and angles would Plot 620-M N.E. of the probable position. This position was plotted on time and course.

Report on H 7818

- ⑧ Note coral head at pos. 86-b Lat. $21^{\circ} 53' 56''$
Long $159^{\circ} 35' 46''$
-
- ⑨ Sounding line crossing discrepancies noted at 13-c where a 20^{ft} sounding is on a 14^{ft} sounding
on sounding line crossing 82-83 b and 4-5 d a 16^{ft} sounding is crossing 13 and 14 foot soundings
-
- 10 Position 51-b Red is very close to the position of the wreck shown on the chart.
Between 11 and 12 c Red are two soundings 40^{ft} and 22^{ft} within a very few meters of each other.
A 14^{ft} sounding faces between a 42^{ft} and a 51^{ft} sounding 50 m. S.E. of O.B.M.
Pos. 54-55 c vol #2.
-
- ⑩ Breakers shown 2 Meters from 12^{ft} sounding 100-101-c were not noted in record
-
- ⑫ South of O/W there appears to be a channel close inshore formed by an offshore ridge and the mainland.
Another channel is noted parallel to the shore south of O.Sam
-
- 12 When the position of mooring buoys on the Topo sheet differed from that given in the record the former was followed.
It is now noted that there is no agreement between chart, Topo, and Hydro. sheet, regarding these buoys.
The buoy 100 N.W. of O.Der was not shown on Topo sheet and was placed on smooth sheet from information in the record (see pos. 3-b vol 2)

Note regarding Wreck (P.D.) on chart

The sounding line for 6-day (in red) positions 50-51-52 passed over the supposed position of this wreck (or not more than two meters to the left of it) without any indication of wreckage being found.
The soundings are very close together along this part of the line and it is quite certain that no part of the wreck is on this line.
It should be noted, however, that the distance to the parallel sounding lines on either side is about 50 Meters and the wreck or parts of it may be in the intervening space.
Par. 3 descript. Rpt. states this "The wreck now lies buried in the sand on the N. shore, but aside from this a thorough search was made for the wreck or parts of it."
The deduction is that there was some question as to whether or not this was really the wreck referred to.

Report on H. 4818

Regardless of the merits of the question, it is desired to state that one line of soundings over a circular area whose diam is approx. 180 ft. is insufficient to disprove the existence of a danger therein and should not warrant the removal of the wreck symbol from the chart unless supplementary evidence is submitted showing positively that the wreck indicated on the chart and the one lying now on the North shore are one and the same.

In comparing this survey with H. 4605 a decided shift to the south of the 12^{FT} and 18^{FT} curves is observed.

Respectfully Submitted
John Fleming
Jan 26-1929

Section of Field work.

Sheet # 4818

Surveyed in 1928.

Report on - Hanapepe Bay.

Chief of Party - K. J. Adams.

Surveyed by - H. C. Warwick.

Protracted by - J. W. Lovese.

Soundings plotted by - W. H. Bainbridge.

verified and inked by - John Fleming.

1. The records conform to the requirements of the General Instructions, except as noted by the verifier.
2. The plan and character of development fulfill the requirements of the General Instructions.
3. The plan and development satisfy the specific instructions.
4. The sounding line crossings are adequate, except as noted below:

The crossing at 82b-83b and 4d-5d
Lat $21^{\circ}54'200''$, Long. $159^{\circ}35'30''-400''$.
has 16 ft. soundings crossing 13 and 14 ft.
soundings as noted by the verifier:

The verifier has also noted a 20 ft.
sounding on a 14 ft. sounding at 13c
Lat. $21^{\circ}53'30''-775''$, Long. $159^{\circ}35'30''-575''$.
These soundings are undoubtedly correct,
because the bottom in this locality is
of coral formation where this difference
might easily be found.

5. Depth curves cannot be completely
drawn, because in many places there
were foul areas with breakers which could
not be investigated. This condition was
true in nearly all kinds of weather.

6. The field plotting was completed in
accordance with the general instructions,
except that some of the rocks shown
on the topographic and boat sheets

had not been transferred. All soundings ³ were not penciled, but where they were omitted they were so close together that it is not general practice to put them all on the sheet in the field.

7. The office draftsmen did not have to do over any of the field drafting, although they added some of the shoreline details from the topographic sheet.

8. The junctions with adjacent sheets are satisfactory.

9. Further surveying is not required to fully develop important areas within the limits of this sheet.

10. Remarks:

~~(a) Soundings between 90c and 96c should be plotted on this sheet.~~ Plotted Feb. 16, 1929 S.F.

(b) Note coral head at 10 ft. sounding 86 b, Lat. $21^{\circ} 53' - 56''$, Long. $159^{\circ} - 35' - 46''$

(c) The symbol for the wreck marked PD on chart 4108 in latitude 21-54-06, longitude 159-35-40 should be removed from the chart, since this danger no longer exists. The reasons for removing this symbol will be found in paragraph 3 of the descriptive report for H-4818.

(d) Requests have been made at Port Allen that this name be used on the new edition of the chart in place of the old name of Eleele. A letter from Mr. W. M. Gorham, General Manager of the Kauai Railway Co. in regard to this will be found filed with descriptive report of T-4364.

(e) It has also been requested that the limits of the new chart be extended to include the new stack of the McByrde sugar mill. Information regarding this is noted in first and second paragraphs, page 2 of the descriptive report for H-4818.

(f) The soundings over the entire H-4818 sheet are about 3 ft. shallower than those of the two previous surveys which are H-2670 and H-4605. There is no apparent reason for this discrepancy and after having H-4818 investigated by the Division of Tides and Currents there seems to be no error in the tidal data.

This discrepancy is probably not serious enough to affect compilation.

(g) The new topography on T-4364 should be used on the chart to replace that of the two previous surveys with which it does not agree. Many changes have naturally come about since the survey of 1904 and the survey of 1926 was probably not very carefully done. The work done on T-4364 was very carefully done with the idea in mind that it should correct the defects of the two previous sheets. In order to show the buildings and detailed topography

6.

at Port Allen. It is necessary to supplement T-4364 with the data found on 4364 a and 4364 b.

(h) Note 8 ft sounding 125 meters southeast of Δ Ele. This sounding was transferred from H-4605.

(i) No mooring buoys were indicated on the hydrographic sheet when it came in from the field. They have all been plotted from the topographic sheet except the one ^{which is} 100 meters W. of \odot Der which was ^{plotted from notes in records} ~~not~~ ^{located} by topography. The topographic locations differ considerably from those in the sounding records, but the topographic information should be the best since there were three good cuts to each buoy.

~~The position of buoy 175 meters west of \odot Bom should be changed to agree with the topographic sheet.~~ Changed 2/15/29
R.F.

(j) It is believed that the 26 ft spot on chart 4108, at latitude $21^{\circ}53'33''$, Long $159^{\circ}35'53''$

7.

should be retained, as it appears almost certain that it should be there. Blueprint 13359 of 1909 shows quite clearly that there might be a shoal point extending out into deep water here.

Carl O. Heston
J. H. + J. E.

O. H. Amos.
~~4587~~

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4818

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. 17

REGISTER NO. 4818

State Territory of Hawaii

General locality Island of Kauai

Locality Hanalei Bay (Port Allen)

Scale 1:5000 Date of survey October 22 - 28, 1928

Vessel Steamer "GUIDE"

Chief of Party K. T. Adams

Surveyed by H. C. Warwick

Protracted by C. W. Lovesee

Soundings penciled by W. H. Bainbridge

Soundings in ~~fathoms~~ feet

Plane of reference M. L. L. W.

Subdivision of wire dragged areas by

Inked by J. Fleming Jan. 26, 1929

Verified by J.F.

Instructions dated May 25, June 23, 1928

Remarks: Supplementing Hydrographic Sheet No. 4605
and Chart No. 4108.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4818

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

Number of positions on sheet	. . .	<u>563</u>
Number of positions checked	. . .	<u>289</u>
Number of positions revised	. . .	<u>13</u>
Number of soundings recorded	. . .	<u>3057</u>
Number of soundings revised	. . .	<u>329</u>
<i>Number of soundings omitted in field plotting and executed in the office</i>		<u>580</u>
Number of signals erroneously plotted or transferred	. . .	<u>None</u>

Date: Jan 26 - 1929

Cartographer: John H. ...

REPORT OF EXAMINATION OF HANAPEPE BAY,
KAUAI, T. H.

Radio instructions of April 25, 1932, called for the examination of the 28-foot shoal area shown on chart 4108 approximately 0.7 mile due east of Hanapepe Bay Light, Kauai, T.H.

A four hundred-foot wire drag was constructed, using 1/16 inch stranded wire, 15 Allen paint cans, and 40 pound weights. Pulling boats, with 200 feet of tow-line on each end, were used to operate the drag. The drag was tested with a floating tester, and no appreciable lift or sag was found at rowing speed. Two guide buoys were anchored on either side of the shoal area, about 600 feet apart, and the drag towed down between these buoys on May 10 and 11th.

The area included within the charted 30-foot depth curve was covered and cleared with drags set at 30, $32\frac{1}{2}$, and 34 feet (reduced for tides), respectively. All of these drags grounded, however, on a very small coral head, or obstruction, bearing 232 degrees true, distance 90 meters from the charted 28-foot sounding. A sounding of $30\frac{1}{2}$ feet (reduced) was obtained at the grounding (position 1 a). The obstruction was extremely hard to find, even when hooked by the drag, and appeared to be a rock or coral head only a foot or so across. The depths alongside and in the immediate vicinity were 37 to 40 feet. An unsuccessful attempt was made to see the bottom with the aid of a water glass. This grounding was covered and cleared with a drag set at $28\frac{1}{2}$ feet (reduced).

Marker buoys were placed on the 28-foot charted soundings and several hours were spent in closely sounding out the area included within the 30-foot depth curve on the chart. Nothing less than 38 feet was found within this depth curve.

A preliminary report of the investigation was submitted to the office on June 2nd. The field plotting of the work was done on chart 4108. There was only one officer on the field work, and although Mr. Edgar, of the U. S. Engineer's, took some angles in the end boat, the control of the drag and the records do not warrant the plotting of the drag strips on a smooth sheet. However, there was a slight distortion in the chart, and a 1:5,000 projection was constructed to plot the least depths and to plot new landmarks and mooring buoy positions which were located by sextant angles from triangulation stations. The chart of the field work, the projection, and an over-lay sheet of the drag strips are submitted this date. The chart shows the drag strips and corrections to buildings in the vicinity of the landing. The projection shows the least depth at the grounding, the soundings taken in and around the charted 28-foot sounding, and the present positions of the mooring buoys.

Tides.

A plain staff was placed at the landing at Port Allen and connected by levels to B. M. No. "2". Mean lower low water on the staff is 0.40 feet. The staff was read between intervals of dragging, and recorded in the drag record on page 19.

Soundings.

All soundings are in feet, reduced to mean lower low water.

It is recommended that the charted 28-foot and the 30-foot soundings be taken off the chart, and that the depths as shown on the projection be substituted; and that the $30\frac{1}{2}$ -foot obstruction (pos. 1 a) be charted.

Dec. 20, 1932
Respectfully submitted,

Chas. K. Green
Chas. K. Green, H. & G. Engr.

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KAUAI, T. H.

Radio instructions of April 25, 1932, called for the examination of the 26-foot shoal area shown on chart 4108 approximately 0.7 mile due east of Hanapepe Bay Light, Kauai, T.H.

A four hundred-foot wire drag was constructed, using 1/16 inch stranded wire, 15 gallon paint cans, and 40 pound weights. Pulling boats, with 200 feet of tow-line on each end, were used to operate the drag. The drag was tested with a floating tester, and no appreciable lift or sag was found at rowing speed. Two guide buoys were anchored on either side of the shoal area, about 600 feet apart, and the drag towed down between these buoys on May 10 and 11th.

The area included within the charted 30-foot depth curve was covered and cleared with drags set at 30, 32 $\frac{1}{2}$, and 34 feet (reduced for tides), respectively. All of these drags grounded, however, on a very small coral head, or obstruction, bearing 232 degrees true, distance 90 meters from the charted 26-foot sounding. A sounding of 30 $\frac{1}{2}$ feet (reduced) was obtained at the grounding (position 1 a). The obstruction was extremely hard to find, even when hooked by the drag, and appeared to be a rock or coral head only a foot or so across. The depths alongside and in the immediate vicinity were 37 to 40 feet. An unsuccessful attempt was made to see the bottom with the aid of a water glass. This grounding was covered and cleared with a drag set at 28 $\frac{1}{2}$ feet (reduced).

Marker buoys were placed on the 26-foot charted soundings and several hours were spent in closely sounding out the area included within the 30-foot depth curve on the chart. Nothing less than 38 feet was found within this depth curve.

A preliminary report of the investigation was submitted to the office on June 2nd. The field plotting of the work was done on chart 4108. There was only one officer on the field work, and although Mr. Edgar, of the U. S. Engineer's, took some angles in the end boat, the control of the drag and the records do not warrant the plotting of the drag strips on a smooth sheet. However, there was a slight distortion in the chart, and a 1:5,000 projection was constructed to plot the least depths and to plot new landmarks and mooring buoy positions which were located by sextant angles from triangulation stations. The chart of the field work, the projection, and an over-lay sheet of the drag strips are submitted this date. The chart shows the drag strips and corrections to buildings in the vicinity of the landing. The projection shows the least depth at the grounding, the soundings taken in and around the charted 26-foot sounding, and the present positions of the mooring buoys.

Tides.

A plain staff was placed at the landing at Port Allen and connected by levels to B. M. No. "2". Mean lower low water on the staff is 0.40 feet. The staff was read between intervals of dragging, and recorded in the drag record on page 19.

Soundings.

All soundings are in feet, reduced to mean lower low water.

It is recommended that the charted 26-foot and the 30-foot soundings be taken off the chart, and that the depths as shown on the projection be substituted; and that the 30 $\frac{1}{2}$ -foot obstruction (pos. 1 a) be charted.

Respectfully submitted,

Chas. H. Green
Chas. H. Green, H. & C. Engr.

Dec 20, 1932

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES

JAN 3 1933

Acc. No. _____

REPORT ON WIRE DRAG SHEET NO. 4818a.

Shoal Area in Hanapepe Bay, Kauai.

Hawaiian Islands.

Surveyed in 1932.

Instructions dated April 25, 1932 (Radio).

Chief of Party - C. K. Green.
Surveyed by - Field Party.
Protracted by - Field Party.
Soundings plotted by - Field Party.
Inked by - Field Party.
Verified by - Field Party.

The purpose of this survey was mainly the examination of the charted 28 foot shoal area in Hanapepe Bay (see letter No. 278, 1932). Criticism might be made here that the work was not recorded in a sounding volume, though there is reason to believe that none were available at the time. The record submitted has been attached to the Descriptive Report.

The wire drag work has not been checked in the Office and it is not recommended by the Chief of Party for plotting on the smooth sheet, due to the control of the drag and other inaccuracies.

The 28 foot and 30 foot soundings shown on Chart 4108, 1929 edition, are satisfactorily disproved by the wire drag. The effective depths in this area show that greater depths than the above soundings were passed over the shoal. While the limits of the drag strips may be inaccurately plotted on the sheet, there is a sufficient margin of safety to certify that the questionable shoal area was covered. In addition, several hours were spent in sounding out the area and the least depth found was 38 feet (see Drag Record).

Since the examination by the field party, a subsequent examination of the original records was made in the Office and it was found that the charted 28 foot sounding from H. 4605, was erroneously reduced and should have been 40 feet; and the charted 30 foot sounding from H. 2670, was incorrectly read from the original records which value should have been 38 feet.

The authority for the 30 foot shoal located on the present survey will be found on page 2 of the sounding record (pos. 1a). It has also been recorded on H. 4818a.

Additional Work.

Attention is called to the fact that about 180 meters northward of the 30 foot shoal found on the present survey a ridge with an indicated least depth of 31 feet makes out from the 30 foot curve for a distance of about 300 meters (see H. 4818). In view of the statement by the Chief of Party that the 30 foot shoal was a coral head or a rock "only a foot or so across", it is not unlikely that a similar condition exists on the ridge and it is recommended that an examination be made with the wire drag or else an intensive lead line examination be made between the 30 foot and the 60 foot curves.

• 4818a.

Reviewed by G. Risegari - May 2, 1933.

Sheet Inspected by - A. L. Shalowitz.

EXAMINED and approved:

L. O. Colbert
L. O. Colbert,
Chief Field Records Section.

A. L. Shalowitz
Chief, Field Work Section.

G. Risegari
Chief, Chart Division.

G. H. T. Division
Chief, H. & T. Division.

April 3, 1933

✓ Division of Hydrography and Topography:

Division of Charts:

Tide Reducers are approved in
volumes of sounding records for

HYDROGRAPHIC SHEET 4818 a

Locality Shoal Area in Hanapepe Bay, South Coast of Kauai Island, Hawaiian Ids.

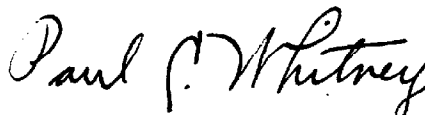
Chief of Party: C. K. Green in 1932

Plane of reference is mean lower low water, reading
0.4 ft. on tide staff at Port Allen
14.7 ft. below B. M. 2

Height of mean higher high water above plane of reference is 1.7 feet.

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.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

WIRE DRAG
HYDROGRAPHIC TITLE SHEET

REG. NO. 48182

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. _____

REGISTER NO. 48182

State Hawaiian Is.

General locality South Coast of Kauai

Locality Shoal Area in Hanapepe Bay (Port Allen)

Scale 5,000 Date of survey May 10 to 12, 1932

Vessel Pulling Boats

Chief of Party C. K. Green

Surveyed by Field Party

Protracted by Field Party

Soundings penciled by Field Party

Soundings in ~~fathoms~~ feet

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by _____

Inked by _____

Verified by _____

Instructions dated April 25, 1932, 192

Remarks: For further information see letter No. 40 (1933)

Soundings filed with descriptive report.

GPO

Res. Rept.

*No. 135
Outline Tracing*

*1 Vol. Slips
Letter No. 40 (1933)*

4818a

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES

JAN 9 1933

Acc. No. _____

Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

R. S. Patton, Director



State: Hawaiian Is.

DESCRIPTIVE REPORT

~~Topographic~~
Hydrographic

Sheet No. 4818a

LOCALITY

South Coast of Kauai
Shoal Area in Hanapepe Bay (Port
Allen)

19 32

CHIEF OF PARTY

C. K. Green

40105

Applied to chart 4100 Wittmann 11/7/58

Vol. 1

Total Vols. for Sheet 1

U. S. COAST & GEODETIC SURVEY
LIBRARY AND ARCHIVES

Connective Vol. No. 1

JAN 3 1933

DEPARTMENT OF COMMERCE *S-128*
COAST AND GEODETIC SURVEY

Drag Record

R. S. Patten, Director.

General Locality *Hana pepe Bay*

Sublocality *Kauai, T. H.*

H-4818a

~~RECORD OF CURRENT OBSERVATIONS.~~

Station Numbers _____

From *May 10* to *May 12*

19*32*

Name of Vessel *Pulling Boats*

Chief of Party *Chas. K. Green*

Number of Record Book _____

Original or Duplicate _____

11-5826 X

GOVERNMENT PRINTING OFFICE

POSITIONS OF SOUNDINGS

1-a	Page 2
2a to 4a	Page 27
1b to 5b	Page 20

DRAG RECORD

May 11	Positions 1A to 15A	Pages 2-7
May 12	Positions 1B to 10B	Pages 11-13

CUTS TO LANDMARKS ETC.
Pages 15 - 18

TIDE STAFF READINGS
Page 19

Form 270

DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

....., Director.

General Locality Hanapepe Bay

Sublocality KAUAI, T.H.

Drag Record.
~~RECORD OF CURRENT OBSERVATIONS.~~

Station Numbers.....

From..... to.....

19.....

Name of Vessel.....

Chief of Party C. K. Green

Number of Record Book.....

Original or Duplicate.....

11-5926 x

Note - this was only volume
available for record.

DIRECTIONS.

1. Observations should be taken as frequently as practicable, preferably at definite intervals of time, as every ten minutes, or quarter-hourly, half-hourly, etc.
2. If observations are made with a current meter, frequent observations should also be made with a pole as a check on the meter and for ascertaining directions.
3. The location of each current station should be accurately plotted on a chart or tracing which is to be forwarded to the office with the current records.
4. When the direction of the current is determined by angles from an accurately located distant object, the angles are to be marked R or L according as the float bears to the right or left of the reference object.
5. The velocity of the wind should be estimated according to the following scale and recorded in miles. If means for the actual measurement of the wind is provided, this should be definitely stated.

FORCE OF WIND.		FORCE OF WIND.	
Designated as—	Velocity.*	Designated as—	Velocity.*
0. Calm.....	0-3	7. Moderate gale.....	40
1. Light air.....	4	8. Fresh gale.....	48
2. Light breeze.....	13	9. Strong gale.....	56
3. Gentle breeze.....	18	10. Whole gale.....	65
4. Moderate breeze.....	23	11. Storm.....	75
5. Fresh breeze.....	28	12. Hurricane.....	90
6. Strong breeze.....	34		

* Statute miles per hour.

6. The deviation of the compass used should be recorded in the table on the following page.
7. The kind of time used and how obtained should be carefully noted in the appropriate place; also, record, at frequent intervals, in the column of Remarks, how much the timepiece used is fast or slow, and when it is set right.
8. For further instructions, see publication entitled "General Instructions for the Field Work of the Coast and Geodetic Survey," Special Coast Survey Publication No. 26, pp. 151-157; also Water Supply and Irrigation Paper No. 94, U. S. Geological Survey, especially pp. 26-30.

DEVIATION TABLE.

Name of Vessel.....

Ship's head by compass.	Deviation.	Magnetic heading.	Ship's head by compass.	Deviation.	Magnetic heading.
	° /	° /		° /	° /
0°			180°		
15°			195°		
30°			210°		
45°			225°		
60°			240°		
75°			255°		
90°			270°		
105°			285°		
120°			300°		
135°			315°		
150°			330°		
165°			345°		

Date of swinging of ship for deviation table

THE CHIEF OF PARTY SHOULD SEE THAT THE DATA CALLED
FOR ON THIS PAGE IS ENTERED IN BEFORE SENDING THE
RECORD TO THE OFFICE.

11-5926 X

Kind of time used:

Location of stations plotted on chart No. _____

Description of current apparatus used:

Position angles at station occupied:

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		

May 11, A.M.

Pos. Guide Buoy (2 SW mooring buoys) 00
 North guide } L Flag - Light 130°

South guide (2 SW mooring buoys) 00
 L Flag - Light 116°

COAST AND GEODETIC SURVEY
Form 270

A day

Current station No.: *Drag line 1* Date: *May 11*

General locality:

Location of station: *200' tow line drag* Depth: *32 1/2*

Latitude: *400' drag* Longitude:

TIME h. m.	Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Polaris.	SHIP'S HEAD by Compass.	COMPASS VAR.
				Knots.	Tenths.	Knots.	Tenths.			
<i>AM</i>				<i>End Launch</i>				<i>Guide boat</i>		
<i>8:00</i>	<i>(1)</i>		<i>86-05</i>	<i>Flag</i>		<i>100-45</i>	<i>Flag</i>			
			<i>23-41</i>	<i>Wind</i>		<i>19-27</i>	<i>Wind</i>			
			<i>14-25</i>	<i>LT</i>		<i>90-08</i>	<i>LT</i>			
				<i>F-Flag</i>		<i>702-56</i>	<i>N Flag</i>			
							<i>F LT</i>			
<i>8:03</i>	<i>(2)</i>		<i>forth hant at guide buoys.</i>							
						<i>73-12</i>	<i>N</i>			
						<i>99-18</i>	<i>F</i>			
<i>8:06</i>	<i>(3)</i>		<i>92-59</i>	<i>Flag</i>		<i>110-36</i>				
			<i>31-02</i>	<i>Flag</i>		<i>28-00</i>				
						<i>77-23</i>	<i>N</i>			
			<i>46-49</i>	<i>F-Flag</i>		<i>196-00</i>				
<i>8:07</i>			<i>2-75</i>	<i>aground</i>						
				<i>about #4</i>						

Position angles at station occupied:

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Polaris or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
					Sounding 33 ft at grounding least depth on small coral head 30.5 feet. tide red. = -.2 30.3 Pos 1a	
					{ 95-00 Flag Wind 27-55 Light } { 94-40 Flag Wind 27-40 Lt } 37-17 Flag - House Ely set	8.15 AM.
					Planted marker at grounding and sounded around for over an hour general depth 36 feet - got one sounding of 30 1/2 feet on small head - with 33 feet on another head near along side - See pos. above for 30 1/2 sounding.	
					See page 19 for tide reductions -	

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date: *May 11*

General locality: *P.M. pos. Guide marker buoy*

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
<i>A.</i>	<i>m.</i>					<i>Knots.</i>	<i>Tenths.</i>	<i>Knots.</i>			

P.M. New mark
buoy to 130° 30' flag-light.
107 flag-East.

same 116 flag-light.
89-30 flag East

COAST AND GEODETIC SURVEY
Form 270

2nd drag

A day

Current station No.:

May 11 P.M. Date: May 11, 193

General locality:

2 ft swell

Location of station:

400' drag

Depth: 30 1/2

Latitude:

Longitude:

TIME. h. m.	Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Fath.		DIR. OF POLE by Angle or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
				Knots.	Tenths.	Knots.	Tenths.			
P.M.	Pas			End Beat				Guide	boat	
1:57	(4)		84-04	Flag				72-50	Flag	
			15-02	Wind				18-00	Wind	
				Lt.					Lt.	
			58-	F-Mac.				25-30	End. Flag	
2:01	(5)		89 37	same				79-46	same	
			17 06	same				19-56		
			37 29	F-Flag				47-20	N-Flag	
2:07	(6)		96-47	same				85-00	same	
			19 40	same				22-23		
			88 42	F-Flag				50-45	N-Flag	
								100-00	F to Wind	
2:17	(7)		105 31	same				90-47	same	
			22 44					25-27		
			87 12	F-Flag				45-30	N-Flag	
								85-	F Wind	

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date:

May 11

General locality:

Location of station:

Depth: 30 1/2

Latitude:

Longitude:

TIME. P.M. h. m.	Depth of Meter.	Num- ber of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Fols.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
				Knots.	Tenths.	Knots.	Tenths.			
	P00			Ezed Boat					Guide boat	
2-22	(8)	{	104	13	Same			{	90-20	Same
			26	53	Same				28-27	
			48	03	F-Flag				15-00	N-Flag
								16-30	Flag-F	
			102	57	Same			{	87-55	Same
			32	30	Same				33-55	
2-31	(9)		54	12	F Flag				12-00	N-Flag

5

Position angles at station occupied:

True bearings of reference objects:

Time meridian: Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
					Hauling dug out	
					Outside marker nearly to Mac Budge Stack	

COAST AND GEODETIC SURVEY
Form 270

Current station No.: **3rd Line** Date: **May 11, 1932**

General locality:

Location of station:

Latitude: **400' drag**

Longitude:

Drag set 30 1/2' Depth:

TIME.	Depth of Water fms.	Num- ber of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Fathoms.		DIR. OF POLE by Angles or Polaris.	SHIP'S HEAD by Compass.	COMPASS VAR.	
				Feet.	Tenths.	Feet.	Tenths.				
				<i>End</i>		<i>front</i>		<i>Guide boat</i>			
3:06	(10)			76	29	Flag Wind		86-50 106-30 35	Flag-Wind Flag-LT N-Flag Wsch?		
				22	07	LT.					
				28	41	F-Flag					
3:21	(11)			84	22			97-11 23-21 97-00	Same N-Flag		
				25	57						
				51	29						
3:26	(12)			86	02			99-10 24-48 72-30 18-22	F-Flag N "		
				26	56						
				32	40					F-Flag	
3:33	(13)			86	19	Same		101-56 27-51 70 122	N-Flag LT-F		
				29	10						
				21	05					F-Flag	

Position angles at station occupied:

200' tow line

True bearings of reference objects:

400 ft drag -

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Polaris or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles.		
					<i>Wain - 2' swell - smooth</i>	
					<i>Hauling drag out</i>	
					<i>Range - Lt - 00</i>	

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date: *May 11*

General locality:

Depth:

Location of station:

Longitude:

Latitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.	VELOCITY by Fath.	DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
a.	m.	f.			Ends.	Tenths.			
					<i>Ends. fath.</i>		<i>guide post</i>		
<i>3</i>	<i>:41</i>	<i>(14)</i>			<i>87 06</i>	<i>Flag</i>	<i>102-00</i>	<i>Flag</i>	
					<i>31 41</i>	<i>Wind</i>	<i>31-05</i>	<i>Wind</i>	
						<i>Lt</i>		<i>Lt</i>	
					<i>15 49</i>	<i>F-Flag</i>	<i>63</i>	<i>N-Flag</i>	
							<i>129-</i>	<i>Lt-F</i>	
<i>3</i>	<i>:47</i>	<i>(15)</i>			<i>89 14</i>	<i>same</i>	<i>101-52</i>	<i>same</i>	
					<i>32 29</i>		<i>31-47</i>		
					<i>22 15</i>	<i>F-Flag</i>	<i>67--</i>	<i>N-Flag</i>	
							<i>137½</i>	<i>Lt-F</i>	
							<i>65-40</i>	<i>Lt-#2</i>	

Position angles at station occupied:

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
4:00 P.M.	94-18		Flag		at ground	
	28-00		Wind Lt.		sounding 36	
	78-05		Flag East.			
	Range - Lt. aground between 2-3					

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date: *May 12*

General locality:

Location of station:

Depth: *34 1/2*

Latitude:

Longitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Poles.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
h.	m.	ft.			Knots.	Tenths.	Knots.	Tenths.			
<i>8</i>	<i>09</i>								<i>84-52</i>		
									<i>72-44</i>		
									<i>19-00</i>	<i>N-Flag</i>	
									<i>16</i>	<i>F-Flag</i>	
<i>8</i>	<i>15</i>								<i>90-05</i>		
									<i>26-05</i>		
									<i>35-</i>	<i>N Flag</i>	

Position angles at station occupied:

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
					<p>guide boat near guide mark 8:18 } 90-24 Flg 24-44 Wind Lt. sounding 4 ft. around light in drag dropped down - below depth - do not use C R H</p>	

COAST AND GEODETIC SURVEY
Form 270

Dr. 5

Current station No.:

Date: *May 12*

General locality:

Location of station:

Depth: *28 1/2*

Latitude:

Longitude:

TIME.	Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
				Knots.	Tenths.	Knots.	Tenths.			
<i>10-17</i>	<i>Pr</i>							<i>86-09</i>		
								<i>19-57</i>		
								<i>49-28</i>		
<i>10-24</i>								<i>90-47</i>		
								<i>29-32</i>		
								<i>30-05</i>	<i>N-Flag</i>	
								<i>05</i>	<i>Flag - F</i>	
<i>10-31</i>								<i>92-05</i>		
								<i>23-52</i>		
								<i>05</i>	<i>N Flag</i>	

COAST AND GEODETIC SURVEY
FORM 270

6 drag

B day

Current station No.:

Date:

May 12, 1932

General locality:

Location of station:

Depth: 282 1/2

Latitude:

400' drag

Longitude:

TIME.	Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.	
				Knots.	Tenths.	Knots.	Tenths.				
AM				End boat				guide boat			
11-05	(1)		106 05	24 17	Flag	Wind	LT.	88-10	Flag	Wind	LT.
			38	-	F-Flag			00	N-Flag		
11-09	(2)		100 57	29 28		same		85-20		same	
			44	-				05-	N Flag		
11-14	(3)		94 55	35 03		same		79-58			
			40	-				00	N-Flag		
11-17	(4)		87 43	41 07		same		77-24			
			32	-				39-39			
								03	N Flag		

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date: May 12

General locality:

Location of station:

Depth: 34 $\frac{1}{2}$

Latitude:

Longitude:

TIME.	Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Fath.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
				Knots.	Tenths.	Knots.	Tenths.			
2:32	(8)		105 35	23 57	Flag	91-02		Flag		
					Wind Lt.	26-03		Wind Lt.		
					65 - F-Flag			35 - N-Flag		
	(9)		103 53	27 39		91-00				
						29-32				
					47 -			23 N Flag		
2:39	(10)		102 02	28 57		92-45				
						30-50				
					51 -			32 - N Flag		

Position angles at station occupied:

True bearings of reference objects:

Time meridian: Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	Tide Soundings e&r.	Mag.	Miles.		
		5 fath	5 feet			
2:50		6	1		98-10 near 25-35 between 3-4 43-00 E-LT	
3:15		5	5		94-15 between 1-2 27-32	

11-5026

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date:

General locality:

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
A.	m.				Knots.	Tenths.	Knots.	Tenths.			
		ft.									
<p>Drag tested with floating tester.</p> <p>Drag set at $30\frac{1}{2}$ ft.</p> <p>Tester fetched up when set at 32'</p> <p>Tester failed to fetch up when set 31' - passed center drag - probably slight sag.</p> <p style="text-align: right;">C. K. G.</p>											

COAST AND GEODETIC SURVEY
FORM 270

Current station No.:

Date: *May 10, 1932*

General locality: *Sextant angles from Δ "Flag" (Elec)*

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
A.	m.	f.			Knots.	Tenths.	Knots.	Tenths.			
								23	36		
								18	41		
								01	16		
								47	28		
								34	55		
								08	41		
								06	42		
								66	17		
								05	27		
								91	58		
								32	51		
								84	42		<i>Flag to Hbr Lt = 29'</i>
								135	02		
								71	36		
								24	44		
								26	35		
								66	22		
								12	53		
								03	53		

Position angles at station occupied:

✓ Sextant angles from Rec. Pavilion

True bearings of reference objects:

Time meridian: Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
Lt to Flag					77-04	} did not fit.
E. Tower to light					23-05	
W. " " "					28-40	
Wind Ina to Light					2-12	
Flag - Red Stack					9-08	
S.W. Buoy - Flag					38-08	
Mid W Buoy to Flag					37-23	
NW Spar buoy - Flag					37-07	
SE Buoy - Flag					19-51	
MIL E " - "					19-28	
NE " - "					19-25	
Spar E " - "					18-55	
Int. Is. Buoy - ✓					35-16	

COAST AND GEODETIC SURVEY
FORM 270

May 10, 1932

Current station No.:

Date:

Radio Tower

General locality: Sextant Angles From East Tower

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angle or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
A.	m.	f.			Knots.	Tenths.	Knots.	Tenths.			
							118	30			
			Flag				120	05			
			Mac				89	51			
			S.W. Buoy				96	53			
			Mid W				104	59			
			N.W.				104	59			
			Mid E				17	12			
			SE Buoy				07	56			
			NE				04	34			
			Spar				09	55			
			Flag				107	12			
			Red Stack				43	49			
			Lt - Int. Isl. Buoy				88	23			
			Lt - Wind Indic				38	23			
			W. Tow - Light				35	04			
			Flag - Rec. Pavilion								
			Flag								

Position angles at station occupied:

Sextant angles from Puolo Pt Light

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
SW Buooy -	✓	Flag			11°-00'	
Mid W	✓	Flag			5-19	
Flag - N.W. Buooy					0-27'	
S.E. Buooy -		Flag			09-43	
Mid E		Flag			08-20	
NE		✓			01-22	
Flag		Spar			01-08	
✓		Rec Pav.			25-27	
✓		Flag			25-15	
✓		Red Stack			06-52	
✓		Church			16-58	
✓		E. Tower			36-55	
✓		W. Tower			43-21	
✓		Wind			10-23	
Mac -		Flag			13-41	
Range -		Flag			20-45	

Position angles at station occupied:

Sextant angles - From Wind Cone

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angle.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		
	W. Tower	- Light			101-05	
	E. " "	- " "			109-44	
	Flag	- Rec. Pav			39-46	
	"	- Red Stack			10-25	
	Lt	- Range			19-10	

Position angles at station occupied:

Tides Hanapepe Bay
Port Allen

True bearings of reference objects:

Time meridian:

Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Polaris or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles.		
	May 11, 1932				Corrections for soundings in feet	
A.M.						
6:30		0.6	0.4		-.2 ✓	
7:30		0.6	0.4		-.2 ✓	
11:00		0.5	0.4		-.1 ✓	
11:40		0.5	0.4		-.1 ✓	
P.M.						
1:00		0.8			-.4 ✓	
5:05		1.5			-1.1 ✓	
	May 12, 1932					
A.M.						
6:20		0.5			-.1 ✓	
P.M.						
12:20		0.6			-.2 ✓	
1:40		0.6			-.2 ✓	
4:30		1.2			-.8 ✓	
M.L.H.W. = 00.40' on staff						
Tide Reduced CK ✓ EAL						Div. TIC
						4/3/33

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date: *May 12, 1932*

General locality:

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Meter.	Number of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Pole.		DIR. OF POLE by Angles or Polorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
h.	m.	f.	Fath	feet	Knots.	Tenths.	Knots.	Tenths.			
<i>AM.</i>		<i>Position</i>			<i>Tide correction zero ✓</i>				<i>100-40</i>	<i>Flag</i>	
<i>6:50</i>	<i>1h</i>	<i>6</i>	<i>2</i>		<i>Lead line correct.</i>				<i>25-14</i>	<i>Wind</i>	
		<i>6</i>	<i>2</i>						<i>43-06</i>	<i>East</i>	
		<i>6</i>	<i>2</i>								
<i>6:54</i>	<i>2h</i>	<i>6</i>	<i>2</i>						<i>101-08</i>	<i>same object</i>	
									<i>26-22</i>		
<i>6:58</i>	<i>3h</i>	<i>6</i>	<i>3</i>						<i>98-32</i>		
									<i>23-49</i>		
<i>7:15</i>	<i>4h</i>	<i>6</i>	<i>2</i>						<i>94-47</i>		
									<i>25-32</i>		
<i>7:19</i>	<i>5h</i>	<i>6</i>	<i>2</i>						<i>102-27</i>		
									<i>23-58</i>		
<i>see tide reducers page 19</i>											

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date: *May 12*

General locality:

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Meter.	Num-ber of Revs.	Time in Seconds.	VELOCITY by Meter.		VELOCITY by Fathoms.		DIR. OF POLE by Angle or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
h.	m.				Knots.	Tenths.	Knots.	Tenths.			
<i>guide can buoy -</i>											
				<i>130</i>	<i>30</i>			<i>Flag - light</i>			
				<i>88</i>	<i>08</i>			<i>Flag - East tower.</i>			
				<i>116</i>	<i>27</i>			<i>Flag - light.</i>			
				<i>25</i>	<i>51</i>			<i>Wind - light.</i>			

Position angles at station occupied:

True bearings of reference objects:

Time meridian: Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	<i>True.</i>	<i>Mag. True.</i>	<i>Mag.</i>	<i>Miles.</i>		

COAST AND GEODETIC SURVEY
Form 270

Current station No.:

Date:

May 11, 1932

General locality:

Location of station:

Depth:

Latitude:

Longitude:

TIME.		Depth of Motor.	Number of Revs.	Time in Seconds.	VELOCITY by Motor.		VELOCITY by Pole.		DIR. OF POLE by Angles or Pelorus.	SHIP'S HEAD by Compass.	COMPASS VAR.
h.	m.	f.			Knots.	Tenths.	Knots.	Tenths.			
9:	35		2a	5-5			Flag			98	10
							Wind			27	49
							Lt.				
9:	45		3a	5 3			Flag			95	39
							Wind			27	28
							Light				
							Flag			78	46
							Forest			44	04
							Lt.				
10:	40		4a	6 2			Flag			81	25
							Wind			42	08
							Lt.				
							2 mooring buoys				
							Range Lt.				

at marker can at grounding

↑ sounding on 25' shoal

tide reduces page 19

no correction ✓

Position angles at station occupied:

True bearings of reference objects:

Time meridian: Tide gauge at

COMPASS DEV.	DIR. OF CURRENT.		WIND.		REMARKS.	OBSERVERS.
	From Angles.	From Pelorus or Compass.	Dir.	Vel.		
	True.	Mag. True.	Mag.	Miles		

Lead

multiplier
on lead

1 - 5.

2 - 11.7

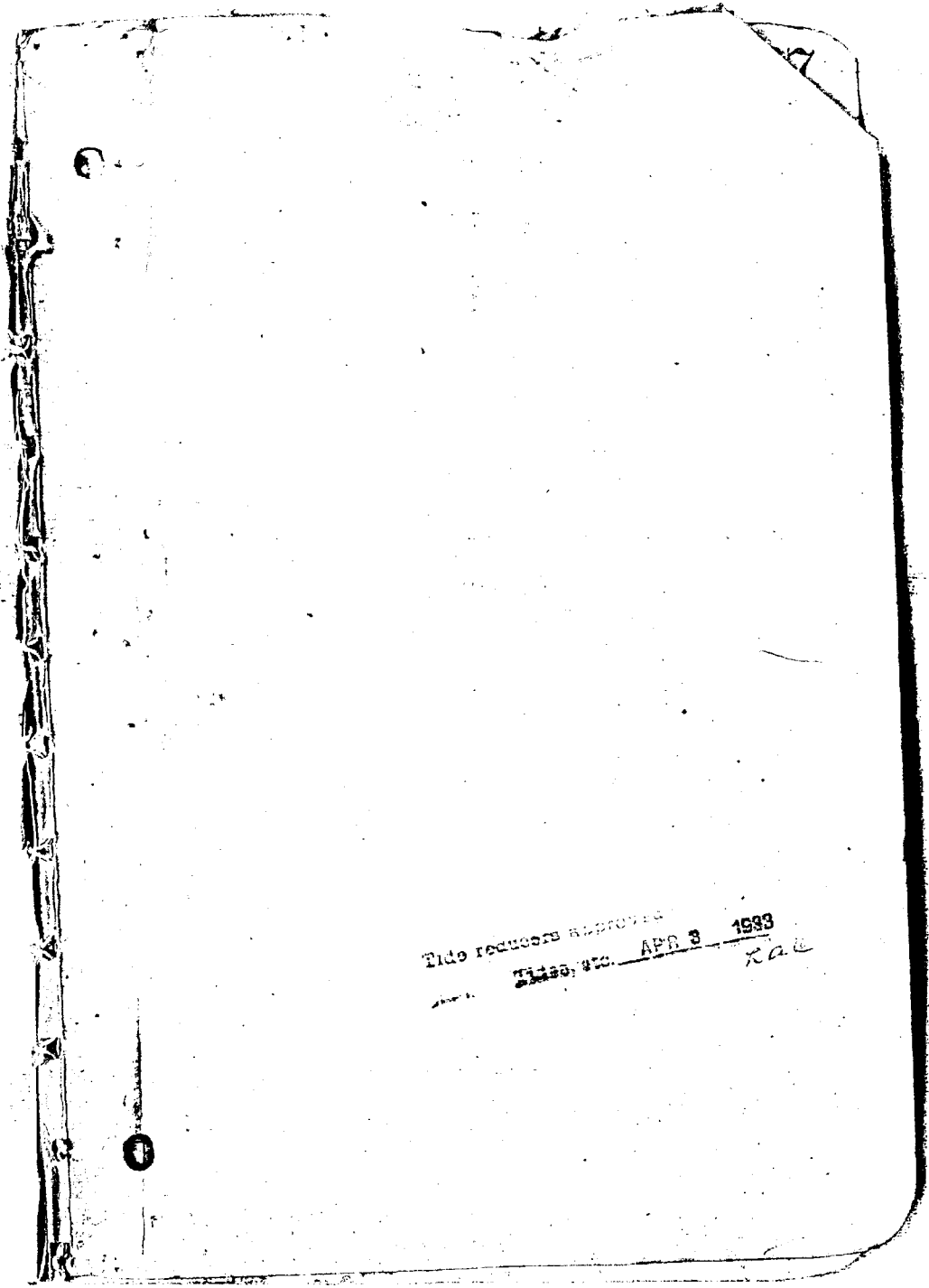
3 - 17.7

4 - 23.7

5 - 29.6

6 - 35.5

7



Tide reduced approved
Miss, etc. APR 8 1933
KAL