

4717

4717

4717

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

E. Lester Jones *Director*

JAN 23 1928

~~Terr.~~ ~~States~~ Hawaiian Is.

DESCRIPTIVE REPORT

Topographic } Sheet No. 1 4717
Hydrographic }

LOCALITY

EAST COAST OF KAUAI ISLAND.

MAKAHUENA PT. to KAHALA PT. ✓

1927

CHIEF OF PARTY

F. G. Engle

GOVERNMENT PRINTING OFFICE

SVI

DESCRIPTIVE REPORT
to accompany

HYDROGRAPHIC SHEET NO. 1 SCALE: 1/40,000
EAST COAST OF KAUAI ID. ----- MAKAHUENA PT., to KAHALA PT.
JAN., 24, 1927 to SEPT., 8, 1927, ----- U.S.C. & G.S.S. DISCOVERER
F. G. ENGLE & CLEM L. GARNER, -- COMMANDING.
Instructions dated ----- November 23, 1926.

LIMITS: This sheet extends from Makahuena Pt., to Kahala Pt., on the East Coast of Kauai Id., and from a junction with inshore work by launch and ship on 1:20,000 scale sheet to about 8 miles offshore or in general beyond the 1000 fathom curve. With the exception of a small amount of work on the North End and some split lines, the work was done during Captain Garner's Command.

GENERAL DESCRIPTION OF THE COAST: From Makahuena Pt., to within a mile of Kawelikoia Pt., the shore is low, with the exception of a mile long stretch north of Kawelikoia, the coast is steep to and forms the end of a mountain range extending East and West.

From Nawiliwili Bay to one mile North of Hanamaulu the shore is low and rocky with Cane lands rising in a gentle slope. From there North to Kapaa is mostly sand beach and from Kapaa to Kahala low and rocky with occasional sand beaches. The area between the coast and the steep foothills and mountains generally about two miles wide is extensively cultivated in cane. North of Kapaa considerable area is in pineapples. Kalepa Ridge and Nonou Mountain are conspicuous from the North and South and show well against the higher mountains, from the Eastward.

OUTLYING DANGERS AND ISLANDS: There are no dangers within 1/2 mile of the coast.

CURRENTS: No decided set was noticed on this side of the Island.

LANDMARKS: The main range of mountains on the Island are almost always in the clouds. A list of Landmarks in the area adjacent to the Hydrography is attached.

INSHORE DANGERS: See descriptive reports accompanying inshore or launch sheets on scale 1:20,000.

ANCHORAGES: Nawiliwili Harbor and Hanamaulu Bay or Ahukini Landing are the only ports in the area of the sheet. They are described in report accompanying the Harbor surveys.

Anchorage in moderate depth may be obtained anywhere along the coast but without shelter and in hard and unsecure holding ground. Only one anchorage was made by the DISCOVERER on the open coast and that just North of

Anahola Bay in eleven fathoms coral bottom. There is always danger of losing an anchor by fouling a rock.

SURVEY METHODS: Fixes were obtained with sextant angles between signals and peaks located by triangulation and plane table.

The hand lead was used in depths up to about 15 fathoms and the fathometer in depths over 15 fathoms.

In deep water vertical casts were taken occasionally for comparison. At these, the bottom temperature and bottom specimen were obtained and a surface temperature, water sample and plankton haul were taken. These data were forwarded with the required forms and labels to the Scripps Institute at La Jolla Calif., in accordance with their request.

TIDE GAUGES: Portable automatic tide gauges were operated at Mawiliwili Bay, Hanamaulu Bay and Hanalei Bay.

CORRECTIONS TO FATHOMETER SOUNDINGS:


Temperature: A temperature - Depth Curve for the locality was constructed, by plotting temperatures as abscissae and the depths at which obtained as ordinates. These temperatures were obtained during the progress of the work on vertical casts with wire and are in all cases bottom temperatures. No serial water temperatures were taken.

For obtaining the correction factors a Factor-Depth^{Curve} was next constructed. For this, the temperatures were tabulated from the Temperature Depth Curve for each 50 fathoms and the mean temperatures for each 200 fathom layer were then entered on the table, and the velocity was entered opposite as obtained from table No. 13 Special Publication No. 108 using a salinity of 34. This value was adopted prior to the receipt of the actual value from the Scripps Institute as determined from samples submitted. The latter value was slightly over 35. The difference between the adopted and actual salinities affects the soundings by one part in 800.

The mean velocity for various depths was then obtained by taking the average of the layer velocities down to that depth, (these were figured for each 200 fathom depth) and the corresponding factor tabulated. This factor is the ratio of mean velocity to velocity corresponding to middle reed of Tachometer (800 fathoms per second).

Slope: Depth curves were drawn on the boat sheet from the uncorrected soundings as plotted and slope factors were entered in the record as determined from the depth curves. In some places where there was likelihood that the slope was uneven as in the case of submarine cliffs the slope factor was reduced below that given by the depth curves on the assumption that in such cases the echo came from a point nearer vertically below the position than otherwise. The existence of submarine cliffs was suspected from the cases of double echoes and long echoes which were obtained.

Respectfully submitted,


F. G. Engle
U. S. Engineer.
Commanding.

LANDMARKS.

△ KAWELIKOA (KAW), the highest point of the Headland at the point of the same name. Its elevation according to the Geological Survey is 687 feet. It is bare and steep-to and of a dark brown color.

⊙ SIX, the highest point of the headland at Kauai Pt., on the South side of Nawiliwili Bay. It is about 600 feet high.

△ KALANIPUI, the outermost peak of the range South of Nawiliwili Bay. It is 786 feet high according to the Geological Survey.

MT. HAUPU, shown on Geological Survey map is frequently in the clouds, It is the highest point of the range South of Nawiliwili.

On the outer ridge from this peak there is a prominent needle and the ridge just above this has a striking resemblance to the Head of Queen Victoria. The outline is best seen from North-northeast and South-southwest and the attention of visitors to Lihue is usually called to it by the residents.

△ KALEPA, the highest and Southernmost point of Kalepa Ridge. A large prominent tree stands at the summit.

△ LIHUE MILL CHIMNEY, a white chimney visible to the Northeast only and not very prominent.

△ HANAMAULU MILL CHIMNEY, a tall, black chimney not very prominent.

△ NONOU, the summit of Nonou Mountain.

△ KAPAA STACK (GRAY), a gray mill chimney.

△ STEEL STACK (BLACK), a black mill chimney.

△ NYE, a large pinnacle peak on the outer end of a range extending to the West. It is the most prominent feature on the East side of the Island and shows against the sky from about 325° to 25° and from 145° to 180°. Even against higher mountain background from the East it is easily picked up.

STATISTICS SHEET NO. 1

EAST COAST KAUAI, - - - - - SCALE; 1:40,000

Date, 1927	Letter	Volume	Positions	Soundings	Miles, stat.	Vessels
Jan. 24	A	1	38	206	28.3	DISCOVERER
28	B	1	33	135	32.0	"
Feb. 1	C	1	37	146	34.5	"
2	D	1	47	201	56.9	"
4	E	1 & 2	67	340	62.0	"
5	F	2	61	270	51.8	"
7	G	2	116	574	66.9	"
8	H	3	96	637	53.6	"
18	J	3	11	46	3.3	"
Aug. 11	K	3 & 4	66	324	36.6	"
25	L	5	67	311	40.2	"
Sept. 1	M	5	84	393	31.0	"
8	N	5	28	126	10.4	"
Totals ---			751	3709	507.5	

January 31, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
5 volumes of sounding records for

HYDROGRAPHIC SHEET 4717

Locality: KAUAI ISLAND, T. H.

Chief of Party: G. L. Garner, 1927.

Plane of reference is M L L W

1.7 ft. on tide staff at Nawiliwili Bay

2.3 " " " " Hanamaulu Bay.

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.

W. H. Rude

Chief, Division of Tides and Currents.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

AND REFER TO No. 11-DRM

WASHINGTON

February 4, 1929.

SECTION OF FIELD RECORDS

East Coast of Kauai, Hawaiian Islands
Report on Hydrographic Sheet 4717
Surveyed in 1927

Instructions dated November 23, 1926

Chief of Party, F. G. Engle.

Surveyed by F. G. E.

Protracted by G. R. Shelton.

Soundings plotted by G. R. S. and G. A. Nelson.

Verified and inked by J. T. Jarman.

1. The records conform to the requirements of the General Instructions. However, the time was often confused when a stop was made in order to take a vertical cast. In such cases the office draftsman used the time interval between the two preceding fixes in plotting soundings.
2. The plan and character of the development conform to the requirements of the General Instructions.
3. The sounding line crossings are adequate with the exception of those noted below:

Lat. 21° 49'	1240 m.	
Long. 159° 23'	700 m.	
Lat. 21° 53'	1700 m.	
Long. 159° 20'	890 m.	
Lat. 21° 53'	880 m.	
Long. 159° 19'	1260 m.	
Lat. 21° 54'	750 m.	
Long. 159° 20'	1260 m.	(2 crossings here)
Lat. 22° 06'	1300 m.	
Long. 159° 15'	1280 m.	

The above crossings disagree anywhere from 5 to 50 fathoms. They have been investigated and appear to be O.K. as far as the records are concerned.

4. The usual depth curves can be completely drawn.
5. The field plotting was completed to the extent prescribed in the General Instructions.
6. The office draftsman found it necessary to correct the plotting of signals white, pat and Kukii. The above changes in signals made it necessary to replot something like 50 positions and 150 soundings. Over 150 soundings were replotted due to careless spacing.
7. The junctions with H. 4597a, H. 4605, H. 4703 and H. 4720 are satisfactory. The junction with H. 4718 was not investigated due to the fact that the above mentioned sheet has not been completed. From a casual inspection of the junction with H. 4705 it would appear that more development is needed in the localities noted below:

Lat. 22° 04'	1150 m.
Long. 150° 18'	280 m.

Lat. 22° 03'	570 m.	
Long. 159° 18'	930 m.	(See H. 4705)

Due to the large amount of overlap and to the various scales, authorities suggested that junction lines need not be shown but only actual overlap.

8. Remarks:

The soundings on H. 4717 are of the echo type. The field party computed the slope factors entered in the records from distances secured by means of 100 fathom curves drawn on the boat sheet. Although not the method generally used, it would appear that their method is the most adaptable for this particular sheet since most of the sounding lines are parallel to the shore. Upon receiving this sheet, the office draftsman used both methods in checking the slope corrections and found a reasonable agreement.

Soundings in pencil on the sheet below 15 fathoms were secured by the fathometer. They are below the allowable limit for fathometer soundings but were left in pencil for study by the reviewer. The majority of them overlap soundings on H. 4703, which were secured by means of the leadline.

9. Report by J. T. Jarman.

1

Section of Field work

Sheet # 4717

Feb. 12, 1929.

Makapuena Pt. to Kahala Pt., Kauai

Surveyed in 1927.

Instructions dated Nov. 23, 1926.

Chief of Party - F. G. Engle.

Surveyed by - F. G. Engle.

Projected by - G. R. Shelton.

Soundings plotted by - G. R. Shelton and G. A. Wilson,
verified and inked by - J. T. Jarman.

1. The records conform to the requirements of the General Instructions except that a notation was not always made in the record book when a change was made from the red to white light method, or vice versa, while making fathometer soundings.

2. The plan and character of development fulfill the requirements of the General Instructions.

3. The plan and development satisfy the specific instructions. It was found necessary however to run additional lines to those specified in the instructions, in order to fully develop the 10, 20, 50, 100 and 200 fathom curves.

4. The sounding line crossings are adequate, except as noted below:

(a) The verifier has noted several crossings which he considered very inadequate, but in the opinion of the writer there are only two of these which show discrepancies larger than would ordinarily be expected.

These two are at Lat $21^{\circ}-53'-880$ m
Long $159-19'-1260$ m
and Lat $21^{\circ}-54'-750$ m.
Long $159-20'-1260$ m.

The white light method with the fathometer was used on all of these crossings which the verifier

considered inadequate, but it is noted that in all cases except the two above mentioned the discrepancies were less than 40 fathoms. Using the white light method there may be a personal equation of as much as 40 fathoms in reading the fathometer, so it would seem that all discrepancies less than this should be considered satisfactory.

There is a bad crossing between
42 E and 43 E Lat $21^{\circ}55'$ - 500 m.
 Long $159^{\circ}20'$ - 1000 m.

This portion of the line can be replotted so the soundings will agree more satisfactorily.

5. The usual depth curves can be completely drawn.
6. The field plotting was completed as prescribed in the general instructions.

7. The office draftsman had to replot three signals and the soundings which they involved.

8. The junctions with sheets H-4597 a and H-4720 are satisfactory.

at the junction with H-4703 there is a 17 fathom sounding on a 10 fathom sounding.
 Lat. $22^{\circ}00' - 920$ m
 Long $159^{\circ}19' - 990$ m.

Soundings ~~noted~~ should be transferred from H-4717 ~~to~~ ^{to} H-4605 and the 200 fathom curve changed to agree ^{with transferred soundings} on H-4605.

at the junction with H-4705 there are two places noted by the verifier as needing additional development. These are at
 Lat $22^{\circ}04' - 1150$ m.
 Long $159^{\circ}18' - 280$ m.

Lat. $22^{\circ}03' - 570$ m.

It does not appear to the writer that the above need any additional development since the spacing of lines do not

5.

exceed the maximum limit specified and since the bottom is of a very uniform character in this vicinity. The only reason for additional development would be to get a more uniform 10 fathom curve.

The junction with #4718 has not been investigated because H-4718 has not been completed. (See note at end of report)

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

10. Remarks.

(a) There is no note on this sheet indicating who checked the plotting of signals.

(b) There is one sounding between 26 D and 27 D which should be changed from 1161 to 1166 on the sheet.
Lat $21^{\circ}-58'$ Long. $159^{\circ}-12'-1000$ M.

(c) Soundings between 1 B and 3 B in

6.

Lat. $21^{\circ}-56'$ - 600 m, Long. $159^{\circ}-20'$
have been rejected as noted in vol. 1
Pages 17 and 18 of the sounding records.

(d) Soundings between 374 and 384
Lat. $21-56'$ - 800 m. and Long $159^{\circ}-20'$
have been rejected as noted in vol. 1
Page 15 of the sounding records.

(e) Sathometer soundings shown on
this sheet in pencil at Lat $22^{\circ}-02'$,
Long $159^{\circ}-19'$ should be rejected, because
this area has been fully developed
by hand lead soundings which will be
found on H-4703 and H-4705.

(f) Sathometer soundings shown in pencil
at Lat $21^{\circ}-59'$, Long $159^{\circ}-19'-30''$ should be
rejected as this area has been fully
developed by hand lead soundings which
are indicated on H-4703.

(g) Sathometer soundings shown in pencil in
Kawilimili Bay should be rejected as this
area has been fully developed by hand lead
soundings. These are found on H-4702

(h) It has been noted on this sheet that the majority of vertical cast lead soundings give a less depth than those taken with the fathometer at the same place.

Theoretically the results should be opposite to those actually obtained.

- 11. (a) Excellent character and scope of surveying.
- (b) Fair field drafting.

Reviewed by -
 Earl O. Heston
 J. H. & J. Engineers.

at the junction of H-4717 with H-4718 the soundings between ~~14K~~ 14K and 15K should be replotted.

In latitude 22°-08' - 400m, Long 159°-17' there is a 17 fm. sounding on a 14 fm. sounding. at this place the lead soundings shown on H-4718 should have preference over the fathometer soundings shown on H-4717
E.O.H.

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

February 4, 1929.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet 4717
East Coast of Kauai, Hawaiian Islands

Surveyed in 1927

Instructions dated November 23, 1926

Chief of Party: F. G. Engle.

Surveyed by F. G. E.

Protracted by G. R. Shelton.

Soundings plotted by G. R. S. and G. A. Nelson.

Verified and inked by J. T. Jarman.

1. The records conform to the requirements of the General Instructions. However, the time was often confused when a stop was made in order to take a vertical cast. In such cases the office draftsman used the time interval between the two preceding fixes in plotting soundings.
2. The plan and character of the development conform to the requirements of the General Instructions.
3. The sounding line crossings are adequate with the exception of those noted below:

Lat. 21° 49'	1240 m.	
Long. 159° 23'	700 m.	
Lat. 21° 53'	1700 m.	
Long. 159° 20'	890 m.	
Lat. 21° 53'	880 m.	
Long. 159° 19'	1250 m.	
Lat. 21° 54'	750 m.	(2 crossings here)
Long. 159° 20'	1260 m.	
Lat. 22° 06'	1300 m.	
Long. 159° 15'	1280 m.	

The above crossings disagree anywhere from 5 to 50 fathoms. They have been investigated and appear to be O.K. as far as the records are concerned.

4. The usual depth curves can be completely drawn.
5. The field plotting was completed to the extent prescribed in the General Instructions.
6. The office draftsman found it necessary to correct the plotting of signals white, pat and Kukii. The above changes in signals made it necessary to replot something like 50 positions and 150 soundings. Over 150 soundings were replotted due to careless spacing.
7. The junctions with H. 4597a, H. 4605, H. 4703 and H. 4720 are satisfactory. The junction with H. 4718 was not investigated due to the fact that the above mentioned sheet has not been completed. From a casual inspection of the junction with H. 4705 it would appear that more development is needed in the localities noted below:

Lat. 22° 04'	1150 m.
Long. 159° 18'	280 m.

Lat. 22° 05'	570 m.
Long. 159° 18'	930 m.

(See H. 4705)

Due to the large amount of overlap and to the various scales, authorities suggested that junction lines need not be shown but only actual overlap.

8. Remarks:

The soundings on H. 4717 are of the echo type. The field party computed the slope factors entered in the records from distances secured by means of 100 fathom curves drawn on the boat sheet. Although not the method generally used, it would appear that their method is the most adaptable for this particular sheet since most of the sounding lines are parallel to the shore. Upon receiving this sheet, the office draftsman used both methods in checking the slope corrections and found a reasonable agreement.

Soundings in pencil on the sheet below 15 fathoms were secured by the fathometer. They are below the allowable limit for fathometer soundings but were left in pencil for study by the reviewer. The majority of them overlap soundings on H. 4703, which were secured by means of the leadline.

9. Report by J. T. Jarman.

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. - 4327

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

Number of positions on sheet . 757.
Number of positions checked . 250.
Number of positions revised . 67.
Number of soundings recorded . 3709
Number of soundings revised . 307
Number of signals erroneously
plotted or transferred 3

Date: -- Feb - 4, 1929 - - - - -

Cartographer: - J. J. Jarman - - - - -

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4717

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. 1

REGISTER NO. 4717

State Territory of Hawaiian Is.

General locality Kauai, E. Coast

Locality East Coast Makahuena Pt. to Kahala Pt.
Jan. 24-Feb. 18 and Aug. 11-Sept. 8, 1927

Scale 1/40,000 Date of survey Jan. 24-Sept. 8, 1927

Vessel DISCOVERER

Chief of Party F.G. Engle

Surveyed by F.G. Engle

Protracted by G.R.S.

Soundings penciled by G.R.S. & G.A.N.

Soundings in fathoms fms

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated Nov. 23, 1926

Remarks:

applied to chart 4100

~~Wittman~~

11/7/58