4718-4719-4720

4718-4719-4720

Form 504

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

E. Lester Jones *Director*

C. & G. SURVEY
L & A
JAN 23 1928
Acc. No.

~~Terr.~~ ~~State.~~ Hawaiian Is.

DESCRIPTIVE REPORT

4720

~~Topographic~~ *Hydrographic* *Sheet No.*'s., 6,- 13,-15.

4718 4719

LOCALITY

NORTH COAST OF KAUAI — 4718

WEST " " " — 4719

ENTIRE " " "-OFFSHORE 4720

192 7

CHIEF OF PARTY

F. G. Engle.

GOVERNMENT PRINTING OFFICE

DESCRIPTIVE REPORT
to accompany

HYDROGRAPHIC SHEETS NOS. 6, 13 & 15, SCALE 1:40,000
NORTH COAST OF KAUAI. JULY 12- SEPT., 28, 1927.
Instructions dated Nov., 23, 1926. --- U.S.C.& G.S.S. DISCOVERER.
F. G. Engle ---- Commanding.
****

LIMITS: These sheets extend from Anahola Bay to Kailiu Pt., and Kailiu Pt., to Mana Pt., and from a junction with launch work on inshore and harbor sheets out to the 1000 fathom curve 6 to 8 miles offshore and off Mana Pt., to the work of the DISCOVERER in 1926.

GENERAL DESCRIPTION OF THE COAST: North of Kahola Pt the shore is rocky with gently sloping land from 50 to 250 feet high back of it with a steep slope at the shore. On the Northwest side of Kilauea Bay there is a prominent headland with flat top on which an engine house and derrick has been built for handling cargo by cable from ships. Halfway between this and Kilauea Pt., is a very prominent brightly colored vertical cliff about 570 feet high visible and prominent to the North and West. A light house on a white cylindrical tower marks Kilauea Pt. Outside of the Point there is a small Islet about 100 feet high separated from the mainland by a narrow deep channel.

For a distance of two miles inland the North side of Kauai Id., as far as Hanalei Bay, is a gently rolling country cultivated in cane and pineapples. At the shore the slope is steep to a height of 200 feet with rocky shore. Between Kalihiwai and Hanalei Bays there is a coral reef extending about 1/4 mile offshore.

West of Hanalei Bay the mountains are close to the shore and there is practically no population or cultivation. Haena Pt., is low and wooded and Kailiu Pt., is formed of low sand dunes. These points extend 1/2 and 1/4 mile respectively from the high land behind.

From Haena Pt., to Kalalau the mountains rise steeply to from three to four thousand feet at a distance of one to two miles from the coast forming an impassible Pali. The slopes are covered with vegetation and moss, however, giving it a green appearance with numerous small waterfalls. The clouds usually obscure the peaks.

As far as Milolii West of Kalalau the peaks are from 3500 to 2000 feet high and are within a mile of the coast. This section is even steeper than the section East of Kalalau, is very sparsely covered with vegetation or moss and the slopes are deeply eroded forming numerous fantastic slender wavy buttresses with deep pockets in form resembling ice that has been melted down by the rays of the sun.

At Milolii the Pali turns from Southeast to almost South and the character changes to a smooth almost vertical face of red rock divided by deep gulches with steep - to impassable walls. The Pali continues around to Mana in gentle curve with a gradually decreasing height and slope until at the latter place it is possible to ascend it on foot. And at Waimea an automobile road has been built ascending the slope to the highland in back of the Napali Coast.

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

CURRENTS: A current of 1/4 to 3/4 knot was found to set Northward and Eastward from Mana to Kilauea Pt. It seemed to be strongest with the strength of the trade wind.

LANDMARKS: The needle rocks back of Kailiu Pt., △ Makana (⊙ Flat) and ⊙ Tooth are conspicuous against the sky from East to Northeast and West to Southwest. Between West and Northeast they show against higher slopes and are not easily distinguishable.

There are no definite peaks along the Napali Coast, even when the top of the Pali is clear of clouds, that can be used as landmarks although those familiar with the varying aspect at different points would find this knowledge useful for approximately fixing his position.

⊙ Spot is a prominent whitish spot on the red cliff at a height of about 100 feet.

Nohili Dune (△ Nohili) is the highest sand dune on the North side of the low flat land on the West side of the Island.

⊙ Fork is a prominent large tree with a forked top.

△ Puu Lua is a prominent rounded grass covered knob on the high land.

△ Puu Kapele is a knob similar to Puu Lua but its slopes are wooded.

ANCHORAGES: On the North side of the Island, Hanalei Bay is a roomy anchorage well sheltered from the Trade wind but open to the North and Northwest and is unsafe in Northerly storms. The bay is circular in shape, one mile in diameter and open on the Northerly quarter. A reef (bare at low water) makes out 1/4 mile from the point on the East side of the entrance and another reef makes out 1/4 mile just inside the point on the West side of the entrance. The Southwest part of the bay is shoal for 1/3 mile from shore. The anchorage depth is 6 fathoms. The Inter-Island Steamers load and unload from lighters to the county concrete dock on the East side which has a depth of 5 - 6 feet alongside and is equipped with a derrick and rails. The East side of the bay has a smooth sand beach free of rocks or coral with gradual slope and is suitable for beaching a Vessel in case of necessity.

Kilauea Bay is a port of call of the Inter-Island Steamers. The Kilauea Plantation maintains a cable loading gear on the high point on the North side of the Bay and mooring buoys. There is no anchorage.

Between Makaha Pt., and Nohili Pt., on the West side good anchorage from 7 to 12 fathoms can be obtained in sand bottom. At times the Trade wind comes in close to shore but usually this area is sheltered. At times a light breeze from the South or Southwest is felt when the Trade wind is blowing strong farther offshore.

In other places on the open coast anchoring where the depth permits is attended by risk of losing an anchor on account of uneven rocky or coral bottom.

SURVEY METHODS: Fixes were obtained by sextant angles between signals and peaks located by triangulation and plane table. The Napali Coast afforded no peaks that could be used on the outer lines and in a few instances tangents were used when signals were not visible. The depths were obtained with handlead to approximately 15 fathoms and with the fathometer in greater depths.

The main system of lines was run parallel to the general trend of the coast. In some places this necessitated frequent shifts from Fathometer to Hand lead and vice versa and in places both were used simultaneously. Between 10 to 20 fathoms the spacing was 150 meters and was gradually increased offshore as the depth increased. A close watch was kept on the leadsman to prevent errors of reading the line and new leadsmen were given instruction to obtain accuracy.

In over 100 fathoms when the Fathometer white light was used two officers read the depth and a mean was recorded. The two depths usually agreed within 5 or 10 fathoms and seldom differed by as much as 25. Tubes were used on two occasions when the relay gave trouble. The two methods appear to agree well with the vertical casts and form smooth contours where it is reasonable to suppose the bottom has a smooth slope.

Vertical casts were taken spaced on an average of less than 5 miles apart over the area sounded. Bottom specimens and temperatures, surface temperatures, samples and Plankton hauls were made at these stations and the data forwarded to the Scripps Institute.

TIDE GUAGES: A Portable Automatic Guage was established and maintained at Hanalei Bay for the reduction of soundings.

CORRECTIONS TO FATHOMETER SOUNDINGS:

Temperature: A temperature - Depth Curve for the locality was constructed, by plotting temperatures as absissae 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 was next constructed.

For this, the temperatures were tabulated from the Temperature Depth Curve for each 50 fathoms and the mean temperature 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 a 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
H. & G. Engineer,
Commanding.

STATISTICS SHEET NO. 13 4719

WEST COAST KAUAI, - - - - - - SCALE: 1:40,000

Date, 1927	Letter	Volume	Positions	Soundings	Miles, stat.	Vessels
July 12	A	1	73	355	31.5	DISCOVERER
13	B	1	124	592	55.0	"
21	C	2	117	491	39.0	"
22	D	2	109	519	38.0	"
25	E	2 & 3	150	706	53.5	"
26	F	3	85	333	28.2	"
27	G	4	134	315	45.4	"
28	H	4	156	411	47.6	"
Aug. 20	J	5	92	522	56.3	"
22	K	5	99	407	54.9	"
Sept. 3	L	5 & 6	73	264	46.0	"
6	M	6	29	126	18.4	"
	Totals ----		1241	5041	513.8	

STATISTICS SHEET NO. 6

NORTH COAST KAUAI, - - - - - - - - SCALE, 1:40,000

Date, 1927	Letter	Volume	Positions	Soundings	Miles, stat	Vessels
August 5	A	1	177	684	72.4	DISCOVERER
6	B	1 & 2	162	746	~~53.4~~	"
8	C	2 & 3	~~61~~ 164	~~278~~ 790	~~57.5~~ ~~22.4~~	"
9	D	3	161	707	64.6	"
10	E	3 & 4	135	447	61.6	"
11	F	4	45	137	21.8	"
19	G	4	70	250	34.5	"
24	H	4 & 5	130	556	75.6	"
25	J	5	49	131	34.3	"
Sept. 2	K	5	83	264	48.8	"
Totals ----			~~1073~~ 1176	~~4200~~ 4712	~~489.4~~ 524.5	

STATISTICS SHEET NO. 15

KAUAI ISLAND, - - - - - - - - - SCALE: 1/20,000

Date, 1927	Letter	Volume	Positions	Soundings	Miles, stat.	Vessels
Sept. 5	A	1	7	15	5.2	Discoverer
6	B	1	93	318	57.5	"
7	C	1	113	350	85.1	"
8	D	1	47	48	40.2	"
	Totals ---		260	731	188.0	

T.8.H.

Copy for Records Section. (11) January 30, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in volumes of sounding records for

5

HYDROGRAPHIC SHEET

4718

Locality:

KAUAI ISLAND, T.H.

Chief of Party:

Plane of reference U. S. Engrs., 1927

2.2 ft. on tide staff at M L L W Hanalei 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.

G T Rude

Chief, Division of Tides and Currents.

(11)

T. 8 N.

Copy for Records Section

January 30, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
6 volumes of sounding records for

HYDROGRAPHIC SHEET 4719

Locality: KAUAI ISLAND, T. H.

Chief of Party: F. G. Engle, 1927.
Plane of reference is M L L W
2.2 ft. on tide staff at Hanalei 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.

G Rude

Chief, Division of Tides and Currents.

T.8H.

Copy for Records Section.

(21)

January 30, 1928.

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in
1 volumes of sounding records for

HYDROGRAPHIC SHEET 4720

Locality: KAUAI ISLAND, T. H.

Chief of Party: F. G. Engle, 1927.
Plane of reference is M S L W
2.8 ft. on tide staff at, Nawiliwili 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.

Chief, Division of Tides and Currents.

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

AND REFER TO No. 3-DRM

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

October 31, 1929.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4719

West Coast of Kauai Island, Hawaiian Islands

Surveyed in 1927

Instructions dated November 23, 1926 (DISCOVERER)

Hand Lead and Fathometer Soundings

Chief of Party, F. G. Engle.

Surveyed by Field Party.

Protracted by G. R. Shelton.

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

Verified and inked by F. B. Kelly and J. T. Walker.

1. There are no important cartographic problems raised by this survey except as noted in Paragraph 4. The work conforms to the specific instructions. No comment will be made regarding the records as this survey was made prior to the standardization of fathometer records.

2. In the deep areas surveyed with the fathometer, several vertical soundings were obtained at which specimens of the bottom were taken and sent to the Scripps Institute. The character of the bottom should have been noted in the records at these points for charting purposes.

3. The sounding line crossings are generally adequate. Some differences occur in the deep areas surveyed with the fathometer white light method.

4. The junctions with the adjoining sheets will be considered individually.

   a. H. 4630 (surveyed in 1926).

   A junction was effected with this sheet and in general a good agreement is had between the overlapping soundings on the two sheets. There is a line of soundings on H. 4630 (55-57 Y in lat. 22° 02' 500 m., to Lat. 22° 03' 600 m., long. 159° 48' 1160 m.) that differs by 10 fathoms from an adjoining line on

H. 4719. Since the control on H. 4630 was partly based on sextant determinations of signals and since H. 4719 covers this area in more detail, it will not be necessary to use the line from H. 4630.

b. H. 4720 (surveyed in 1927).

The junction with this sheet is satisfactory. The differences that exist are in deep water and are unimportant. Both surveys are fathometer soundings and the differences are probably due to inaccuracies inherent in the white light method.

c. H. 4718 (surveyed in 1927).

The junction with this sheet is satisfactory.

d. The junctions with the inshore surveys H. 4701 and H. 4709 are satisfactory.

5. The question of slope corrections to the fathometer soundings has not been considered in this review, since the whole problem is in abeyance at the present time. The soundings were inked by the verifier as corrected by the field party. It should be borne in mind that on a portion of this sheet (northern part) the bottom is irregular with slopes of considerable magnitude; -- two conditions not very conducive to accurate echo soundings. While it is realized that the number of soundings obtained is more than sufficient for charting purposes, the fact should not be overlooked that many of the soundings in the area mentioned may be subject to some error on account of the inability to make proper corrections for slope.

6. Recommendation for future work.

While no additional work is recommended for charting purposes within the limits of this survey, it should be noted that the sheet affords an excellent opportunity for making valuable contributions to the study of echo soundings in general and slope corrections in particular. The area surveyed contains features such as submarine valleys, shelving bottom and irregular depth curves; formations that are generally stumbling blocks where slope corrections are involved. It would be highly desirable to have a detailed examination made with vertical soundings of these configurations for comparative purposes, with a view to arriving at some definite conclusions regarding the use of the fathometer in such areas. The fact that the work could be controlled by visual fixes would greatly enhance the value of such study. The information obtained through such an examination could be used for comparing the corrected as well as the uncorrected echo soundings to determine which gives a closer representation of the true conditions. The echo soundings already obtained could be used as a sort of first approximation for determining where vertical casts are to be taken.

7. The 57 fathom sounding (from H. 4630) in latitude 22° 07 1/4', longitude 159° 46 1/4' will be retained. While the present survey (H. 4719) contains no corroborating sounding at this spot there is a 21 fathom sounding close by. Just prior to obtaining the 21 a "miss" is noted in the records which might indicate an irregularity in the bottom which the surveyor thought was a stray and being deeper than he expected to get, called it a miss. Since this is a volcanic region, it is possible that a small crater has been found.

8. Reviewed by A. L. Shalowitz, October, 1929.

Approved:

_____

Chief, Section of Field Records (CHARTS)

_____

Chief, Section of Field Work (H. & T.)

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

AND REFER TO No. 11-DRM

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

June 18, 1928.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4720

Kauai Island - Offshore. H.I.

Surveyed in 1927

Instructions dated November 23, 1926 (DISCOVERER)

Fathometer Soundings

Chief of Party, F. G. Engle.

Surveyed by F. G. Engle.

Protracted and soundings plotted by T. B. Reed.

Verified and inked by H. F. Garber.

1. The records for this sheet fail to conform to the requirements for recording fathometer soundings (Circular of April 1, 1926) in the following respects:

   a. No notation was made to show that middle reed of tachometer was vibrating at maximum amplitude when the fathometer was read.

   b. No entries were made for surface and bottom temperatures.

   c. No record of salinity appears.

   d. No reduction factors were entered.

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

3. The plan and extent of the survey satisfy the specific instructions with the following exceptions:

   a. No bottom specimens appear to have been taken nor were there any vertical casts taken. Doubtless the Chief of Party considered the vertical soundings taken on H. 4630 which cover most of this area were sufficient to meet this requirement of the instructions. While this is quite true as far as bottom specimens are concerned and as far as affording a general check on the accuracy of the fathometer soundings, it does not afford a means of studying the value of fathometer soundings as simultaneous observations would.

The correction factors applied to the fathometer soundings on this sheet appear to be the same as used on the inshore sheets H. 4718 and 4719.

b. A split line should have been run just above lat. 22° 10', in order to bring the spacing of lines to 2 miles.

c. The work at the northwestern end of the sheet should have been extended further offshore in order to define the 1000-fathom curve. This also applies to the work off the southern end of Kauai Island.

4. The sounding line crossings are satisfactory.

5. The information is sufficient for drawing the usual depth curves except as mentioned in paragraph 3-c above.

6. The junction with H. 4630 is satisfactory. The soundings agree well. It should be noted that there appears an unnecessary duplication in work between these two sheets. The greater portion of the work covered by the latest survey (H. 4720) seems adequately covered on H. 4630 (surveyed in 1926) by vertical casts. Of course the soundings are not as close together as on the 1927 survey, but if this is the only objection then the fathometer work should be extended to cover the entire area between the islands of Niihau and Kauai, for the same condition as to spacing of soundings exists throughout this entire area.

The junctions with the inshore sheets will be taken up when those sheets are completed.

7. The usual field plotting was done by the field party and was satisfactory.

8. No additional work is necessary except as mentioned in paragraph 3-b, -c above and possibly as mentioned in paragraph 6 above.

9. Reviewed by A. L. Shalowitz, March, 1928.

Approved:

_____

Chief, Section of Field Records (Charts)

_____

Chief, Section of Field Work (H. & T.)

Section of Field Records

Report on Sheet No. 4720 — Surveyed Sept 5-8, 1927

Chief of Party F. G. Engle
Surveyed by F. G. Engle
Protracted by J. O. R.
Soundings plotted by J. O. R.
Verified and Inked by H. F. Garber

1. The records conform to the requirements of the General Instructions
2. The sounding line crossings checked very good.
3. Owing to the limit of the survey the depth could not be completely drawn.
4. The protracting and plotting was carried out very good.
5. There was a statement in the Descriptive Report saying that vertical casts were made about every five miles, yet no indication of this was found in the Soundings Record as a check against the fathometer.

March 21, 1928

Respectfully Submitted,
Harry F. Garber.

Section of Field Records

Report on Sheet No 4719
Chief of Party F.G. Engle
Protracted by H.R. Shelton
Verified and Inked by F.B. Kelly
and J.W. Walker

Surveyed in 1927
Surveyed by Party of Steamer Discoverer
Soundings plotted by H.R. Shelton
and Lt. A. Jeson

The sounding records were complete and well kept. The protracting was very well done. Twelve of the 25 positions revised were numbered wrong.

The soundings were carefully plotted and the time intervals were carefully adhered to. In several places notes in the remarks column stated that the fix was a stated number of seconds late or early and in these places the soundings were generally not plotted according to this information.

The sheet was received clean and the work was legible. Mr. Kelly started the sheet and when received by me, after his resignation, he had checked the protracting for the first two volumes and had inked part of "B" day.

The drafting conformed to General Instructions for field work.

Acting on the advice of Capt. Sobieralski, fathometer soundings were disregarded when mixed in with hand lead soundings, except where large discrepancies occurred or where the fathometer indicated a shoal, but none of these large

discrepancies or indications of shoals were noticed.

Some of the turnson which soundings were taken have been rejected by the field (crossed out with green pencil in the records) for no apparent reason. They were all accepted by the office with the permission of Capt. Ellis.

The overlap transferred from H4630 to H4719 disagreed badly in one place. The soundings that seemed to be off were from H4630, 7 to 10 Z (red) day. An investigation was made. △ Nohili$_2$ on H4719 plots very near hydrographic signal Hill on H4630 and they were assumed to be the same point. Plotting Hill in the same position as Nohili$_2$ on H4630 moves the 7 to 10 Z line northwest, so that the soundings fall in a more logical position when transferred to H4719. The 5½ fath. sounding at 8 Z was not transferred as it is probably erroneous — the next deepest sounding in the vicinity being 21 fath. The 7¼ fath sounding between 7 & 8 Z was accepted though it looks doubtful. No soundings were moved on H4630 as they have already been charted.

Reviewed by

Date

Respectfully submitted

J T Walker

Report of Sheet # H-4718

Chief of Party F. G. Engle
Protracted by G. A. Nelson
Verified and inked by F. G. Erskine

Surveyed in 1927
Surveyed by F. G. Engle
Soundings plotted by G. A. Nelson

1. The sounding records were complete and legible. The location of the beginning and ending of the days work was not always recorded.
2. The protracting was excellent. About 28½ percent of the positions were checked and only 1.35 percent had to be reprotracted. Positions 24 + 76 j were plotted incorrectly. This was probably due to the fact that one of the signals used was beyond the ordinary extended arm of the protractor. Positions 17k then 73 k and 47k then 51 k were plotted slightly incorrectly — the error being just beyond the "limit." Due to the depth (600–1000 fathoms) and scale, the positions were left as protracted.
3. The plotting of the soundings was very good also. Only about 1.8 percent had to be replotted. In two or three places the plotter got careless and didn't adhere to the time intervals. At position 52 d a vertical cast was taken, obtaining a sounding of 150 fathoms. A fathometer sounding at this position got a depth of 259 fathoms. Several differences such as this were observed. (This was the greatest)
4. Triangulation station "Hinchinbrook" was not plotted on the smooth sheet. It was used in one "fix." Triangulation station Kyak Island (Grey) was used once or twice. This station fell off of the sheet.
5. The sheet was very clean and legible
6. The drafting conformed to the General Instructions — except that no depth curves were drawn.
7. Hand lead ~~was~~ used up to approximately fifteen fathoms, beyond this depth the fathometer was used except where designated otherwise.

Respectfully submitted

Frank G. Erskine

Feb. 18, 1929

Revision Lot
H-4718

Section of Field Records
Report on Hyd. Sheet. No. 4718
Kauai Island - North Coast
Surveyed in 1927.

Instructions dated Nov. 23, 1926 (Discoverer)

Chief of Party - H. G. Engle
Surveyed by - H. G. Engle
Protracted and plotted by G. A. Nelson
Verified and inked by H. G. Erskine

1. The records for this sheet are clear and legible but the recording of fathometer soundings does not conform with the Circular of April 1, 1926 in the following respects.

There was no check mark at the extreme right hand edge of the left hand page, to show that the middle reed of tachometer was vibrating at maximum amplitude when the fathometer was read.

Salinity was not recorded.

No reduction factors were entered.

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

3. The plan and extent of the survey, satisfies the specific instructions.

4. There are not many cross lines, but the crossings are satisfactory.

5. The information is sufficient for drawing the usual depth curves, with the exception of some parts of the thousand fathom curve.

6. Junctions - This sheet joins ten different sheets, H. 4720, H. 4719, H. 4709, H. 4698, H. 4708, H. 4707, H. 4706, H. 4705, H. 4704 and H. 4717. There is a little gap between the eastern limits of this work and the off shore sheet, H. 4720. The junction with all the other sheets is satisfactory.

7. The usual field plotting was well done by the field party.

8. No additional work is necessary within the limits of this sheet.

Reviewed by R. L. Johnston March, 1929.

Form 537
11—5812

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 4718

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. 6

REGISTER NO. 4718

State ~~Territory of~~ Hawaiian Is.

General locality Kauai - N. Coast

Locality ~~North Coast~~ Kailiu Pt to Kahala Pt.

Scale 1/40,000 Date of survey ~~Aug. 5-Sept. 2~~, 1927

Vessel DISCOVERER

Chief of Party F.G.Engle

Surveyed by F.G.Engle

Protracted by G.A.N.

Soundings penciled by G.A.N.

Soundings in fathoms ~~feet~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by F.G.Erskine

Verified by F.G.E.

Instructions dated Nov.23, 1926

Remarks:

GPO

Form 537
11—5812

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4719

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. 13

REGISTER NO. 4719

State ~~Territory of~~ Hawaiian Is.

General locality Kauai - W. Coast

Locality ~~West Coast~~ Kokole Pt. to Kailiu Pt.

Scale 1/40,000 Date of survey July 12 - Sept. 6, 1927

Vessel DISCOVERER

Chief of Party F.G. Engle

Surveyed by F.G. ENGLE Party of Steamer Discoverer

Protracted by G.R. Shelton

Soundings penciled by G.R.S. Shelton & G.A. Nelson

Soundings in fathoms ~~feet~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by Kelly & Walker

Verified by K & H

Instructions dated Nov. 23, 1926

Remarks:

GPO

Form 537
11—5812

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

REG. NO. 4720

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. 15

REGISTER NO. 4720

State ~~Territory of~~ Hawaiian Is.

General locality Kauai

Locality Entire island - Offshore

Scale 1/120,000 Date of survey Sept.5-8, 1927

Vessel DISCOVERER

Chief of Party F.G. Engle

Surveyed by F.G.Engle

Protracted by T.B.R.

Soundings penciled by T.B.R.

Soundings in fathoms ~~feet~~

Plane of reference M.L.L.W.

Subdivision of wire dragged areas by

Inked by

Verified by

Instructions dated Nov.23, 1926

Remarks:

GPO

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

AND REFER TO No. 3-DRM

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

WASHINGTON October 31, 1929.

SECTION OF FIELD RECORDS

Report on Hydrographic Sheet No. 4719

West Coast of Kauai Island, Hawaiian Islands

Surveyed in 1927

Instructions dated November 23, 1926 (DISCOVERER)

Hand Lead and Fathometer Soundings

Chief of Party, F. G. Engle.

Surveyed by Field Party.

Protracted by G. R. Shelton.

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

Verified and inked by F. B. Kelly and J. T. Walker.

1. There are no important cartographic problems raised by this survey except as noted in Paragraph 4. The work conforms to the specific instructions. No comment will be made regarding the records as this survey was made prior to the standardization of fathometer records.

2. In the deep areas surveyed with the fathometer, several vertical soundings were obtained at which specimens of the bottom were taken and sent to the Scripps Institute. The character of the bottom should have been noted in the records at these points for charting purposes.

3. The sounding line crossings are generally adequate. Some differences occur in the deep areas surveyed with the fathometer white light method.

4. The junctions with the adjoining sheets will be considered individually.

   a. H. 4630 (surveyed in 1926).

   A junction was effected with this sheet and in general a good agreement is had between the overlapping soundings on the two sheets. There is a line of soundings on H. 4630 (55-57 Y in lat. 22° 02' 500 m., to Lat. 22° 03' 600 m., long. 159° 48' 1160 m.) that differs by 10 fathoms from an adjoining line on

H. 4719. Since the control on H. 4630 was partly based on sextant determinations of signals and since H. 4719 covers this area in more detail, it will not be necessary to use the line from H. 4630.

b. H. 4720 (surveyed in 1927).

The junction with this sheet is satisfactory. The differences that exist are in deep water and are unimportant. Both surveys are fathometer soundings and the differences are probably due to inaccuracies inherent in the white light method.

c. H. 4718 (surveyed in 1927).

The junction with this sheet is satisfactory.

d. The junctions with the inshore surveys H. 4701 and H. 4709 are satisfactory.

5. The question of slope corrections to the fathometer soundings has not been considered in this review, since the whole problem is in abeyance at the present time. The soundings were inked by the verifier as corrected by the field party. It should be borne in mind that on a portion of this sheet (northern part) the bottom is irregular with slopes of considerable magnitude; -- two conditions not very conducive to accurate echo soundings. While it is realized that the number of soundings obtained is more than sufficient for charting purposes, the fact should not be overlooked that many of the soundings in the area mentioned may be subject to some error on account of the inability to make proper corrections for slope.

6. Recommendation for future work.

While no additional work is recommended for charting purposes within the limits of this survey, it should be noted that the sheet affords an excellent opportunity for making valuable contributions to the study of echo soundings in general and slope corrections in particular. The area surveyed contains features such as submarine valleys, shelving bottom and irregular depth curves; formations that are generally stumbling blocks where slope corrections are involved. It would be highly desirable to have a detailed examination made with vertical soundings of these configurations for comparative purposes, with a view to arriving at some definite conclusions regarding the use of the fathometer in such areas. The fact that the work could be controlled by visual fixes would greatly enhance the value of such study. The information obtained through such an examination could be used for comparing the corrected as well as the uncorrected echo soundings to determine which gives a closer representation of the true conditions. The echo soundings already obtained could be used as a sort of first approximation for determining where vertical casts are to be taken.

7. The 57 fathom sounding (from H. 4630) in latitude 22° 07 1/4', longitude 159° 46 1/4' will be retained. While the present survey (H. 4719) contains no corroborating sounding at this spot there is a 21 fathom sounding close by. Just prior to obtaining the 21 a "miss" is noted in the records which might indicate an irregularity in the bottom which the surveyor thought was a stray and being deeper than he expected to get, called it a miss. Since this is a volcanic region, it is possible that a small crater has been found.

8. Reviewed by A. L. Shalowitz, October, 1929.

Approved:

Chief, Section of Field Records (CHARTS)

Chief, Section of Field Work (H. & T.)

Referring to par. 6, while this area has many features which would make it desirable for such a study, a more protected place could probably be found. With the present development of the fathometer, it is doubtful whether the data would be dependable enough to form a basis for conclusions regarding slope corrections.

Ams

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4718 -

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

Number of positions on sheet .1176.

Number of positions checked .341.

Number of positions revised .16.

Number of soundings recorded .4712.

Number of soundings revised .83.

Number of signals ~~erroneously~~ left off of sheet ~~plotted or transferred~~ ....1...
One fell off of sheet

Date: - - February - - - 1929 - - - -

Cartographer: - Frank G. Erskine

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4719

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

Number of positions on sheet	1241
Number of positions checked	172
Number of positions revised	25
Number of soundings recorded	5041
Number of soundings revised	117
Number of signals erroneously plotted or transferred	0

Date: Feby 7, 1929

Cartographer: J F Walker

Applied to Chart 4100 Williamson 11/7/58