

5297

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Form 504
Ed. June, 1928

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. Patton
Director

State: T. Hawaii

DESCRIPTIVE REPORT
5297

~~Topographic~~ } Sheet No. 41
Hydrographic }

LOCALITY

Hawaiian Islands

Between the Islands of Maui, Lanai,
and Kahoolawe.

1931-32

CHIEF OF PARTY

O. W. Swainson

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

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REG. NO. 5297

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. 41

REGISTER NO. 5297

State Hawaiian Islands

General locality West of Maui

Locality Alalakeiki Channel to Auau Channel and vicinity

Scale 1:40,000 Date of survey Feb. and March, 1931-32

Vessel U.S.C. & C.S.S. PIONEER.

Chief of Party O. W. Swainson

Surveyed by O. W. Swainson and V. M. Gibbons (Launch, one day)

Protracted by E. K. Burdick, draftsman

Soundings penciled by E. K. Burdick, draftsman

Soundings in fathoms feet

Plane of reference Mean Lower Low Water

Subdivision of wire dragged areas by _____

Inked by _____

Verified by _____

Instructions dated August 19, 1930., 19____

Remarks: _____

DESCRIPTIVE REPORT

TO ACCOMPANY HYDROGRAPHY SHEET NO. 41.

PROJECT 69 - HAWAIIAN ISLANDS

DATE OF INSTRUCTIONS

Instructions for this sheet are included in those for Project No. 69, Hawaiian Islands, dated August 19, 1930.

LIMITS SHEET 41

The sheet extends from latitude $20^{\circ} 54'$ to the southward; the island of Maui being the eastern limit and Lanai the western limit; and it joins sheet 101 on the southwest, extending south to latitude $20^{\circ} 34'$.

CONTROL

The control for this sheet was triangulation stations taken from special publication No. 156, supplemented by a small scheme done by this party. Some topographic stations were transferred from photostatic prints of previous surveys and checked with sextant cuts.

SURVEY METHODS

The soundings were all taken with the fathometer. The lines were spaced about 200 meters in water less than 50 fathoms and about 400 meters over 50 fathoms. Where development was needed the lines were spaced as close as 25 meters.

The corrections for the fathometer soundings are contained in the Season's Report for project 69, Hawaiian Islands, for 1931 and 1932. There was found to be a gap in the original surveys, latitude $20^{\circ} 55'$ and $20^{\circ} 56'$ at longitude $156^{\circ} 42'$. Without instructions this was filled in with the motorsailer on a scale of 1:20,000. This is the insert on sheet No. 41. Later, instructions were received to make the survey over this area on a scale of 1:5000, so the area was resurveyed on a scale of 1:5000 (Sheet No. 53). Tracing of the enlargement of this subplan to scale 1:5000 is being transmitted with sheet No. 53. (H.5298)

CURRENTS

For currents refer to the report on currents in Auau Channel, Hawaiian Islands, Project 69, dated April 11, 1931.

DANGERS

There were no dangers found in the area covered by this sheet. The bottom is very irregular in places.

COMPARISON WITH PREVIOUS SURVEYS

Refer to tracing No. 1 enclosed with smooth sheet. The 20 fathom sounding in latitude $20^{\circ} 56'$, longitude $156^{\circ} 48.8'$ was not verified and is recommended that it be deleted and depths obtained in the area by the Str. PIONEER substituted.

The 17 fathom sounding in lat $20^{\circ} 55.2'$, longitude $156^{\circ} 49.8'$ was verified by ^{no sounding} only when recorder reported "Flashes at 17 fathoms", (see pos. 113-114 F Day) which was crossed by line 11-12 G, shoal-est 20 fathoms. The bottom is very rough here.

The two 16 fathom soundings in latitude $20^{\circ} 53'$, longitude $156^{\circ} 46.5$ were verified as this party obtained depth of 17 fathoms near one of the 16's.

The soundings in the old survey are checked where they are verified by the new survey, and the ones circled in a small red circle do not check the new survey but the extreme unevenness of the bottom may account for the difference. ←

Refer to tracing No. 2. Soundings on sheet 2459a were reduced to scale 1:20,000 and compared with subplan on sheet 41. The soundings check very well with the new survey.

Refer to tracing No. 3. The soundings of the new survey check those of the old, with differences of only a fathom in most cases. Where the old survey differs from the new more than one fathom, the old sounding is encircled in red. The difference between the 20 fathom curve is due to the soundings differing from one foot to one fathom, as the soundings on the new survey are plotted in whole fathoms while the old survey was in feet. The 20 fathom curve of the old is shown in black ink and the one from the new survey is shown in blue ink.

Refer to tracing No. 4. The soundings of the new survey check the old very well, the main difference being in the difference in depth units. The new survey was plotted in whole fathoms and the old survey was in feet. In general the difference in the fathom curve (20) is believed to be due to this difference in units as 20 and four feet is 20 fathoms on the new survey, while on the old survey it would be 124 feet. This would make the sounding on the new survey either on or inside the 20 fathom curve and on the old, outside the curve. The soundings circled in blue are over one fathom different from the new survey, while those one fathom or less are checked with either blue or red. The 20 fathom curve of the old survey was transferred in black ink and the 20 fathom curve from the new survey was transferred in red,

Refer to tracing No. 5. Sheet H3518 expanded to 1:20,000 to check by subplan on sheet 41. The soundings check very well except the one 15 fathom circled in red. This sounding is near a 20 fathom sounding on the new survey, and the new survey obtained a 15 fathom sounding southwest of the old one, which shows the old one to be very little in error.

Refer to tracing No. 6. Sheet 2728 was reduced to scale of 1;40,000 and tracing is enclosed in sheet for comparison. There are several soundings that do not check though the error is not great.

STATISTICS

Ship. . . .	Statute miles of sounding line.	1357.3
	Number of soundings	11207
	Number of Positions	2162
Launch. . . .	Statute miles of soundings line	17.0
	Number of soundings	431
	Number of positions	134

O. W. Swainson,
H. & G. Engineer,
Chief of Party.

REPORT ON INSPECTION BY CHIEF OF PARTY

The sheet was plotted by E. K. Burdick, Draftsman. The Sheet was verified by comparison with the boat sheet by V. M. Gibbens, Jr. H. & G. Engineer. The plotting of the positions was not otherwise checked. The plotting of the soundings was verified by J. R. Jahn from the records, and any error found checked and corrected by E. K. Burdick. Final inspection and writing of descriptive report was made by C. J. Wagner, Jr. H. & G. Engineer. The sheet and records are approved.

O. W. Swainson,
H. & G. Engineer,
Chief of Party.

NOTE:

Tracings (Three) of limits of 101 are enclosed to show junction of the two sheets. Tracings of the junctions of the other sheets joining 41 are transmitted with their respective sheets.

500

DSM

September 13, 1933.

Division of Hydrography and Topography:

✓ Division of Charts:

Tide Reducers are approved in
8 volumes of sounding records for

HYDROGRAPHIC SHEET 5297

Locality **Alalakeiki Channel to Anau Channel, Southwest Coast Maui, T. H.**

Chief of Party: **O. W. Swainson in 1931-1932**

Plane of reference is **mean lower low water, reading**

2.6 ft. on tide staff at Lahaina

9.5 ft. below B. M. 1

2.2 ft. on tide staff at Makena.

4.5 ft. below B.M. 1 (1931)

2.8 ft. on tide staff at Kaunapali

15.6 ft. below B.M. 1

3.5 ft. on tide staff at Honolulu (Time of tide 30 minutes earlier at

17.3 ft. below B.M. 2 place of soundings)

Height of mean higher high water above plane of reference is 2.0 ft.
at Lahaina, Makena and Kaunapali and 1.8 ft. at Honolulu.

Condition of records satisfactory except as noted below:

Harry Hanner
Chief, Division of Tides and Currents

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 5297

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

Number of positions on sheet	2296
Number of positions checked	242
Number of positions revised	20
Number of soundings recorded	11638
Number of soundings revised	15
Number of signals erroneously plotted or transferred	0

Date: November 1, 1933

Cartographer: Ralph E. DeMent

Nov. 1, 1933

Section of Field Records
Report on Hydrographic Sheet No 5297
Alabiki Channel to Anau Channel
West of Maui
Hawaiian Islands

Surveyed in Feb. & Mar. 1931-32

Instructions dated Aug 10, 1932

Chief of Party - O. W. Swainson

Surveyed by - O. W. S. & V. M. Gibbens

Protracted by - C. K. Burdick

Soundings penciled by - C. K. B.

Topography inked by - Field Party

Verified & inked by - R. C. Delmont.

1 The records conform to the requirements of the Hydrographic Manual, with the following exception:

Soundings, below 100 fathoms were, (with few exceptions) entered in the records to the nearest whole fathom instead of ~~to the nearest~~ ~~fathoms and~~ half fathoms. (See par. 32 p. 4 Hydrographic Manual.)

~~an instrument that this condition could
actually exist~~

2. The plan and character of development ~~of development~~ fulfills the requirements of the Hydrographic Manual.
3. The plan and extent of development satisfies the specific instructions
4. The sounding line crossings are adequate but were found to be rather jumpy - successive protracting & checking could not prove them to be in error so in view of the irregular pattern they were accepted as plotted.
5. The 20, 50, & 100 fathom depth curves can be drawn.
6. The field plotting was complete to the extent prescribed in the Hydrographic Manual.

7. No drafting (with the exception of the depth) curves was redone in the office.

8. Overlap. The overlap on the north-west was made on H-5290 - and is satisfactory, being a continuation of two lines of soundings.

9. Remarks.

(a) The area covered by this sheet is extremely irregular in nature, and jumps of from ten to twenty fathoms are not uncommon in the deeper portions. For that reason the numerous crossings were examined and inked as plotted.

b. Line 5123 to 125 N. inc. has beginning at Lat $20^{\circ} 45.7'$ Long $156^{\circ} 39.5'$ and running north east has been rejected. These soundings have been questioned in the records by Vol 5 - page 72, by the recorder as seeming to be too deep.

c. Lat $20^{\circ} 44.6'$ a single 86 fathom sounding falling between 60 & 47 fathom soundings has been rejected. This sounding

is questioned in the records in
Vol. 6, page 60.

- (d) The soundings in b & c above were
rejected by authority of Mr. L. O. Colwell ✓
- (e) Lat $20^{\circ} 47.3'$ Long $156^{\circ} 34.8'$ The
sounding between 43 & 44 f are questioned
~~They carry shoal depths of 13 & 14 fathoms.~~
~~They have been inserted, although no~~
~~authority can be found for them on H-4317~~ Wm. Colwell
- (f) Lat $20^{\circ} 51.1'$, Long $156^{\circ} 45.7'$ - A 20 fathom
sounding, marked by the recorder in
Vol 1, page 51 was accepted
- (g) Lat $20^{\circ} 50'$, Long $156^{\circ} 40.4'$ - Soundings of
22, 16 & 22 fathoms resp, questioned by
the recorder in Vol 4, page 60 were
accepted.
- (h) Lat $20^{\circ} 55.5'$, Long $156^{\circ} 46.6'$. Two soundings
of 21 and 25 fathoms were questioned by
the recorder in Vol 8 page 11 were
accepted, after an examination of
H-5298 which covers the same area
on a 1-5,000 scale.

- (1) The soundings in (d of e & h) were
accepted by authority of Mr. A. L. Malawity. ✓
- (j) Soundings on turns were as a
general rule not plotted, except where
they carried critical depths or shoals.

Respectfully submitted,
Ralph C. DeMunt.

SECTION OF FIELD RECORDS
Review of Hydrographic Sheet No. 5297.
Alalakeiki Channel to Auau Channel, West Coast of Maui,
Hawaiian Islands.
Surveyed Feb. - Mar. 1931 and 1932.
Instructions dated Aug. 19, 1930 (Pioneer Proj. 69)

Chief of Party - O. W. Swainson, V. M. Gibbens.
Protracted and soundings plotted by - E. K. Burdick.
Verified and inked by - R. E. De Ment.

1. The records conform to the requirements of the Hydrographic Manual. Only one bottom characteristic was recorded for this entire sheet.
2. The plan and extent of development conform to the regulations and satisfy the specific instruction, except that the regulations call for more vertical wire casts and bottom specimens distributed over the areas surveyed by fathometer methods.
3. Soundings in many places seem to be inconsistent but on close examination and comparison with previous surveys it is believed that the apparent inconsistency is due to a very irregular bottom, probably of a volcanic nature. Depths at crossings of lines are in general good agreement.
4. Depth curves can be drawn satisfactorily.
5. Junction with contemporary survey sheets H. 5290 and H. 5298 are satisfactory.
6. Comparison with previous surveys. A reconnaissance survey (H. 2459) was made in 1901. The sheet also overlaps surveys made in 1904-5 (H. 2726-27-28-30) and in 1913-14 (H. 3513-18); confidential sheets H. 4317 and 4320 are to the eastward on the Maui coast. The present survey has a much closer development of the area represented. The agreement in depths is good considering the nature of the bottom.

The new survey does not indicate any great changes in Chart 4130 which was compiled from the earlier surveys. A special search for the 20 in lat. $20^{\circ}56'.2$ long. $156^{\circ}48'.7$ failed to confirm this depth. An examination of the records of H. 3653 show that this was a Bassnett tube sounding, that if corrected in accordance with check casts of this depths it should have been plotted as 22 instead of 20. The present survey finds depths of 30 fathoms in this approximate position with depths of 24 fathoms less than 300 meters south and also west of the charted 20. The charted 38 about .6 mile north-east of the 20 should be 75. It resulted from an error in plotting on H. 3653. The 38 should be removed from the charts.
7. Field drafting was completed to the extent prescribed by the regulations and was satisfactory.
8. Recommendations. This sheet (H. 5297) should supersede all previous surveys for charting depths. Bottom characteristics should be retained

H. 5297-2.

from previous surveys. Also note the recommendation of the Chief of Party, Descriptive Report, page 2, regarding the charted 20 discussed in par. 6 above.

No further surveys are deemed necessary at this time.

9. Reviewed by R. J. Christman, Dec. 12, 1933.

Examined and approved:


Chief, Field Records Section.


Chief, Field Work Section.


Chief, Division of Charts.


Chief, Division of H. & T.