

8723

Diag. Cht. No. 4116-2.

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE  
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION  
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. FF-5-2-63 Office No. H-8723

LOCALITY

State Hawaii

General locality Maui Island

Locality Vicinity of Keanae Point

1963

CHIEF OF PARTY

H. J. Seaborg

LIBRARY & ARCHIVES

DATE 2-5-64

8723

**HYDROGRAPHIC TITLE SHEET**

H-8723

INSTRUCTIONS - 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.

PF-5-2-63

State HAWAII

General locality MAUI ISLAND

Locality Area in the immediate vicinity <sup>∨</sup> east and west of Keanae Point

Scale 1:5,000 Date of survey March - May 1963

Instructions dated Original, 25 Oct. 1960; Supplemental, 3 January 1963

Vessel PATHFINDER launches 1, 2, 3 and 4

Chief of party H. J. Seaborg

Surveyed by R. K. Hanson and S. R. Kotler

Soundings taken by echo sounder, hand lead, wire Echo sounder

Fathograms scaled by Launch crew

Fathograms checked by Launch crew and Junior Officer of Launch

Protracted by R. A. Rader

Soundings penciled by R. A. Rader

Soundings in fathoms ~~XXX~~ at ~~XXX~~ MLLW = 0.7 on the tide staff

REMARKS: One leadline sounding taken on a sunken rock.

DESCRIPTIVE REPORT TO ACCOMPANY  
HYDROGRAPHIC SURVEY H-8723 (PF-5-2-63) 1963  
KEANAE POINT, MAUI ISLAND, HAWAII

SCALE: 1:5000  
March-May 1963

H. J. Seaborg  
Captain, C&GS  
Comdg., Ship PATHFINDER

A. PROJECT

Hydrographic survey PF-5-2-63 was accomplished under OPR-419 according to basic instructions dated October 25, 1960, file 211/mmy, S-2-SU as modified by supplemental instructions dated January 3, 1963, file 211/pt, S-2-PF.

B. AREA SURVEYED

The survey was performed on the northeast coast of Maui Island, and included the area adjacent to the coast line both east and west of Keanae Point, the purpose of the survey being to adequately survey the bays adjacent to Keanae Point for anticipated future use. The limits of the survey are: on the east, longitude  $156^{\circ} 08' 15''$ ; on the west, longitude  $156^{\circ} 10' 30''$ ; on the north, latitude  $20^{\circ} 52' 45''$ ; and on the south by the general shoreline. The survey was begun on March 12, 1963 and completed on May 25, 1963; the reason for the extreme length of time being interruptions necessary to perform other operations. This survey junctions with contemporary survey H-8720 (PF-10-3-63), done at a 1:10,000 scale during the 1963 field season and prior survey Register No. 3515, done in 1913 at a 1:20,000 scale. *overlaps*

C. SOUNDING VESSEL

All depth soundings were obtained with the following launches of the ship PATHFINDER. The color used to identify the day letter of the launch is

|             |          |            |        |
|-------------|----------|------------|--------|
| shown also: | Launch 1 | lower case | blue   |
|             | Launch 2 | " "        | purple |
|             | Launch 4 | " "        | brown  |

Bottom samples were obtained from Launch 3, using lower case green letters to identify the positions. See Vol. 8 of H-8720 (1963)

#### D. SOUNDING EQUIPMENT

All depths were obtained using the DE-723 type echo-sounder except for "a" day, launch 4, when an 808 type was used. All echo sounding was on the "A" scale of the instruments with no depths over 31 fathoms. No faults occurred in the equipment which affected the accuracy of the soundings. The following instruments were used:

| Launch No. | Day Letter | Type of Fathometer | Fathometer Serial No. |
|------------|------------|--------------------|-----------------------|
| 1          | a-e        | DE-723             | 140 ✓                 |
| 2          | a-c        | DE-723             | 141 ✓                 |
| 3          | b          | DE-723             | 143 ✓                 |
| 4          | a          | 808                | 68 ✓                  |

Three types of echo-sounder corrections were applied: velocity, initial, and fathometer corrections. The fathometer correction is the name given to ~~to~~ the correction accounting for transducer draft and instrument error.

The velocity corrections were determined graphically from information obtained from standard Nansen bottle casts using protected and unprotected thermometers, assuming a calibration velocity of 800 fathoms per second. A copy of the corrections applied has been enclosed in this report.

The index of the echo-sounders was set at a depth of 0.0 fathoms. Any fluctuation from this setting was entered in the record volumes as the initial correction.

The fathometer correction was determined from standard bar check data by comparing the actual or measured depth with the depth read on the fathometer. Bar checks were taken either once or twice a day at depths of 1.0, 2.0, and 4.0 fathoms. Since the velocity corrections is 0.0 at 2.0 fathoms, the fathometer correction should be the difference between the depth read and ~~and~~ the true depth when using the 2.0 fathom bar check. The bar checks at 1.0 and 4.0 fathoms are simply to provide more observations from which a better average fathometer correction can be obtained and more chance of error eliminated. Allowance was made for the difference in the speed of sound

(velocity correction) at 4.0 fathoms so that the bar check data is accurately based on 2.0 fathoms.

#### E. SMOOTH SHEET

The smooth sheet projection was made in the Washington Office on the ruling machine.

Approximately 50% of the Hydrographic data was applied to the smooth sheet with the aid of a film positive copy of the boat sheet, according to procedures outlined in the Hydrographic Manual, Sec. 6-47. This method was made possible due to the great care taken in plotting the boat sheet. In the shoal development area west of Keanae Point and all the area east of the Point, the usual method of protracting was used. ✓

It was found that the position obtained from pricking through from the film-positive to the smooth sheet agreed in almost all cases within 1 mm. In areas where it was evident that distortion of the boat sheet film copy was causing excessive discrepancies from protracted positions, the position at the ends of lines and intermediate positions were protracted and the film positive was then adjusted to these positions. This gave satisfactory results. When using the film positive copy, all end positions pricked on the smooth sheet were checked by protracting methods. Intermediate positions as deemed necessary were also checked.

After having an opportunity to compare the film positive pricking method with the protracting method, I have found that little if any time was saved using the former. In an area where the sounding lines are much longer, such as ship hydrography, it may save time, however. When lines are only 4 to 6 positions long, having to check the end positions by protracting eliminates any of its advantages.

#### F. CONTROL

The visual method of horizontal control was used with photo-hydro and ✓

hydro signals transferred from the following photogrammetric compilations:

|         |                              |         |
|---------|------------------------------|---------|
| T-11991 | Advance manuscript completed | 5-11-62 |
| T-11907 | " " " "                      | " "     |

#### G. SHORELINE

The source of shoreline detail for the boatsheet was the advance manuscripts listed in section F of this report. The shoreline detail was verified or revised by the hydrographer, and changes in the shoreline and topographic details are shown on the boat sheet and on the manuscripts sent to the Washington Office for revision of blue line manuscripts. There were no major changes, but the revised and verified data was put on the smooth sheet with the aid of the boat sheet. The steep sloping bottom and low tide range, accompanied by heavy surf conditions prevented delineation of the low water line.

*\* See Review, par. 2*

#### H. CROSSLINES

The percentage of crosslines run was 10% with good agreement found at all crossings. There were no differences to reconcile except in shoal waters where discrepancies of less than 1 fathom were due to the irregular bottom.

#### I. JUNCTIONS

Satisfactory agreement was attained at all junctions with contemporary and prior surveys.

#### J. COMPARISONS WITH PRIOR SURVEYS

No pre-survey review items were included in the survey area.

This survey was compared with prior survey C&GS Register No. 3515, scale 1:20,000 dated February 1913. In general, the soundings offshore of the 20 fathom curve differed from the smooth sheet consistently from 2-3 fathoms. In all cases the prior survey showed deeper soundings. The 20 fathom curve of the prior survey was about 150 meters closer to the shore than that of the smooth sheet. Although these discrepancies exist, it is felt that the present

survey should supersede the prior survey.

From the 20 fathom to the 10 fathom curve, the prior survey showed about 1 fathom deeper than the smooth sheet. The location of the 10 fathom curve was in good agreement with the smooth sheet.

Inshore of the 10 fathom curve, the soundings on the prior survey were in good agreement with the smooth sheet. The prior survey showed the existence of a sunken rock at Lat.  $20^{\circ} 52.1' N$ , Long.  $156^{\circ} 09.25' W$  which was verified on the smooth sheet. A least depth of  $2.0^{\dagger}$  fms. (echo sounder) and a leadline sounding of 10 feet <sup>Corrected for tide = 7 feet L.D. or 1.1 fathoms</sup> was obtained on it, after sufficient development by drifting over the location for 15 minutes. Position 220e, blue is the detached position of the sunken rock. ✓

A development of a shoal at Lat.  $20-51.87^{\circ} N$ , Long.  $156-09.25 W$  indicated a shoal sounding of 1.3 fathoms obtained from the regular system of development lines. This agrees with the prior survey, which shows a shoal sounding of  $1-4/6$  fathoms at this location. ✓

A shoal development at Lat.  $20-52.0 N$ , Long.  $156-08.5 W$  indicated a shoal sounding of 4.1 fathoms obtained between position 198-199d which agrees with a sounding of  $4-5/6$  fathoms shown on the prior survey. *Not adequately developed. Additional development recommended. See Review par. 30.* ✓

#### K. COMPARISON WITH THE CHART

This survey was compared with the largest scale chart of the area, C&GS Chart 4116, scale 1:250,000, revised 6/11/62 which contained only 4 soundings in the area of the survey. These were in good agreement with the smooth sheet as well as can be determined owing to the large difference in scale. ✓

The four sunken rocks shown off Kanae Point on the chart should be deleted, and <sup>A</sup> a sunken ledge <sup>is</sup> shown as verified by the hydrographer on the smooth sheet, *in this area*

#### L. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede prior surveys for charting.

#### M. AIDS TO NAVIGATION

There were no fixed or floating aids to navigation in the survey area. The Church Steeple on Keanae Point should not be charted since it cannot be seen offshore, because it is surrounded by trees.

The large island at Lat. 20-52.75 N, Long. 156-10.5 W should be charted. It has two obvious peaks at the north and south ends of the island.

#### N. STATISTICS

| <u>Launch No.</u> | <u>No. of Pos.</u> | <u>Miles of sounding line</u> | <u>Bottom samples</u> |
|-------------------|--------------------|-------------------------------|-----------------------|
| 1                 | 669                | 54.7                          | -                     |
| 2                 | 483                | 41.3                          | -                     |
| 3                 | 7                  | -                             | 7                     |
| 4                 | 67                 | 6.2                           | -                     |
| Total             | <u>1226</u>        | <u>102.2</u>                  | <u>7</u>              |

The survey area includes approximately 1.7 square miles of hydrography. There were no tide, current, oceanographic or magnetic stations within the survey area.

#### O. MISCELLANEOUS

The area just west of Keanae Point is a good anchorage area which was used at various occasions by the Ship PATHFINDER. It has a good holding bottom of fine black sand and rocks. At times of strong northeasterly and easterly winds, there is little or no protection and under these conditions, it is not desirable as an anchorage.

In mild weather, the beach at signal LUX is a good landing area for a rubber raft or a skiff. This beach was used once for landing a signal building party. It is composed of sand and gravel.

Although the film positive copy of the boat sheet was intended primarily for use in transferring positions to the smooth sheet, it was also useful in locating verified, deleted, and revised positioning of foul areas, breaker lines and rocks awash on the smooth sheet.



P. RECOMMENDATIONS

There are no recommendations to be made. ✓

Q. REFERENCES TO REPORTS

Season's Report  
Fathometer Report

forwarded ✓

Respectfully submitted

*Richard A. Rader*

Richard A. Rader  
LTJG, USC&GS

Approved and forwarded

*H. S. Seaborg*  
H. S. Seaborg  
Captain, C&GS  
Comdg., USC&GSS PATHFINDER

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TIDE NOTE

PROJECT OPR-419 USC&GSS PATHFINDER HYDROGRAPHIC SURVEY H-8723, PF-5-2-63

The tide station used for this entire sheet was portable gage located in Hana Bay, Maui; Lat. 20-45-35N, Long. 155-59-07 W. The height of MLLW on the staff was 0.7 feet. The time meridian used was 150 W. No correction was applied for differences in time or height to observed tides. Hourly heights were computed in the field. Height of MLLW was supplied by the Washington Office.

GEOGRAPHIC NAME LIST

PROJECT OPR-419 USC&GSS PATHFINDER HYDROGRAPHIC SURVEY H-8723, PF-5-2-63 ✓

HONOMANU

HONOMANU STREAM

KEANAE

KEANAE POINT

MOIKI POINT

:

LIST OF STATIONS ON H-8723 (PF-5-2-63)

NAME USED IN  
HYDROGRAPHIC SURVEY

ORIGIN OF STATION

|                         |  |
|-------------------------|--|
| AMP                     | <del>T-11991</del> Shown on T-11907 (See note below) |
| ARM                     | T-11991  |
| BUS                     | Hydro Signal   |
| CAN                     | T-11991 (See note below)                             |
| CAR                     | T-11907  |
| CAT                     | T-11907 } (See note below)                           |
| DOG                     | T-11907 }  |
| EAR                     | T-11907  |
| FEZ                     | T-11907 (See note below)                             |
| HOD                     | T-11991  |
| LEN                     | T-11991 } (See note below)                           |
| LOG                     | T-11991 }  |
| LUX                     | T-11907 (See note below)                             |
| MUT                     | Hydro Signal   |
| NIL                     | T-11991 (See note below)                             |
| NUT                     | T-11991  |
| PAUWALU (HGS)-1877,1929 | Triangulation  |
| PET                     | T-11907 (See note below)                             |
| RED                     | T-11907  |
| SOX                     | Hydro Signal   |
| STE                     | T-11991  |
| WAG                     | T-11991 (See note below)                             |

The following stations were checked by utilizing a film negative of the advanced manuscript of T-11907 and T-11991

|     |     |
|-----|-----|
| CAR | CAN |
| CAT | LEN |
| DOG | LOG |
| FEZ | NIL |
| LUX | WAG |
| PET |     |
| AMP |     |

TIDE CORRECTORS: Sheet PF-5-2-63 H-8723  
Reference Station: Portable Tide Gage  
at Hana, Maui

|                            |        |                            |        |
|----------------------------|--------|----------------------------|--------|
| <u>12 March 1963</u>       |        | <u>8 April 1963</u>        |        |
| 0720-0850                  | -0.2   | 0700-0800                  | -0.1   |
| 0851-1142                  | -0.1   | 0801-1005                  | 0.0    |
| 1143-1300                  | -0.2 ✓ | 1006-1132                  | -0.1 ✓ |
| 1301-1440                  | -0.3   | 1133-1245                  | -0.2   |
| 1441-1748                  | -0.4   | 1246-1425                  | -0.3   |
|                            |        | 1426 <del>1425</del> -1625 | -0.4   |
|                            |        | 1626-1800                  | -0.3   |
| <u>3 April 1963</u>        |        | <u>24 May 1963</u>         |        |
| 0800-1205                  | -0.2   | 0615-0712                  | -0.1   |
| 1206-1300                  | -0.3 ✓ | 0713 <del>0712</del> -1058 | 0.0    |
| 1301-1630                  | -0.2   | 1059-1150                  | -0.1   |
| 1631-1700                  | -0.1   | 1151-1236                  | -0.2   |
|                            |        | 1237 <del>1256</del> -1326 | -0.3 ✓ |
| <u>4 April 1963</u>        |        | 1327 <del>1326</del> -1420 | -0.4   |
| 0800-1100                  | -0.2   | 1421 <del>1420</del> -1520 | -0.5   |
| 1101-1505                  | -0.3 ✓ | 1521 <del>1520</del> -1745 | -0.6   |
| 1506-1700                  | -0.2 ✓ | 1746 <del>1745</del> -1845 | -0.5   |
| 1701-1800                  | -0.1   | 1846 <del>1845</del> -1945 | -0.4   |
|                            |        | 1946 <del>1945</del> -2000 | -0.3   |
| <u>5 April 1963</u>        |        |                            |        |
| 0700-0945                  | -0.1   |                            |        |
| 0946 <del>0945</del> -1145 | -0.2 ✓ | <u>25 May 1963</u>         |        |
| 1146-1500                  | -0.3 ✓ | 0600-0645                  | -0.2   |
| 1501-1645                  | -0.2   | 0646 <del>0645</del> -0800 | -0.1   |
| 1646-1800                  | -0.1   | 0801 <del>0800</del> -1130 | 0.0    |
|                            |        | 1131 <del>1130</del> -1240 | -0.1 ✓ |
| <u>6 April 1963</u>        |        | 1241 <del>1240</del> -1330 | -0.2 ✓ |
| 0700-1030                  | -0.1   | 1331 <del>1330</del> -1420 | -0.3   |
| 1031 <del>1030</del> -1145 | -0.2 ✓ | 1421 <del>1420</del> -1508 | -0.4   |
| 1146 <del>1145</del> -1620 | -0.3 ✓ | 1509 <del>1508</del> -1925 | -0.5   |
| 1621 <del>1620</del> -1740 | -0.2   | 1926 <del>1925</del> -2000 | -0.4   |
| 1741 <del>1740</del> -1800 | -0.1   |                            |        |
|                            |        |                            |        |
| <u>7 April 1963</u>        |        |                            |        |
| 0700-1045                  | -0.1   |                            |        |
| 1046-1215                  | -0.2 ✓ |                            |        |
| 1216-1700                  | -0.3   |                            |        |
| 1701 <del>1700</del> -1800 | -0.2   |                            |        |

All correctors are in fathoms.

Note: All tide correctors were applied according to the hydro manual Sec. 5-100. All corrections were applied to the nearest one tenth of a fathom, since all echo soundings were less than 31 fathoms.

USC&GS SHIP PATHFINDER

OSS-30  
H. J. Seaborg, Comdg.

VELOCITY CORRECTIONS  
Hawaiian Islands  
OPR-419  
Maui Island

To be applied to all hydrography accomplished during the 1963 season.

| RANGE              | CORR. | RANGE              | CORR. |
|--------------------|-------|--------------------|-------|
| FROM - TO<br>(fms) | (fms) | FROM - TO<br>(fms) | (fms) |
| 0.0 - 2.9          | +0.0  | 50.0 - 53.5        | +2.2  |
| 3.0 - 5.3          | 0.1   | 54.0 - 58.0        | 2.4   |
| 5.4 - 7.5          | 0.2   | 58.5 - 63.0        | 2.6   |
| 7.6 - 9.5          | 0.3   | 63.5 - 67.5        | 2.8   |
| 9.6 - 11.6         | 0.4   | 68.0 - 72.0        | 3.0   |
| 11.8 - 14.0        | 0.5   | 72.5 - 76.5        | 3.2   |
| 14.2 - 16.2        | 0.6   | 77.0 - 81.5        | 3.4   |
| 16.4 - 18.4        | 0.7   | 82.0 - 86.5        | 3.6   |
| 18.6 - 20.8        | 0.8   | 87.0 - 91.5        | 3.8   |
| 21.0 - 23.0        | 0.9   | 92.0 - 96.5        | 4.0   |
| 23.2 - 25.2        | 1.0   | 97.0 - 102.        | 4.2   |
| 25.4 - 27.4        | 1.1   | 103. - 114         | 4.5   |
| 27.6 - 29.6        | 1.2   | 115 - 128          | 5.0   |
| 29.8 - 31.0        | 1.3   | 129 - 144          | 5.5   |
| 31.5 - 36.0        | 1.4   | 145 - 172          | 6.0   |
| 36.5 - 40.5        | 1.6   | *174 - 230         | 7.0   |
| 41.0 - 45.0        | 1.8   | 232 - 296          | 8.0   |
| 45.5 - 49.5        | 2.0   | 298 - 388          | 9.0   |

\* values from this depth onward are based on values from 1962 velocity curve.

ABSTRACT OF FATHOMETER CORRECTIONS TO H-8723 (PF-5-2-63)

| <u>Launch</u> | <u>Date</u> | <u>Day Letter</u> | <u>Fathometer Correction</u><br>(fms) | <u>Fathometer No.</u> |
|---------------|-------------|-------------------|---------------------------------------|-----------------------|
| 4             | 12 Mar.     | a                 | +0.4                                  | 68                    |
| 2             | 3 Apr.      | a                 | +0.4                                  | 141                   |
| 2             | 4 Apr.      | b                 | +0.3                                  |                       |
| 2             | 5 Apr.      | c                 | +0.3                                  |                       |
| 1             | 6 Apr.      | a                 | +0.4                                  | 140                   |
| 1             | 7 Apr.      | b                 | +0.4                                  |                       |
| 1             | 8 Apr.      | c                 | +0.4                                  |                       |
| 1             | 24 May      | d                 | +0.4                                  |                       |
| 1             | 25 May      | e                 | +0.4                                  |                       |

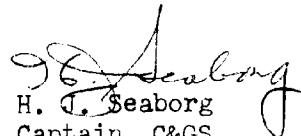
Initial corrections were scanned off each fathogram and entered directly in the sounding volume.

APPROVAL SHEET

REGISTRY NO. H-8723 (PF-5-2-63) ✓

The field work on this survey was inspected where conditions permitted. The records and smooth sheet have been examined and are approved.

The survey is considered complete and adequate for charting purposes and no additional field work is recommended.

  
H. T. Seaborg  
Captain, C&GS  
Comdg., Ship PATHFINDER





**TIDE NOTE FOR HYDROGRAPHIC SHEET**

Nautical Chart Division: R.H.Carstens

April 1, 1964

Plane of reference approved in  
6 volumes of sounding records for

HYDROGRAPHIC SHEET 8723

Locality Keanae Bay, Maui Island, Hawaii

Chief of Party: H.J. Seaborg

Plane of reference is mean lower low water reading

0.7ft. on tide staff at

10.0ft. below B. M. NO. 1 (1962)

Height of mean high water above plane of reference is: 2.0ft.

Condition of records satisfactory except as noted below:

:

  
Chief, Tides and Currents Branch

HYDROGRAPHIC SURVEY STATISTICS  
HYDROGRAPHIC SURVEY NO. 8723

RECORDS ACCOMPANYING SURVEY: To be completed when survey is registered.

| RECORD DESCRIPTION |               | AMOUNT               | RECORD DESCRIPTION |            | AMOUNT        |                            |
|--------------------|---------------|----------------------|--------------------|------------|---------------|----------------------------|
| SMOOTH SHEET       |               | 1                    | BOAT SHEETS        |            | 1             |                            |
| DESCRIPTIVE REPORT |               | 1                    | OVERLAYS           |            |               |                            |
| DESCRIPTION        | DEPTH RECORDS | HORIZ. CONT. RECORDS | PRINTOUTS          | TAPE ROLLS | PUNCHED CARDS | ABSTRACTS/SOURCE DOCUMENTS |
| ENVELOPES          | 5             |                      |                    |            |               |                            |
| CAHIERS            |               |                      |                    |            |               |                            |
| VOLUMES            | 6             |                      |                    |            |               |                            |
| BOXES              |               |                      |                    |            |               |                            |

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

| PROCESSING ACTIVITY                            | AMOUNTS                   |                |             |        |
|--|---------------------------|----------------|-------------|--------|
|  | PRE-VERIFICATION          | VERIFICATION   | REVIEW      | TOTALS |
| POSITIONS ON SHEET                             |                           |                |             | 1226   |
| POSITIONS CHECKED                              |                           | 482            |             |        |
| POSITIONS REVISED                              |                           | 19             |             |        |
| DEPTH SOUNDINGS REVISED                        |                           | 140            | 119         |        |
| DEPTH SOUNDINGS ERRONEOUSLY SPACED             |                           | 30             |             |        |
| SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED     |                           | NONE           |             |        |
|  | TIME (MANHOURS)           |                |             |        |
| TOPOGRAPHIC DETAILS                            |                           | 29             | 75          |        |
| JUNCTIONS                                      |                           | 10             | 30          |        |
| VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS |                           | 60             | 25          |        |
| SPECIAL ADJUSTMENTS                            |                           | 0              | 20          |        |
| ALL OTHER WORK                                 |                           | 155            | 74          |        |
| TOTALS   | :                         | 254            | 224+6       |        |
| PRE-VERIFICATION BY                            |                           | BEGINNING DATE | ENDING DATE |        |
| VERIFICATION BY                                | LARRY J. OLIVER LTJG NOAA | 12/9/71        | 2/10/72     |        |
| REVIEW BY                                      | Kenneth W. Wellman        | 1/5/73         | 5/22/73     |        |

Inspected D.R. Engle Carstens

942 hrs

7/11/73 8/17

7/19/73

OFFICE OF MARINE SURVEYS AND MAPS

MARINE CHART DIVISION

HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-8723

FIELD NO. PF-5-2-63

Hawaii, Maui Island, Vicinity of Keanae Point

SURVEYED: March - May 1963

SCALE: 1:5,000

PROJECT NO.: OPR-419

SOUNDINGS: Echo sounders, DE-723, 808,  
Leadline.

CONTROL: Sextant angles on  
shore signals

|                             |                    |
|-----------------------------|--------------------|
| Chief of Party .....        | H. J. Seaborg      |
| Surveyed by .....           | R. K. Hanson       |
| .....                       | S. R. Kotler       |
| Protracted by .....         | R. A. Rader        |
| Soundings plotted by .....  | R. A. Rader        |
| Verified and inked by ..... | L. J. Oliver       |
| Reviewed by .....           | K. W. Wellman      |
| .....                       | Date: May 22, 1973 |
| Inspected by .....          | D. R. Engle        |

1. Description of the Area

This survey covers the area in the vicinity of Keanae Point on the northeast coast of the Island of Maui. It extends westward from longitude  $156^{\circ}08'15''$  to longitude  $156^{\circ}10'30''$  and north from the general shoreline to latitude  $20^{\circ}52'45''$ . The bottom slopes gradually from the rocky foreshore to maximum depths of 31 fathoms along the north central limit of the survey area. The bottom consists of sand, coral, and rock.

2. Control and Shoreline

The source of control is given in the Descriptive Report.

The shoreline originates with reviewed photogrammetric surveys T-11907 of 1960-62 and T-11991 of 1960-63 supplemented by revisions made by the hydrographic party. These revisions are shown in red on the smooth sheet.

Several foreshore characteristics shown as "Rocky", "rky", or "Rk" on the above T-sheets and the boatsheet of the present survey, were described by the more appropriate term "Blds" on the smooth sheet.

Conflicting information on rock elevations existed between the boat-sheet and T-11991 because of the questionable use of the term "awash" by the field editor. Differences were reconciled thru conference with Photogrammetry personnel. (See paragraph 4).

### 3. Hydrography

- A. Depths at crossings are in good agreement.
- B. The usual depth curves, with the exception of the low water, one and two-fathom curves, were adequately delineated. Heavy surf conditions and foul areas prevented delineation of curves less than 3 fathoms.
- C. The development of the bottom configuration and the investigation of least depths are considered adequate with the exceptions of the shoal, indicated by the 4.1-fathom sounding, in the vicinity of lat.  $20^{\circ}52'00''$ , long.  $156^{\circ}08'30''$  which was not adequately developed.

### 4. Condition of the Survey

The field plotting, sounding records, and Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual except as noted below.

Numerous conflicts in rock elevations existed between the reviewed photogrammetric surveys and the field edit notes on the boatsheet. Field edit notes such as "Awash 7 feet at 10:10, 5 April 63" appears to be in error and were ignored. If accepted, these notes would indicate several rocks to be uncovered as much as 6 feet at MHW while photogrammetry had shown them to be awash at MLLW. Reexamination of the photographs confirmed the belief that the photogrammetric surveys were correct, and the rocks were shown accordingly on the smooth sheet.

### 5. Junctions

An adequate junction was effected with H-8720 (1963) on the north and east.

During review it was found that junctional data was transferred carelessly during verification of this survey. Excessive horizontal displacement of the transferred soundings and noncontinuous depth curves in the junctional area necessitated extensive revisions of the junction.

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6. Comparison with Prior Surveys

H-3515 (1913) 1:20,000  
 H-3518 (1913) 1:60,000  
 H-3519 (1913) 1:60,000  
T-3273 (1912) 1:20,000

These prior survey cover the area of the present survey. A comparison between the prior and the present surveys reveals general differences of 2 to 4 fathoms in the offshore areas and as much as 1 fathom near shore. These differences are attributed to the less accurate survey methods employed on the prior surveys. The 5 and 10-fathom curves have not been significantly changed by the lesser depths on the present survey, but the twenty fathom curve has shifted seaward approximately 100 meters in the area north of the Keanae peninsula and approximately 760 meters in the central area between Keanae Point and Moiki Point.

A few soundings and rocks not considered disproved by the present survey have been carried forward to supplement the present hydrography.

The more important ones are listed below:

|                    |                 |                  |
|--------------------|-----------------|------------------|
| A. 10-fm. sounding | lat. 20°52.14', | long. 156°08.44' |
| B. rock awash      | 20°51.85',      | 156°08.20'       |
| C. rock awash      | 20°51.95',      | 156°09.18'       |
| D. submerged rock  | 20°51.94',      | 156°09.63'       |

With the addition of these items from the prior surveys the present survey is adequate to supersede the prior surveys in the common area.

7. Comparison with Chart 4116 (latest print date August 7, 1971)A. Hydrography

The charted hydrography originates with the previously discussed prior surveys, supplemented by partial application of the boatsheet and smooth sheet of the present survey prior to verification and review.

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Attention is called to the southeastern islet of the three islets charted in the vicinity of lat.  $20^{\circ}52.6'$ , long.  $156^{\circ}10.3'$  which originated with an unascertainable source prior to the date of the present survey. The present survey shows a rock awash 20 m. westward but no islet at that position. The charted islet should be disregarded.

The present survey with the additions previously mentioned is adequate to supersede the charted hydrography within the common area.

B. Aids to Navigation

There were no aids to navigation within the area of the present survey.

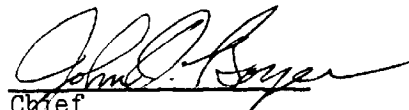
8. Compliance with Project Instructions

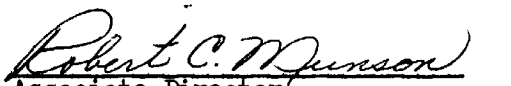
The survey adequately complies with the project instructions.

9. Additional Field Work

This is an adequate basic survey, however, determination of least depth on the 4.1-fathom shoal in lat.  $20^{\circ}50.0'$ , long.  $156^{\circ}08.5'$  is recommended when a survey party is again in the area.

Examined and Approved:

  
Chief  
Marine Chart Division

  
Associate Director  
Office of Marine Surveys and Maps

H-8723

Items for Future Presurvey Review

1. The 4.1-fathom shoal indication in lat.  $20^{\circ}52.0'$ , long.  $156^{\circ}08.5'$  should be developed to determine the least depth.
2. The items listed in paragraph 6, carried forward from prior surveys, should be verified or disproved.

Resurvey Cycle Information:

Position Index - lat. 205, long. 1562  
Bottom change index - 2  
Use index - 1  
Resurvey cycle - 50 yrs.

Position index - lat. 205, long. 1561  
Bottom change index - 2  
Use index - 1  
Resurvey cycle - 50 yrs.



