

8678

Original

Diag. Cht. No. 4116-2.

Form 504

U. S. DEPARTMENT OF COMMERCE
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey HYDROGRAPHIC

Field No. PF 20-1-62 Office No. H-8678

LOCALITY

State HAWAII

General locality MAUI ISLAND

Locality AUAU CHANNEL

19 62

CHIEF OF PARTY

ARTHUR L. WARDWELL

LIBRARY & ARCHIVES

DATE

FEB 1 1963

USCOMM-DC 5087

8678

HYDROGRAPHIC TITLE SHEET

H-8678

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 20-1-62

State HAWAIIGeneral locality MAUI ISLANDLocality AUAU CHANNELScale 1:20,000 Date of survey 20 April - 28 May 1962Instructions dated 25 October 1960, 9 January 1962Vessel SHIP PATHFINDERChief of party ARTHUR L. WARDWELLSurveyed by LTJG. C.W. MATHISSON, LTJG. R.A. TRAUSCHKE, LTJG. W.J. SENKOW, ENS. R.E. LUSKENTSoundings taken by echo sounder, ~~hand lead, wire~~Fathograms scaled by SHIP'S PERSONNELFathograms checked by SHIP'S PERSONNELProtracted by Ens. N. C. AustinSoundings penciled by Ens. N.C. AustinSoundings in fathoms ~~xxx~~ at ~~xxx~~ MLLW

REMARKS:



DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SURVEY H-8678 FIELD NO. PF-20-1-62

AUAU CHANNEL, MAUI ISLAND

HAWAIIAN ISLANDS

SCALE: 1:20,000

20 APRIL - 28 MAY 1962

Arthur L. Wardwell
Captain, C&GS
Comdg., Ship PATHFINDER

A. PROJECT:

Project OPR-419, instructions dated 25 October 1960 and 9 January 1962, and letter dated 30 January 1962.

B. AREA SURVEYED:

The area surveyed is in Auau Channel and junctions on the north with SU 40-1-61 H- , on the east with sheets SU-10-3-61 H-8578 and SU-10-2-61, H-8577 and on the south by SU-40-2-61 H-8583. Surveying operations were begun on 20 April 1962 and ended on 28 May 1962.

C. SOUNDING VESSELS:

All work was done with the Ship PATHFINDER (blue upper case letters).

D. SOUNDING EQUIPMENT:

Raytheon Survey Fathometer, model 723, serial number 145, was used throughout the survey. Velocity corrections were determined from an oceanographic station observed on 25 April 1962.

E. SMOOTH SHEET:

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

F. CONTROL:

All control for the survey was second or third order triangulation. "A" day was visually controlled and consisted of a development of the "reported 18 fathom sounding" at the north end of the sheet, and a few sounding lines in the south east corner of the area. "H" day was all bottom samples, visually controlled. Shoran control was used for the remaining days. Station WEA was

Located on triangulation station HAWEA. Station LAH was located on R.M. 1 of triangulation station Lahaina S.E. Base 1950.

G. SHORELINE:

There was no shoreline.

H. CROSSLINES:

Approximately 9% crosslines were run. No large discrepancies were encountered at crossings, and minor ones can be attributed to the irregular bottom.

I. JUNCTIONS:

¹⁴
~~Ten~~ instances were found where the junction depths listed in B disagreed considerably with soundings of the new survey. They are:

<u>Lat.</u>	<u>Long.</u>	<u>Junct. Plot</u> <i>not available</i>	<u>Smooth Plot</u>
20 52.4' N	156 45.9' W	29 Fath	38 Fath
20 52.55	156 45.85	23	38
20 52.3	156 44	15	24
20 52.4	156 44.1	16	18
20 52.55	156 44.15	17	24
20 53.1	156 45.9	37	18
20 53.4	156 45.9	49	29 (20 + E)
20 53.55	156 45.9	51	30 78
20 53.9	156 45.9	41	50
20 53.75	156 45.9	43	48
20 54	156 45.9	39	50
20 54.25	156 45.9	49	40
20 54.4	156 45.9	53	35
20 56.4	156 45.9	60	69

Because the bottom is highly irregular in some areas of the smooth sheet, it would have been surprising to not have had some junction discrepancies. In view of the fact that the junctions were made with surveys of recent years, it is recommended that the soundings of this survey replace the junction sounding only if it is shoaler. [NOTE: SEE ALSO PARAGRAPH O, RECOMMENDATIONS]

✓ In reference to the possibility of a ridge with soundings as shoal as 15 fathoms in Lat. 20° 52.3 and Long. 156° 44' in letter dated 30 January 1962 (211/pt), no indication of a shoal at such a depth was found.

J. COMPARISON WITH PRIOR SURVEYS:

Only one item in the presurvey review lies in the area covered by this smooth sheet. This item, item No. 1, was the 18 fathom sounding reported 1957 in the area of Lat. $20^{\circ} 59.4' N$, Long. $156^{\circ} 44.1' W$. A development was made in the area, but no indication of such a depth was encountered. It is, ^{THE 49 FATHOM} ~~AS SHOWN ON CHART~~ ^{AS SHOWN ON CHART} ~~#4130 WAS VERIFIED~~ therefore, recommended that this feature be deleted from the chart. ^{LAT - $20^{\circ} 59.08'$} ^{LONG - $156^{\circ} 44.1'$}

The new survey was compared with prior surveys (Hydrographic Survey No. 5297, February 1931 to March 1932, 1:40,000). H.S. No. 5292 was the only prior survey available which was applicable to this sheet. It did not cover the entire area of the new survey; to the extent it did cover, however, an agreement within two fathoms was found to exist in general. Locations where differences of more than two fathoms occurred are:

<u>Lat.</u>	<u>Long.</u>	<u>Prior Survey</u>	<u>Smooth Plot.</u>
$20^{\circ} 51.8$	$156^{\circ} 47.8$	19 fathoms	30 fathoms ?
$20^{\circ} 52.6$	$156^{\circ} 44$	22	18✓
$20^{\circ} 52.7$	$156^{\circ} 46.2$	29	19
$20^{\circ} 52.75$	$156^{\circ} 45.8$	38	19
$20^{\circ} 53.1$	$156^{\circ} 46.3$	30	20✓
$20^{\circ} 53.2$	$156^{\circ} 46.3$	33	20✓
$20^{\circ} 53.2$	$156^{\circ} 47.2$	33	26✓
$20^{\circ} 53$	$156^{\circ} 46.8$	General Area	
$20^{\circ} 53.2'$	$156^{\circ} 45.9$		18

The very irregular bottom is most likely the reason for all the discrepancies listed.

K. COMPARISON WITH THE CHART:

The plotted smooth sheet was compared to the largest scale chart of the area; C&GS 4130, 3rd Edition 30 December 1936, revised 2 June 1958, 1:80,000; and in general the two compared fairly well although a close comparison was not possible because of the scale of the chart. In the following areas, however, discrepancies of about ten fathoms were found.

<u>Lat.</u>	<u>Long.</u>	<u>Chart</u>	<u>Smooth Plot</u>
20° 51.1' N	156° 46.8' W	37 fathoms	22 fathoms
20° 52.9	156° 45.7	37	19
20° 53.0	156° 46.4	16	22 18 in vicinity
20° 53.5	156° 46.1	24	35
20° 53.6	156° 47.0	25	28 25 in vicinity
20° 54.4	156° 46.9	33	22 23 in vicinity
20° 54.5	156° 46.6	35	28

No new dangers to navigation were found.

L. ADEQUACY OF SURVEY:

The survey is complete and adequate to supersede prior surveys.

M. AIDS TO NAVIGATION:

Only ^{two} ~~one~~ aid appears on the sheet, Lahaina Light, and ^{HAWAII PT. LIGHT; BOTH ARE} ~~it is~~ in agreement with the 1962 light list.

N. STATISTICS:

STATISTICS FOR PF-20-1-62

<u>Date</u>	<u>Day Letter</u>	<u>Miles Sdg. Line</u>	<u>No. of Pos.</u>	
20 April	A	46.9	202	Visual
5 May	B	16.3	64	Shoran
6 "	C	51.8	172	Shoran
7 "	D	60.1	170	Shoran
8 "	E	82.8	224	Shoran
9 "	F	105.1	288	Shoran
10 "	G	79.5	233	Shoran
28 "	H	BOTTOM SAMPLES	<u>26</u>	Visual

1379 Total
Respectively submitted,

Ned C. Austin

Ned C. Austin
Ensign, C&GS

Approved and forwarded,

H. J. Seaborg

JAN 23 1963

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

O. RECOMMENDATIONS

Discrepancies (par. I) appear excessive; no completely satisfactory check could be made for this report.

All fathograms for H-8678 covering the noted areas of discrepancy were re-scanned and soundings verified. Fathograms for this area, B/S SU 40-2-61, were not available for checking.

It is also to be noted that the comparison was of a smooth sheet to a boat sheet and the irregularities might be partially eliminated after smooth plot of SU 40-2-61.

Nine of the fourteen listed discrepancies were the result of a single day's work (G day Surveyor) compared to two days (E/D day Pathfinder).

No general correction could be applied to any one day to overcome these discrepancies.

Approved and forwarded,

H. J. Seaborg

JAN 23 1963

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

TIDE NOTE

PROJECT OPR-419 USC&GSS PATHFINDER HYDROGRAPHIC SURVEY H-8678, PF 20-1-62

Corrections for tides were determined from tides observed with a portable automatic gage located on Mala Wharf, Lahaina, Maui(Lat. 20-53.4 N; 156-41.4 W). No correction was made for range or time. Mean lower low water is 0.4 feet on the tide staff. The tide station is in the 150 degree time meridian.

GEOGRAPHIC NAME LIST

PROJECT OPR-419 USC&GSS PATHFINDER HYDROGRAPHIC SURVEY H-8678, PF 20-1-62

No shoreline on sheet; no geographic name list.

DRAFT CORRECTIONS
SHIP PATHFINDER
1962

SHEET PF 10-4-62

Day	Corr.
A	+ 0.4
B	0.4
C	0.4

SHEET PF 20-1-62

Day	Corr.
A	+ 0.4
B	0.5
C	0.4
D	0.4
E	0.4
F	0.4
G	0.4

SHEET PF 20-2-62

Day	Corr.
A	+ 0.3
B	0.3
C	0.4
D	0.4
E	0.4
F	0.4
G	0.4
H	0.4

SHEET PF 40-1-62

Day	Corr.
A	+ 0.4
B	0.4
C	0.4
D	0.5
E	0.5
F	0.5
G	0.4
H	0.5
J	0.5

SHEET SU 40-1-61

Day	Corr.
A	+ 0.3
B	0.3
C	0.5
D	0.4

SHEET SU 40-2-61

Day	Corr.
A	+0.4
B	0.3
C	0.4

Note: All corrections in fathoms.

LEADLINE COMPARISON
SHIP PATHFINDER
DE-723 # 145
1962

Midship draft = 15.1 ft. = 2.5 fm. Initial set at 2.0 fm.

Velocity correction = + 0.5 fm.

Leadline	Fath.rdg.	Corr. fath.rdg.	Instrument error
14.5	13.6	14.6	+ 0.1
14.5	13.6	14.6	+ 0.1
14.5	13.5	14.5	0.0
14.5	13.5	14.5	0.0
14.5	13.5	14.5	0.0
14.5	13.5	14.5	0.0
14.5	13.6	14.6	+ 0.1
14.6	13.7	14.7	+ 0.1
14.8	13.8	14.8	0.0
14.8	13.7	14.7	- 0.1

Mean instrument error = + 0.03 Therefore the correction for
instrument error is small enough to neglect.

Corr. fath.rdg. = Fath.rdg. + velocity corr. - Initial - Midship draft.

Instrument error = Corr. fath.rdg. - leadline

All readings and corrections in fathoms.

USC&GSS PATHFINDER, OSS-30
A. L. Wardwell, Cmdg

VELOCITY CORRECTIONS
Hawaiian Islands
OPR-419
Maui Island

To be applied to all Hydrography accomplished during the
1962 Season.

RANGE			CORR. (Fms)	RANGE			CORR. (Fms)
FROM	-	TO		FROM	-	TO	
		(Fms)				(Fms)	
0.0	-	3.0	+ 0.0	98.3	-	101.6	+ 4.3
3.1	-	5.2	+ 0.1	101.7	-	106.7	+ 4.5
5.3	-	7.5	+ 0.2	106.8	-	112.1	+ 4.7
7.6	-	9.6	+ 0.3	112.2	-	118.1	+ 4.9
9.7	-	11.8	+ 0.4	118.2	-	124.2	+ 5.1
11.9	-	15.2	+ 0.5	124.3	-	130.2	+ 5.3
15.3	-	19.6	+ 0.7	130.3	-	137.0	+ 5.5
19.7	-	24.0	+ 0.9	137.1	-	143.5	+ 5.7
24.1	-	28.4	+ 1.1	143.6	-	151.5	+ 5.9
28.5	-	32.7	+ 1.3	151.6	-	161.5	+ 6.1
32.8	-	37.3	+ 1.5	161.6	-	185.0	+ 6.5
37.4	-	41.6	+ 1.7	185.1	-	211.8	+ 7.0
41.7	-	46.0	+ 1.9	211.9	-	241.8	+ 7.5
46.1	-	50.4	+ 2.1	241.9	-	276.0	+ 8.0
50.5	-	55.0	+ 2.3	276.1	-	316.0	+ 8.5
55.1	-	59.7	+ 2.5	316.1	-	364.0	+ 9.0
59.8	-	64.3	+ 2.7				
64.4	-	69.2	+ 2.9				
69.3	-	74.1	+ 3.1				
74.2	-	78.9	+ 3.3				
79.0	-	83.8	+ 3.5				
83.9	-	88.7	+ 3.7				
88.8	-	93.6	+ 3.9				
93.7	-	98.2	+ 4.1				

Comp: SRK
Chkd: SRP
Typed: JLB
Chkd: LLP

TIDE CORRECTORS: SHEET PF-20-1-62 H-8678
 Reference Station: Lahaina, Maui, Hawaii
 MLLW on staff 0.4 ft.
 No time or range factors

20 April 1962	5 May 1962	6 May 1962
0900-1026 0.0 fms	1500-2000 -0.4 fms	0700-0847 -0.1 fms
1027-1213 -0.1		0848-1200 0.0
1214-1322 -0.2		1201-1312 -0.1
1323-1500 -0.3		1313-1423 -0.2
1501-1800 -0.4		1424-1545 -0.3
1801-1920 -0.3		1545-end -0.4
7 May 1962	8 May 1962	9 May 1962
0900-1000 -0.1 fms	0800-1410 -0.1 fms	0800-1030 -0.2 fms
1001-1230 0.0	1411-1542 -0.2	1031-1413 -0.1
1231-1350 -0.1	1543-1710 -0.3	1414-1628 -0.2
1351-1500 -0.2	1711-2200 -0.4	1629-1838 -0.3
1501-1628 -0.3		1839-2114 -0.4
1629-2040 -0.4		2115-0000 -0.3
10 May 1962	28 May 1962	
0000-0023 -0.3 fms	1025-1537 -0.2fms	
0024-0244 -0.2	1538-1900 -0.1	
0600-1737 -0.2		
1738-2100 -0.3		

Computed & Checked : L.L.P. S.R.P.
 Typed: L.L.P.
 Checked: J.D.R.

LIST OF STATIONS ON H-8678 (PF 20-1-62)

NAME USED IN HYDRO-
GRAPHIC SURVEY

ORIGIN OF STATION

HAIN

all are triangulation stations

HAW

LAH

MALA

PIONEER

PUU

WEA

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. 8678

Records accompanying survey: Smooth sheets 1....;
 boat sheets 1....; sounding vols. 5....; wire drag vols.;
 Descriptive Reports 1....; graphic recorder envelopes 4....;
 special reports, etc.

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

Number of positions on sheet	.....	<u>1379</u>
Number of positions checked	.....	<u>62</u>
Number of positions revised	.....	<u>25</u>
Number of soundings revised (refers to depth only)	.....	<u>To many</u>
Number of soundings erroneously spaced	.....
Number of signals erroneously plotted or transferred	.....
Topographic details	Time	.....
Junctions	Time	.....
Verification of soundings from graphic record	Time	<u>21 hours</u>
Special adjustments	Time	<u>5 hours</u>

Verification by William H. Schugold Total time 104 hours Date 8 Sept. 1965

Reviewed by Time Date

VERIFIER'S REPORT OF HYDROGRAPHIC SURVEY NO. H-8678

The verifier should deal with the present hydrographic survey only, as the reviewer considers its relation to previous surveys and published charts. He should be thoroughly familiar with Chapters 3, 7 and 9 of the Hydrographic Manual.

- 1.✓ The descriptive report was consulted and appropriate notes were made in soft pencil regarding action taken.
- 2.✓ Soundings originating with the survey and mentioned in the descriptive report have been verified, including latitude and longitude.
- 3.✓ All reference to survey sheets mentioned in the descriptive report include the registry number and year.
4. Geographic names of hydrographic features if on sheet are in slanting lettering and of topographic features in vertical lettering.
- 5.✓ All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken.
- 6.✓ All positions verified instrumentally were check marked in the sounding records.
- 7.✓ All critical soundings are clear and legible and are a little larger than the adjacent soundings.
- 8.✓ The metal protractor has been checked within the last three months.
Steel Protractor #592 9/1/65
- 9.✓ The protracting and plotting of all bad crossings were verified.
- 10.✓ All detached positions locating critical soundings, rocks or buoys were verified.
- 11.✓ The boat sheet was compared with the smooth sheet.
The boat sheet was useful as a general guide.

- 12✓ The spacing of soundings as recorded in the records was closely followed.
- 13✓ The bottom characteristics were shown on outstanding shoals.
The number of bottom characteristics ~~to be~~ were sufficient
- 14✓ The reduction and plotting of doubtful soundings were checked.
15. The transfer of contemporary topographic information was carefully examined.
To be completed in Washington *off shore survey does not require shoreline*
16. All junctions were transferred and overlapping curves made identical.
To be completed in Washington
17. The notation "JOINS H- (19--)" was added in ink for all contemporary adjoining or overlapping sheets now registered. Those not verified are shown in pencil.
To be completed in Washington
- 18✓ The depth curves have been inspected before inking.
By H. L. Politt, Supervisor
19. All triangulation stations and transfer of topographic and hydrographic signals were checked.
To be completed in Washington
- 20✓ Heights of rocks were checked against range of tide.
21. Rocks transferred from topographic surveys have a dotted curve where shown thereon. Rocks located accurately by hydrographer are encircled by dotted red curve.
Superseded
- 22✓ Unnecessary pencil notes have been removed.
- 23✓ Objects on which signals are located and which fall outside of the low water line have been described on the sheet.
- 24✓ The low water line and delineation of shoal areas have been properly shown.
This is an offshore survey
- 25✓ Degree and minutes values and symbols have been checked.
- 26✓ Questionable soundings have been checked on the fathograms.

27. Source of shoreline and signals (when not given in report).

To be completed in Washington

28. All notes on sheet are in accordance with figure 171 in the Hydrographic Manual.

29. All aids located, with those on contemporary topographic sheets, have been shown on survey.

No aids to navigation were located on this survey

30. Depth curves were satisfactory except as follows:

Depth curves on this survey were satisfactory.

31. Sounding line crossings were satisfactory except as follows:

Distances on Sta. "WEA" between positions 205F thru 217F, 9 May 1962, believed to be incorrect by 1 mile. The soundings are in disagreement with surrounding hydrography. Both sounding lines are being submitted on an overlay.

32. Junctions with contemporary surveys were satisfactory except as follows:

To be completed in Washington

33. Condition of sounding records was satisfactory except as follows:

a) No detached rocks were located on this survey. b) Line fixings were recorded properly. c) Position values at the beginning and ending of lines were entered. d) The number of bar checks taken were sufficient. e) Time recording was satisfactory. f) Notes on fathograms were transferred to the record books. g) The reduction of soundings was accurately done. h) The scanning of fathograms was poor. i) Peaks at uneven intervals were missed.

34. The protracting was satisfactory except as follows:

The protracting was satisfactory —

35. The field plotting of soundings was satisfactory except as follows:

The field plotting of soundings was satisfactory —

36. Notes to reviewer:

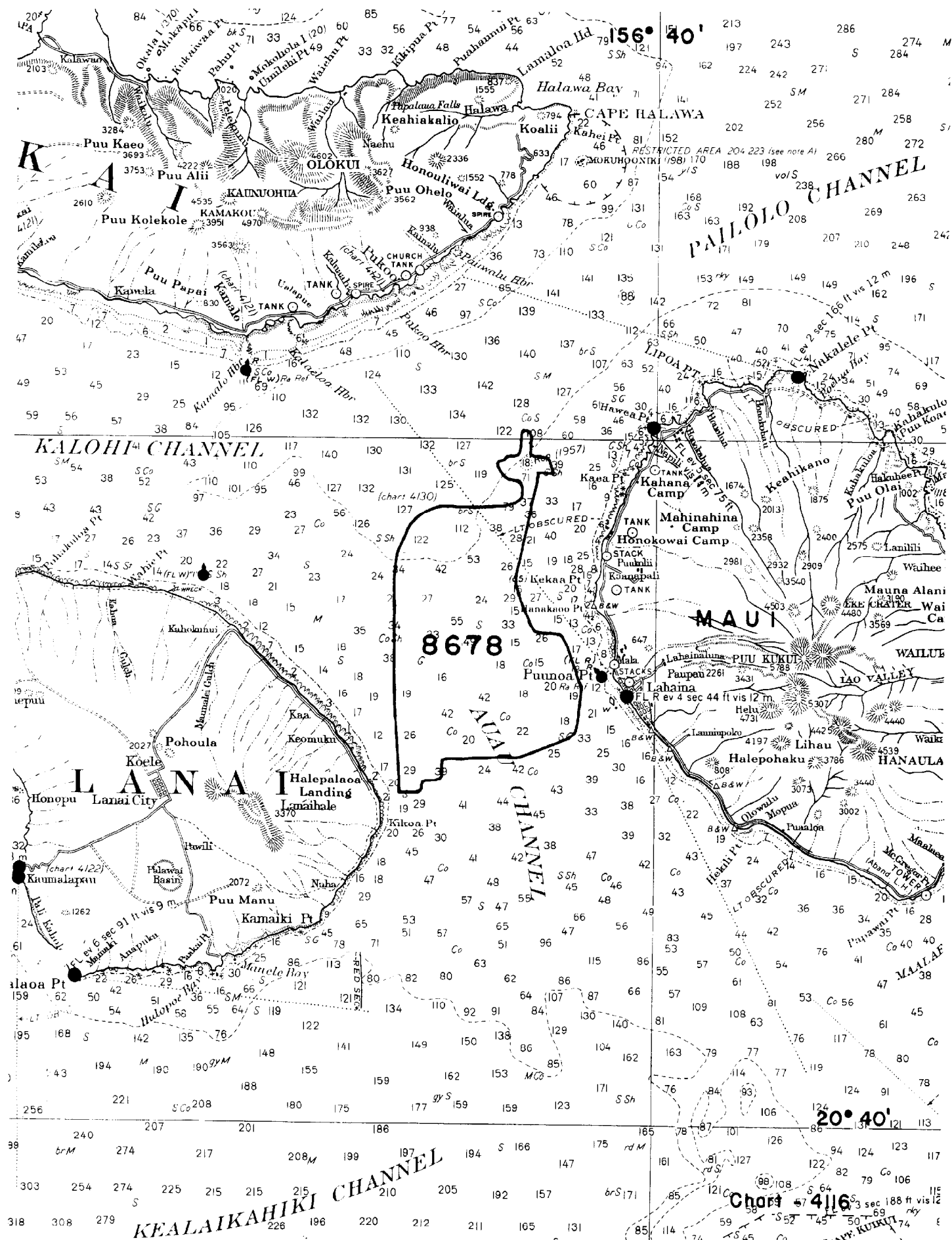
Line 35B thru 43B, 5 May, 1962 unable to be plotted. Control questionable.

See overlay — chart comparison —

Verified by

Alan K. Schupel

Date *8 Sept. 1965*



TIDE NOTE FOR HYDROGRAPHIC SHEET

4/8/63

Nautical Chart Division: R. H. Carstens

Plane of reference approved in
5 volumes of sounding records for

HYDROGRAPHIC SHEET 8678

Locality Maui Island, Hawaii

Chief of Party: A.L. Wardwell (1962)

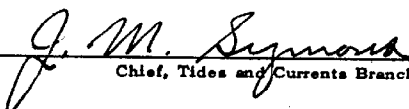
Plane of reference is Mean lower low water reading

0.4 ft. on tide staff at Lahaina (Mala Wharf)

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

Height of mean high water above plane of reference is : 1.5 ft.

Condition of records satisfactory except as noted below:



Chief, Tides and Currents Branch

NAUTICAL CHARTS BRANCH

SURVEY NO. H-8678

Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
3/26/64	4130	G.R. Johnson	Before After Verification and Review Partly Applied
3/26/64	4116	G.R. Johnson	Before After Verification and Review Partly Applied thru cht 4130, drg #11
3/31/64	4102	G.R. Johnson	Before After Verification and Review Partly Applied thru cht 4116, drg #13
9-11-64	4180	E.M.B	Before After Verification and Review Partly applied thru cht 4130 #11. added several edg
9/10/75	400	M.D. LAVIS	Before After Verification and Review Part applied thru Chart 4102 - no corrections
9/19/75	4179	HAUSMAN	Before After Verification and Review Exam for Partial Application NO CHART CORR.
12-22-77	4116	M. SAGER	Before After Verification and Review Examined changed (CAT I) 65 fm to 49 fm & labeled 18 fm ED. Consider Final Appl.
5/7/79	4125	RAITER	Before After Verification and Review Drg 6 Rinal as class 1
2/5/80	540	M. Sager	Before After Verification and Review Cat I Final Application Thru 19340 (4116)
3/17/80	19004 (4102)	Stembel	Before After Verification and Review Cat I. Consider fully applied. App'd thru 19340 (4116)
3-23-83	19007	L.A. Simmons	Cat. I. Consider fully app'd thru 19010 #12 Exam. No Correction.

M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.