

9235

Diag. Cht. No. 4115

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT
(HYDROGRAPHIC)

Type of Survey **HYDROGRAPHIC**
Field No. **FA-5-2-71**
Office No. **H-9235**

LOCALITY

State **HAWAII**
General Locality **NORTHWEST COAST OF HAWAII**
Locality **HONOKAOPE BAY TO ANAEOHOMALU BAY**

1971

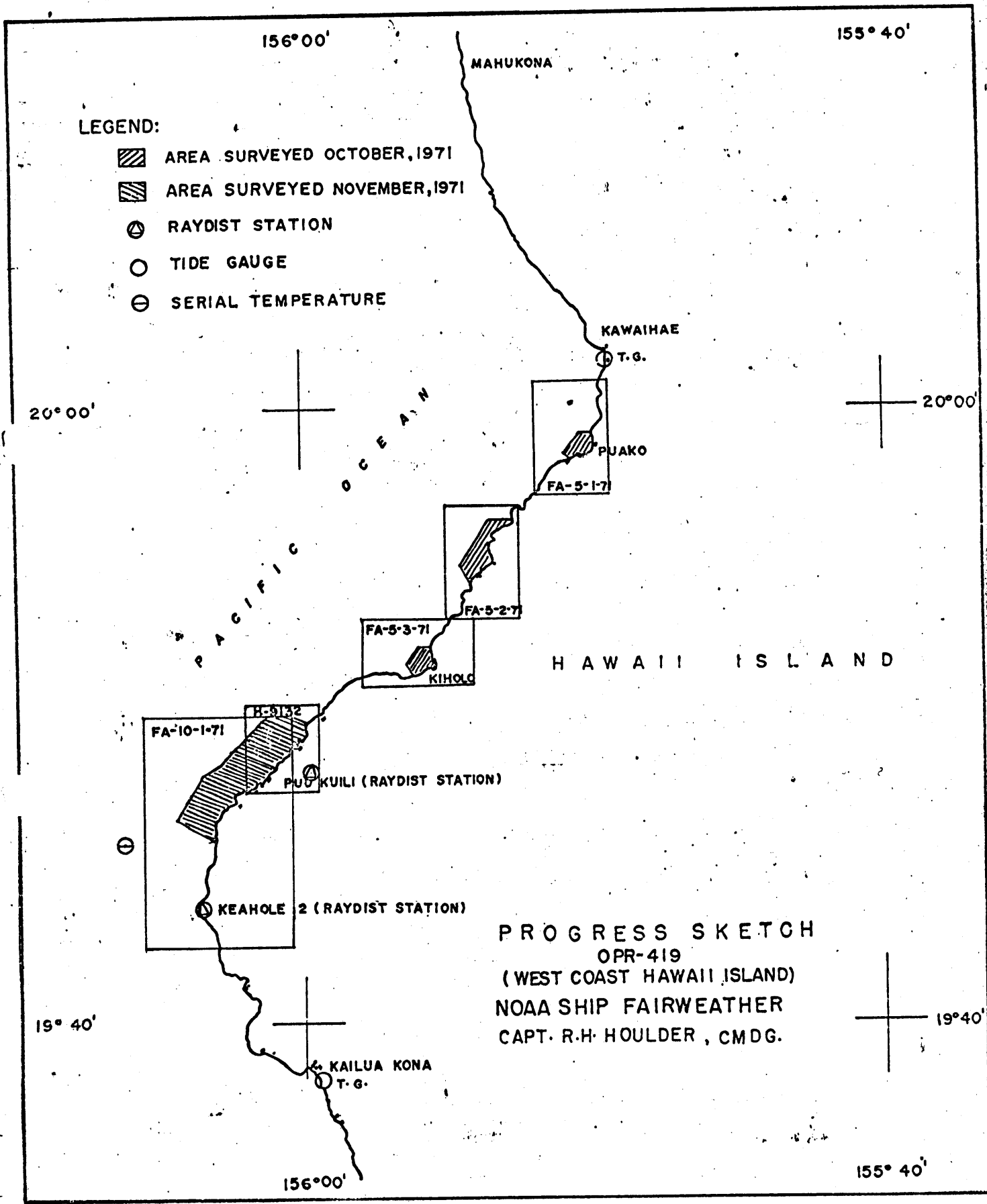
CHIEF OF PARTY
R. H. HOULDER

LIBRARY & ARCHIVES






DATE **11-7-74**

9235

see 6



LEGEND:

-  AREA SURVEYED OCTOBER, 1971
-  AREA SURVEYED NOVEMBER, 1971
-  RAYDIST STATION
-  TIDE GAUGE
-  SERIAL TEMPERATURE

PROGRESS SKETCH
 OPR-419
 (WEST COAST HAWAII ISLAND)
 NOAA SHIP FAIRWEATHER
 CAPT. R.H. HOULDER, CMDG.

Descriptive Report
to Accompany
Hydrographic Sheet H-9235 (FA-5-2-71)
West Coast of Hawaii Island, Hawaii
Scale 1:5,000
NOAA Ship FAIRWEATHER (MSS-20)
CAPT. R. H. Houlder, Commanding

A. PROJECT

The survey was accomplished under OPR-419 project instructions dated 17 September 1971 and in accordance with the PMC OORDER. ✓✓

B. AREA SURVEYED

The survey was made off the west coast of Hawaii Island and extended from Honokaope Bay on the north to and including Anaehoomalu Bay on the south. East-west hydrographic lines were run from the coast line to about one-half mile off the coast, the northernmost line at 19°56'41" N., and the southernmost line at 19°54'40" N. The survey junctions with prior survey H-9131, scale 1:10,000, accomplished by NOAA Ship PATHFINDER in 1970. ✓✓
The survey junctions on the north with survey H-9018, 1:10,000, also done in 1970 by NOAA Ship PATHFINDER.

C. SOUNDING VESSELS

One FAIRWEATHER launch and one modified Boston Whaler were used in accomplishing the hydrography. The following are the color codes applicable to each vessel: ✓✓

FA-4	Green
FA-6	Brown

D. SOUNDING EQUIPMENT

Launch 4 used a Ross 400A Fineline fathometer. The modified Boston Whaler used a Raytheon ~~FA-723~~ fathometer, serial number 561, in its work. ✓✓
FE-723

Velocity corrections were determined from serial temperature and salinity observations. Bar checks were taken daily. An abstract of the cumulative corrections to the soundings of the survey is included in this report.

E. SMOOTH SHEET

The position and sounding data were recorded, logged for automated processing and plotted by ship's personnel using the digital PDP-8/E computer. The signal list was prepared by ship's personnel. The final smooth sheet is to be plotted electronically and verified by personnel at Pacific Marine Center. ✓✓

F. CONTROL

The hydrography was accomplished by visual fix methods. Signals were located using a Wild T-2 Theodolite and MRA-3 Mark II Tellurometers. Third order specifications were followed in establishing the control. All computations were based on Hawaiian State Plane coordinate system Zone 1 and were performed on NOAA Ship FAIRWEATHER's PDP-8/E computer.

✓

G. SHORELINE

No manuscripts were available that were the same scale as the survey (1:5,000) and shoreline was delineated using 1:10,000 advance manuscripts T-12534 and T-12536. These manuscripts were photographed and the negative was enlarged to the appropriate scale. No discrepancies were noted in the field.

✓
21412
PH-6401
6402

T-12535 (1:5000) applied during inspection.

H. CROSSLINES

Crosslines of over 10 percent of the principal system of sounding lines were in good agreement.

✓

I. JUNCTIONS

The survey junctions with H-9018, scale 1:10,000, on the north and H-9131⁽¹⁹⁶⁵⁻⁷⁰⁾ on the west and south. In both surveys, soundings agreed to within six feet except in areas of an irregular bottom where in some instances discrepancies up to ten feet were noted.

✓

J. COMPARISON WITH PRIOR SURVEY

The survey was not compared to any prior survey.

✓

K. COMPARISON WITH THE CHART

The survey was compared to C&GS Chart 4140, 1:80,000, 4th edition, October 25, 1969, revised July 24, 1971 and soundings agreed to within 6 feet. The charted rock awash at 19°55'04" N., 155°54'06" W. was not verified by the survey although a potentially dangerous rock was found nearby at 19°55'00.5" N., 155°54'06.0" W. (D.P. 5529). A charted sunken rock dangerous to surface navigation is charted at 19°55'01" N., 155°54'06" W. This also was not verified although a ~~sunken~~ rock was found at 19°54'59.5" N., 155°53'57.5" W. (D.P. 5528) (2)

✓

L. ADEQUACY OF THE SURVEY

The survey is complete and adequate for charting purposes.

✓

PH-6402

M. AIDS TO NAVIGATION

There were no aids to navigation found in the survey area. ✓ ✓

N. STATISTICS

	<u>FA-4</u>	<u>FA-6</u>
Number of positions	786	181
Sounding lines (n.m.)	62.2	6.3
Area of survey (Sq. n.m.)		

✓

O. MISCELLANEOUS

None. ✓

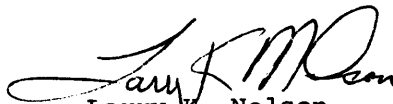
P. RECOMMENDATIONS

None. ✓

Q. REFERENCES TO REPORTS

1. Season's Report, NOAA Ship FAIRWEATHER, 1971.
 2. Field Edit Report, OPR-419, NOAA Ship FAIRWEATHER, 1971.
 3. Fathometer Report, OPR-419, NOAA Ship FAIRWEATHER, 1971.
 4. Coast Pilot Report, OPR-419, NOAA Ship FAIRWEATHER, 1971.
 5. Traverse and Triangulation Report, OPR-419, NOAA Ship FAIRWEATHER, 1971.
 6. PDP-8/E Software and Processing Report, OPR-419, NOAA Ship FAIRWEATHER, 1971.
 7. PDP-8/E Hardware Report, OPR-419, NOAA Ship FAIRWEATHER, 1971.
- ✓ ✓

Respectfully submitted,


Larry K. Nelson
LT., NOAA

PHASE CORRECTIONS

Bench checks for all DE-723 instruments were accomplished in May prior to the start of the field season. Digital phase checks were initiated on the FAIRWEATHER at the end of the field season. Included in this report are the tabulations of Bench checks and Digital phase checks for the following fathometers: 533, 542, and 561. These phase corrections have been tabulated and sent to PMC separately with the velocity corrections.

Daily phase checks were made where bottom relief allowed such comparisons and any errors were noted in the hydrographic sounding volumes.

The results of the tabulated Digital phase checks indicate the following:

1. No corrections need be applied to work accomplished by fathometers #533 and 561 in the fathoms mode.
2. Corrections to work accomplished by fathometer #542 in the fathoms mode need to be applied as follows:
0 to 240 fathoms +0.6 fm
3. In the feet mode, fathometer #542 has no corrections.
4. In the feet mode, fathometer #533 has following corrections:

<u>Depth (feet)</u>	<u>Correction (feet)</u>
0 to 75	0
80	+0.9
90	+0.5
100	+0.6
110	+1.0
240	0

5. In the feet mode, fathometer #561 has following corrections:

<u>Depth (feet)</u>	<u>Correction (feet)</u>
0 to 10	0.5
20	0.4
30	0.6
40	0.2
50	0.3
60	0.3
70	
80	0.4
90	1.0
120	0.5
130	1.0
210	.8
230	.9
231 to 240	0

DE-723 Instrument Phase Check Corrections

Fathometer No. 561

FA-6

Project No. 419

18 MAY 1971

24 FEB 1972

Scale	Bench Check			Digital Phase Check	
	Correct depth	Indicated depth	Correction	Indicated depth	Correction
A	10	FT.	FT.	10.5 FT.	-0.5 FT
	20			20.4	-0.4
	30			30.6	-0.6
	40	39.8 FT.	+0.2 FT.	40.2	-0.2
B	50			50.3	-0.3
	60			60.3	-0.3
	70			70.7	-0.7
	80	80.0	0.0	80.4	-0.4
C	90			91.0	-1.0
	100			101.0	-1.0
	110			111.0	-1.0
	120	120.0	-0.0	120.5	-0.5
D	130			131.0	-1.0
	140			141.0	-1.0
	150			151.0	-1.0
	160	159.9	+0.1	160.9	-0.9
E	170			171.0	-1.0
	180			181.0	-1.0
	190			191.0	-1.0
	200	199.8	+0.2	200.9	-0.9
F	210			211.0	-1.0
	220			220.8	-0.8
	230			230.9	-0.9
	240	240.0	0.0	240.0	0.0

VELOCITY CORRECTORS

Velocity Table Number 1 corrector's was used for Launch (FA-4) Ross
400A Fineline.

Velocity Table Number 4 corrector's was used for Launch (FA-6) Hydro
Barge Raytheon DE-723 Serial No. 561. Table was constructed at PNC
using velocity Table 1 and phase correctors from Table 4.

VELOCITY CORRECTIONS
West Coast, Hawaii Island
OPR-419 1971
NOAA Ship FAIRWEATHER (MSS-20)
CAPT. R. H. Houlder, Commanding

Corrections to be applied to the following sheets:

- FA-5-1-71
- FA-5-2-71
- FA-5-3-71

The following table will be used between the dates of 16 October 1971 and 18 November 1971.

<u>APPLICABLE DEPTHS</u> (Feet)	<u>CORRECTIONS</u> (Feet)
0.0	0.0
9.0	+ .3
16.4	+ .65
23.0	+ .98
29.5	+1.3
36.1	+1.6
57.4	+2.7
73.8	+3.53
90.2	+4.35
106.6	+5.17
123.0	+5.99
139.4	+6.81
155.8	+7.64
172.2	+8.46
287.1	+14.2
369.0	+18.2
574.0	+27.4

ECHO CORRECTIONS

West Coast, Hawaii Island

OPR-419 1971

NOAA Ship FAIRWEATHER (MSS-20)
CAPT. R. H. Houlder, Commanding

SHEET	DATE	CORRECTIONS	POSITIONS
<u>LAUNCH FA-4</u>			
FA-5-2-71	10-17-71 ²⁹⁰	+2.8 feet	5001-5119
	10-18-71 ²⁹¹	+2.8 "	5120-5231
	10-19-71 ²⁹²	+2.1 "	5232-5371
	10-20-71 ²⁹³	+2.0 "	5372-5483
	10-21-71 ²⁹⁴	+2.3 "	5484-5612
	10-27-71 ³⁰⁰	+2.5 "	5618-5731
	10-29-71 ³⁰²	+2.8 "	5732-5787
	10-31-71 ³⁰³	--- **	5788-5794
H-9132	10-30-71	--- *	6001-6009
	11-01-71	+0.2 fathoms	6010-6040
	11-02-71	+0.3 "	6041-6208
FA-10-1B-71	11-04-71	+0.3 "	4028-4058
	11-10-71	+0.3 "	4059-4128
	11-11-71	+0.3 "	4129-4218
	11-13-71	+0.3 "	4219-4228
	11-14-71	+0.3 "	4236-4342
	11-15-71	+0.4 "	4343-4522
	11-16-71	+0.4 "	4523-4670
	11-17-71	+0.4 "	4671-4754

--- * Bottom samples taken.

--- ** Detached positions.

ECHO CORRECTIONS

West Coast, Hawaii Island

OPR-419 1971

NOAA Ship FAIRWEATHER (MSS-20)
CAPT. R. H. Houlder, Commanding

SHEET	DATE	CORRECTIONS	POSITIONS
<u>LAUNCH FA-6 (Hydro Skiff)</u>			
FA-5-1-71	10-27-71	0.0 feet	4000-4002
	10-27-71	+0.7 "	4003-4013
	10-27-71	0.0 "	4014-4018
	10-27-71	+0.7 "	4019-4021
	10-27-71	0.0 "	4022-4026
	10-27-71	+0.7 "	4027-4029
	10-27-71	0.0 "	4031, 4033
	10-27-71	+0.7 "	4035-4049
	10-27-71	0.0 "	4050-4054
	10-27-71	+0.7 "	4055-4058
	10-27-71	0.0 "	4060-4065
	10-27-71	+0.7 "	4066-4069
	10-27-71	0.0 "	4070, 4072
	10-27-71	+0.7 "	4073-4076
	10-27-71	0.0 "	4077
	10-27-71	+0.7 "	4078-4080
10-27-71	0.0 "	4081-4089	
FA-5-2-71	10-28-71 301	+0.8 feet	4000-4111
	10-30-71 303	+0.6 "	4120-4122
	10-30-71 303	+0.6 "	4130-4136
	10-30-71 303	+0.6 "	4140-4180
FA-5-3-71	11-01-71	0.0 feet	2301-2313
	11-01-71	+0.7 "	2314-2317
	11-01-71	0.0 "	2318-2320
	11-01-71	+0.7 "	2321-2327
	11-01-71	0.0 "	2328-2329
	11-01-71	+0.7 "	2330-2341
H-9132	11-13-71	+0.2 fathoms	2201-2225
	11-13-71	+0.7 "	2226-2245
	11-13-71	+0.2 "	2246-2252
	11-13-71	+0.7 "	2253

INITIAL CORRECTIONS

West Coast, Hawaii Island

OPR-419 1971

NOAA Ship FAIRWEATHER (MSS-20)

CAPT. R. H. Houlder, Commanding

SHEET	VESSEL	CORRECTIONS	POSITIONS
FA-5-1-71	FA-3	0.0	3001-3804
	FA-6 (Hydro Skiff)	0.0	4000-4089
FA-5-2-71	FA-4	0.0	5001-5794
	FA-6 (" ")	0.0	4000-4180
FA-5-3-71	FA-3	0.0	2001-2283
	FA-6 (" ")	0.0	2301-2341
H-9132	FA-4	0.0	6001-6208
	FA-3	0.0	2001-2200
	FA-6 (" ")	0.0	2201-2253
FA-10-1B-71	FA-3	0.0	2005-2245
	FA-4	0.0	4028-4754

LIST OF SIGNALS
Sheet H-9235

OPR-419 1971
West Coast, Hawaii Island
NOAA Ship FAIRWEATHER (MSS-20)
CAPT. R. H. Houlder, Commanding

Note: Positions probably expressed in degrees, minutes and seconds rather than seconds expressed in meters as indicated

<u>Signal Number</u>	<u>LATITUDE (° ' m)</u>	<u>LONGITUDE (° ' m)</u>
025	19° 56' 3615m	155° 52' 4966m
026	19 56 2280	155 52 4853
027	19 56 1437	155 53 0174
028	19 56 1169"	155 53 1352"
029	19 56 0927	155 53 1934
030	19 56 0598	155 53 2460
031	19 55 5520	155 53 3168
032	19 55 4864	155 53 2496
033	19 55 4393	155 53 2668
034	19 55 3771	155 53 3835
035	19 55 2716	155 53 3583
036	19 55 1757	155 53 3464
037	19 55 1182	155 53 2619
038	19 54 5841	155 53 3060
039	19s 54 5135	155 53 4291
040	19 54 5001	155 53 5145
041	19 54 4248	155 53 5520
042	19 54 4520	155 53 5876
043	19 54 4370	155 54 0630
044	19 54 3642	155 54 1029
045	19 56 0458	155 52 5619
046	19 56 1329	155 52 5424
047	19 55 0000	155 53 0000

-End-

(originated in verification)

TRANSMITTAL SHEET

The field work was examined daily under the supervision of this command. The boatsheet was inspected daily for completeness and no additional work is considered necessary.

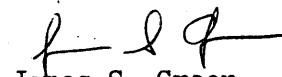


R. H. Houlder
CAPT., NOAA
Comdg., Ship FAIRWEATHER

APPROVAL SHEET

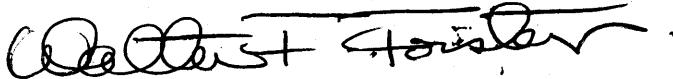
The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report)

Examined and approved,



James S. Green
Supervisory Cartographic Technician

Approved and forwarded,



Walter F. Forster, Cdr., NOAA
Chief, Processing Division
Pacific Marine Center

3/6/74

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

TIDE NOTE FOR HYDROGRAPHIC SHEET

Processing Division: Pacific Marine Center

Hourly heights are approved for Form 362

Tide Station Used (NOAA Form 77-12): Kawaihae Harbor, Hawaii Is.

Period: 28 September - 18 November 1971

HYDROGRAPHIC SHEET: H-9235

OPR: 419

Locality: West Coast of Hawaii

Plane of reference (mean lower low water): 2.1 ft.

Height of Mean High Water above Plane of Reference is 1.6 ft. -

Remarks: Zone Direct.

E. A. Arlow

Chief, Tides Branch

TIDE NOTE

Two portable Bristol bubbler tide gages were installed and operated in connection with launch hydrography during the survey. A 0-10 foot bubbler gage was installed at Kawaihae Harbor, Hawaii Island, Hawaii (latitude 20°02.30' N., longitude 155°49.85' W.) on 27 September 1971 and was removed on 18 November 1971. A similar bubbler gage was installed at Kailua, Hawaii Island, Hawaii (latitude 19°38.52' N., longitude 155°59.97' W.) on 29 September 1971 and was removed on 18 November 1971. Hourly heights were scanned and checked by ship's personnel for both gages and the data was forwarded with the marigrams to C33, Rockville, Maryland, for analysis.

GEOGRAPHIC NAMES
Survey No. H-9235 (1971)

Name on Survey	Sources										
	A	B	C	D	E	F	G	H	K		
	On Chart No.	On previous survey No.	On U. S. quadrangle Maps	From local information	On local Maps	P. O. Guide or Map	Rand McNally Atlas	U. S. Light List			
✓ ^{offset} AKAHU KAIMU											1
✓ ANAEHOOMALU											2
✓ ANAEHOOMALU BAY											3
✓ HAWAII ISLAND											4
✓ HONOKAOPE BAY											5
✓ KAAUAU POINT											6
✓ KAPALAOA											7
✓ LAE O PULLI											8
✓ LAE O HIKAKA											9
✓ LIILILINAHEHE BAY											10
✓ LULAHALA POINT											11
MAHINE ROCK											12
✓ POHAKULOA ^{Do not use until position & application can be verified}											13
PENAEUCKERATA											14
✓ WAAWAA POINT											15
✓ WAULUA BAY											16
✓ ANAEHOOMALU POINT											17
✓ PACIFIC OCEAN											18
											19
											20
											21
											22
											23
											24
											25
											26

Approved
 Char E. Harrington
 Staff Geographer
 7 Feb. 1975

HYDROGRAPHIC SURVEY STATISTICS
 HYDROGRAPHIC SURVEY NO. H-9235

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET & PNO		1	BOAT SHEETS		1	
DESCRIPTIVE REPORT		1	OVERLAYS		8	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1			
CAHIERS	1					
VOLUMES	5					
BOXES						
T-SHEET PRINTS (List)						
10283, 10014, 12531						
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				916
POSITIONS CHECKED		967	-	
POSITIONS REVISED		39	3	
DEPTH SOUNDINGS REVISED		725	197	
DEPTH SOUNDINGS ERRONEOUSLY SPACED		20	-	
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED		1	-	
	TIME (MANHOURS)			
<i>TOPD Details</i> Verification of Control		8	15	
<i>Junctions</i> Verification of Positions		37	16	
Verification of Soundings		117	25	
<i>Special adjustments</i> Smooth Sheet Compilation		52	20	
ALL OTHER WORK		8	35	
TOTALS		222	111	
PRE-VERIFICATION BY	BEGINNING DATE	ENDING DATE		
	10/12/73	10/12/73		
VERIFICATION BY <i>James L. Stringham</i> James L. Stringham	BEGINNING DATE	ENDING DATE		
	10/26/73	10/29/74		
REVIEW BY <i>Dennis Hill</i> Dennis Hill	BEGINNING DATE	ENDING DATE		
	April 25, 1975	July 8, 1975		

Inspected J. Baumgardner 67 hrs 1-25-77

J.D. Engle 4-2-77 10 hrs

Reg. No. H-9235

The Computer and Excess Sounding Cards for this survey have not been corrected to reflect the changes made to the Computer Card and Excess Card Printouts at this time of the review.

When the cards have been updated to reflect the final results of the survey the following shall be completed:

CARDS CORRECTED

DATE _____ TIME REQ'D _____ INITIALS _____

REMARKS:

Reg. No. _____

The magnetic tape containing the data for this survey has not been corrected to reflect the changes made during evaluation and review.

When the magnetic tape has been updated to reflect the final results of the survey, the following shall be completed:

MAGNETIC TAPE CORRECTED

DATE _____ TIME REQ'D _____ INITIALS _____

REMARKS:

H-9235

Information for Future Presurvey Reviews

This survey covers a portion of the west coast of Hawaii between Honokaope Bay and Anaehoomalu Bay. No significant changes have occurred since the prior surveys.

<u>Position Index</u>		<u>Bottom Change Index</u>	<u>Use Index</u>	<u>Resurvey Cycle</u>
<u>Lat.</u>	<u>Long.</u>			
195	1560	2	1	50 years

OFFICE OF MARINE SURVEYS AND MAPS

MARINE SURVEYS DIVISION

MODIFIED HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9235

FIELD NO. FA-5-2-71

Hawaii, Northwest Coast of Hawaii, Anaehoomalu Bay to Honokaope Bay

SURVEYED: October 17-31, 1971

SCALE: 1:5,000

PROJECT NO.: OPR-419

SOUNDINGS: Ross 400A and
Raytheon DE-723 Depth Recorders

CONTROL: Sextant Fixes on
Shore Signals

Chief of Party R. H. Houlder
Surveyed by L. K. Nelson
..... D. B. McLean
Automated Plot by Gerber Digital Plotter (PMC)
Verified by J. L. Stringham
Reviewed by D. J. Hill
Date: July 8, 1975
Inspected by S. Baumgardner

1. Control and Shoreline

The origin of the control is adequately covered in part F of the Descriptive Report.

Shoreline originates with Class I unreviewed photogrammetric manuscripts T-12534 and T-12536 of 1963-70 and T-12635 of 1969-70.

2. Hydrography

A. Depths at crossings are in good agreement.

B. The usual depth curves are adequately delineated except within the area of the 6-foot depth curve where the existence of foul areas and ledge made passage dangerous.

C. The development of the bottom configuration is considered adequate. No least depths were investigated.

3. Condition of Survey

The field work, sounding records, smooth plotting, various sounding print-outs, and Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual, supplemented by the Instruction Manual for Automated Hydrographic Surveys except as follows:

A. The 50-meter maximum allowable line spacing was exceeded in some areas.

B. Several significant shoal indications were not developed.

4. Junctions

Adequate junctions were effected with H-9018 (1968-70) on the north and with H-9131 (1970) on the south and west.

5. Comparison with Prior Surveys

A. H-5052 (1928-29) 1:80,000

Part of this prior survey falls within the area of the present survey but is not discussed in this review.

B. H-5006 (1929) 1:20,000

This prior survey covers the area of the present survey. The spars^sity of soundings and the small scale of the prior survey precludes a detailed comparison with the present survey; however, the general character of the area has remained the same.

Several rocks awash, submerged rocks, and bottom characteristics have been carried forward to supplement the present survey.

With these additions, the present survey is adequate to supersede the prior survey within the common area.

6. Comparison with Chart 4140, 6th Edition, December 29, 1973

A. Hydrography

The charted hydrography originates with the previously discussed prior surveys which require no further consideration, supplemented by the partial application of the boat sheet and verified smooth sheet of the present survey.

The present survey is adequate to supersede the hydrography within the common area.

B. Aids to Navigation

There are no aids to navigation within the limits of the survey.

7. Compliance with Instructions

This survey adequately complies with the project instructions except for the requirement of 50-meter line spacing which was exceeded on the northern portion of the survey.

8. Additional Field Work

This is an adequate basic survey and no additional field work is necessary.

Examined and Approved:

a J Patrick
Chief
Marine Surveys Division

R. H. Hamilton
Associate Director
Office of Marine Surveys
and Maps

