

9336A  
9336B

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. .... RA-5-3-72  
Office No. .... H-9336A & H-9336B

LOCALITY

State ..... Hawaii  
General Locality ..... Kona Coast  
Locality ..... Honokohau Bay & Kailua Bay

19 72

CHIEF OF PARTY  
G. E. Haraden

LIBRARY & ARCHIVES

DATE ..... 6-24-74

9336A  
9336B

HYDROGRAPHIC TITLE SHEET

H-9336A

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.

RA-5-3-72

State HAWAII

General locality KONA COAST, ~~HAWAII ISLAND~~

*See Other Title Sheet*

Locality HONOKOHAU Bay

Scale 1:5,000

Date of survey 24 Sept. - Oct. 5, 1972  
6, ~~14~~ 15 OCTOBER 1972

Instructions dated 15 JUNE 1972

Project No. OPR-419-RA-72

Vessel NOAA Ship RAINIER's Boston Whaler (2127)

Chief of party CAPT. G.E. HARADEN

Surveyed by LTJG <sup>R.A.</sup> SCHIRO, LTJG <sup>M.R.</sup> McCASLIN

Soundings taken by echo sounder, ~~hand lead, pole~~ RAYTHEON DE-723 (SN: 834 and 256)

Graphic record scaled by SHIP'S PERSONNEL

Graphic record checked by SHIP'S PERSONNEL

Protracted by \_\_\_\_\_ Automated plot by ~~COM PLOT DE~~ <sup>MK-Gerber Digital</sup> PLOTTER

Soundings penciled by \_\_\_\_\_

Soundings in ~~XXXX~~ feet at ~~MLLW~~ MLLW \_\_\_\_\_

REMARKS: The Modified Transverse Mercator Projection, soundings and position numbers on the boat-sheet were plotted by the RAINIER'S PDP 8/e computer and Complot plotter.

*Applied to title 7/8/74*

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4200*

*E.P.P.*

DESCRIPTIVE REPORT  
TO ACCOMPANY HYDROGRAPHIC SURVEY

RA-5-3-72  
H-9336

Scale 1:5,000

1972

NOAA Ship RAINIER

CAPT G.E. HARADEN  
Commanding

#### A. PROJECT

This survey was conducted in accordance with PROJECT INSTRUCTIONS: OPR-419-RA-72, dated 15 June 1972. Subsequent changes to these instructions do not effect this survey. ✓

#### B. AREA SURVEYED

This 0.5 square mile survey covers Honokohau Bay on the Kona Coast of Hawaii Island and is bounded on the north by latitude  $19^{\circ} 40' 55''$  N, on the west by longitude  $156^{\circ} 02' 15''$  W, on the south by latitude  $19^{\circ} 40' 10''$  N. The portion of this area north of Maliu Point is a surf zone, much of it very shoal. ✓

The survey began on 6 October and was completed on 15 October 1972. This survey junctions with contemporary survey H-9334 (RA-10-7-72) and can be compared with prior survey H-5005 (1928). Junction is also made with Corps of Engineers' survey of Honokohau small boat harbor.

#### C. SOUNDING VESSEL

The sounding vessel for the entire survey was the NOAA Ship RAINIER'S Boston Whaler (2127). Since the largest portion of the area surveyed is a surf zone, this was the only vessel suitable for the work. ✓

#### D. SOUNDING EQUIPMENT

Soundings for the survey were recorded on Raytheon DE-723 fathometer number 834 on 6 October 1972 (JD 280), and Raytheon DE-723 fathometer number 256 on 14 and 15 October 1972 (JD 288, 289). Both fathometers often gave a very light trace; frequent stops to clean the gear only partly helped. ✓ It was impossible to protect the gear completely from salt spray, which probably caused the fathometer problems. The records obtained are adequate considering the working conditions.

Bar checks, down to 7 fathoms, were made daily and the results abstracted. Fine arc and A-F checks were made at frequent intervals. Initial corrections were scanned from the fathograms and an abstract of correctors was prepared. A draft correction of one foot was used for the Boston Whaler. ✓ The

Transducer Correction (TRA) was obtained by summing the instrument error, initial, and draft.

Both fathometers were phased electronically prior to the survey and checked by field comparisons. Correctors were merged into the Transducer Correction/Table Indicator(TC/TI) tape for automated processing (see separates).

Velocity Corrections were computed from a Nansen cast taken in latitude  $19^{\circ} 17.6'$  N, longitude  $155^{\circ} 56.1'$  W, on 13 October 1972. The resulting velocity table was entered on tape and referenced in the TC/TI tape (see separates).

For further sounding correction information, see Special Report, Corrections to Echo Soundings, OPR-419, NOAA Ship RAINIER, 1972.

#### E. SMOOTH SHEET

The smooth sheet will be produced at PMC from automated processing tapes provided by this vessel.

The boat sheet was produced aboard the RAINIER by the PDP 8/e Hydroplot/Hydrolog System and is a Modified Transverse Mercator Projection with the Central Meridian located at  $156^{\circ} 00' 00''$  W, and the Control Latitude at 2,050,000 meters north of Latitude zero. The projection was verified in the field. Positions were applied to the launch sheet at the end of each working day by the system's Complot Model DP-3-5 Plotter and later smoothed, where necessary, before plotting on the final copy of the boat sheet. All main scheme lines were plotted in black ink, crosslines in red and junction soundings from contemporary surveys in green.

#### F. CONTROL

This survey was controlled by three point sextant fixes on visual objects. Photogrammetric methods were used to establish 9 of the 15 signals used, with the remaining 6 signals being range markers or lights with established positions (see separates). Map manuscript T-13382 was used for transfer of signals.

### G. SHORELINE

Shoreline details were transferred to the boatsheet directly from manuscript T-13382. Field edit was completed and the manuscript verified by the RAINIER in 1972. The shoreline shown on RA-5-3-72 is accurate. Several rocks were added to the manuscript (ozalid copy). There is a rock, covered at latitude 19° 40' 24" N, longitude 156° 01' 52" W. There are two rocks awash at latitude 19° 40' 29" N, and longitude 156° 01' 50" W. A rock which originally was noted on the manuscript as awash, bares at latitude 19° 40' 42" N, longitude 156° 01' 48" W. There is a rock, covered, at latitude 19° 40' 44" N, longitude 156° 01' 49" W. A rock bares at latitude 19° 40' 46" N, longitude 156° 01' 54" W. There are some rocks against the beach at latitude 19° 40' 47" N, longitude 156° 01' 47" W. There are numerous small coral heads in the area of latitude 19° 40' 46" N, longitude 156° 01' 50" W.

For further details see T-13382 and Field Edit Report, OPR-419, NOAA Ship RAINIER, 1972.

### H. CROSSLINES

1.0 crossline miles were run, representing 16% of the total survey. Sounding comparisons are excellent in all cases.

### I. JUNCTIONS

This survey junctions with 1:10,000 scale contemporary survey H-9334 (RA-10-7-72). Junctions are excellent in all cases.

### J. COMPARISONS WITH PRIOR SURVEYS

The area of this survey is covered by prior survey:

H-5005		
<del>H-9334</del>	1:20,000	1928-1929

Considering the difference in scale, and that the prior survey is in fathoms while RA-5-3-72 is in feet, the soundings compare well. All comparisons between prior soundings and those of RA-5-3-72 are within 1 fathom, except for two prior soundings listed below which disagree with the present survey by at least 2 fathoms:

<u>H-5005</u>	<u>G.P.</u>	<u>Differs from H-9336 by:</u>
7 Fathoms	19° 40' 24" N 156° 01' 59" W	<sup>3</sup> <del>10</del> Fathoms ✓
$\frac{4}{6}$ Fathoms	19° 40' 22" N 156° 01' 53" W	2 Fathoms ✓

Considering the consistent results of RA-5-3-72, and the otherwise good agreement between RA-5-3-72 and H-5005, these two soundings appear to be an error in the prior survey. It is recommended that the contemporary survey supersede the prior survey in all cases of disagreement. ✓

RA-5-3-72 also junctions with the Army Corps of Engineers' survey of the Honokohau small boat harbor. Junctions are excellent in all cases. ✓

There were no pre-survey review items within the area of this survey. ✓

#### K. COMPARISON WITH CHART

The area of this survey is covered only by C&GS Chart 4140 (4th Edition, 25 October 1969). As 4140 is a 1:80,000 scale chart, the difference in scales between the chart and RA-5-3-72 does not permit any meaningful comparison. See Inset (1:5,000) CH. 4140, 6th Ed. 12/29/73 ✓

#### L. ADEQUACY OF SURVEY

Surf prevented thorough inshore development near the northern part of the working area. This survey in conjunction with the Corps of Engineers' survey of Honokohau Harbor, is considered complete and adequate for charting purposes. ✓

#### M. AIDS TO NAVIGATION

One lighted bouy and four nonfloating lights are located within the area of this survey. These aids were compared to those on C&GS Chart 4140, and in the Light List (1972). None of the aids are noted on Chart 4140; the Light List was found to be complete and accurate. ✓

In addition, the Keahuolu Point Northeast range marker and

the northernmost building at Honokohau are of landmark value. The approximate position of the building is marked on T-13382 and RA-5-3-72. The building originally shown on T-13382 cannot be seen while entering the Honokohau boat harbor and is not of landmark value. The Keahuolu Point Northwest range marker is fallen down and no longer is of landmark value.

For positions and further details, see T-13382, NOAA Forms 76-40 (separates), and Field Edit Report, OPR-419. NOAA Ship RAINIER, 1972.

#### N. STATISTICS

Sheet RA-5-3-73 contains 117 positions, 6.6 nautical miles of sounding lines, and approximately 0.7 square miles of survey area. There are no bottom samples.

#### O. DATA PROCESSING

Raw data gathered by the Boston Whaler was hand-logged at night aboard the ship using logger format, and later converted to master format using AM 330. After the initial plot, data tapes were edited to remove rejected data, to correct soundings, to include peaks and deeps and to correct errors in angles or signal numbers. Corrector tapes were prepared using standard PDP 8/e corrector tape format. Separate master tapes and corresponding corrector tapes were prepared for each day. Standard formats as specified in the Instruction Manual, Automated Hydrographic Surveys, were used for the TC/TI and Velocity Correction tapes.

NOTE: TRA corrector values and velocity table numbers shown on the Hydroplot/Hydrolog tapes are to be ignored for processing at PMC. The correct data is listed on the TC/TI tape.

Soundings displayed on the boatsheet have been reduced for predicted tides and a launch draft of 1.0 feet.

#### P. REFERENCES TO REPORTS

1. Corrections to Echo Soundings, OPR-419, NOAA Ship RAINIER, 1972.



2. Field Edit Report, OPR-419, NOAA Ship RAINIER, 1972

Respectfully submitted,

*Michael McCaslin*

Michael McCaslin  
LTJG, NOAA

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SEPARATES FOLLOWING TEXT

1. Tide Note
  2. Abstract of Corrections to Echo Soundings
  3. Signal Listing
  4. Index to Survey Sheets
  5. NOAA Form 76-40, Nonfloating Aids or Landmarks for Charts
  6. Parameter Tape Listing
  7. Abstract of Position Numbers
  8. EDAT Form 1
  9. Approval Sheet
-

TC/TI TAPE

RA-5-3-72

FATH: RAYTHEON 834

LAUNCH 2127

131000 0 0000 0002 280 000000 000000  
131417 0 1001  
131610 0 1006  
132500 0 1001  
132545 0 0000  
145130 0 0001  
145347 0 0002  
145835 0 0001  
150025 0 1004  
151800 0 0002  
152001 0 0001  
152100 0 1004  
153100 0 0002  
153255 0 0001  
153331 0 1004

TC/TI

RA-5-3-72

FATH: RAYTHEON 256

LAUNCH 2127

100400 0 0000 0001 288 000000 000000  
100702 0 1001  
101430 0 0000  
101633 0 1001  
103530 0 0000  
104102 0 1001  
104258 0 0000  
134020 0 1001  
134606 0 0000  
135546 0 1001  
135900 0 0000  
141620 0 1001  
390900 0 0000 0001 289 000000 000000

L1,4

001 VELOCITY CORRECTION TAPE  
002 RA-5-3-72  
003 LAUNCH 2127  
004 TABLE 0001

\*

L5,46

005	000042	0	0000	0001	000	000000	000000
006	000082	0	0002				
007	000122	0	0004				
008	000162	0	0006				
009	000202	0	0008				
010	000242	0	0010				
011	000282	0	0012				
012	000320	0	0014				
013	000364	0	0016				
014	000404	0	0018				
015	000446	0	0020				
016	000486	0	0022				
017	000528	0	0024				
018	000578	0	0026				
019	000610	0	0028				
020	000648	0	0030				
021	000688	0	0032				
022	000728	0	0034				
023	000768	0	0036				
024	000808	0	0038				
025	000875	0	0040				
026	000975	0	0045				
027	001075	0	0050				
028	001175	0	0055				
029	001275	0	0060				
030	001375	0	0065				
031	001475	0	0070				
032	001575	0	0075				
033	001675	0	0080				
034	001778	0	0085				
035	001878	0	0090				
036	001980	0	0095				
037	002080	0	0100				
038	002180	0	0105				
039	002280	0	0110				
040	002380	0	0115				
041	002475	0	0120				
042	002575	0	0125				
043	002675	0	0130				
044	002775	0	0135				
045	002875	0	0140				
046	002975	0	0145				

\*

L47, 50  
047 VELOCITY CORRECTION TAPE  
048 RA-5-3-72  
049 LAUNCH 2127  
050 TABLE 0002

\*

L51, 92

051	000042	0	0000	0002	000	000000	000000
052	000082	0	0002				
053	000122	0	0004				
054	000162	0	0006				
055	000202	0	0008				
056	000242	0	0010				
057	000282	0	0012				
058	000320	0	0014				
059	000364	0	0016				
060	000404	0	0018				
061	000446	0	0020				
062	000486	0	0022				
063	000528	0	0024				
064	000570	0	0026				
065	000610	0	0028				
066	000648	0	0030				
067	000688	0	0032				
068	000728	0	0034				
069	000768	0	0036				
070	000808	0	0038				
071	000875	0	0040				
072	000975	0	0045				
073	001075	0	0050				
074	001175	0	0055				
075	001275	0	0060				
076	001375	0	0065				
077	001475	0	0070				
078	001575	0	0075				
079	001675	0	0080				
080	001778	0	0085				
081	001878	0	0090				
082	001980	0	0095				
083	002080	0	0100				
084	002180	0	0105				
085	002280	0	0110				
086	002380	0	0115				
087	002475	0	0120				
088	002575	0	0125				
089	002675	0	0130				
090	002775	0	0135				
091	002875	0	0140				
092	002975	0	0145				

\*

S I G N A L P L O T T E R C A R D S

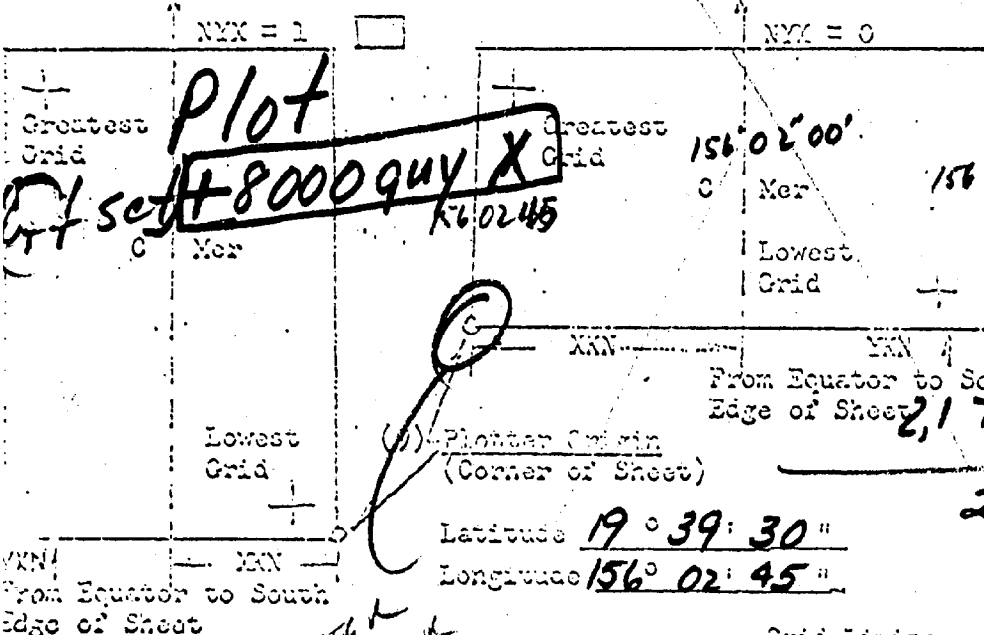
H-NO.		LATITUDE	LONGITUDE	X	Y	X
09336	301	73 19405973	156020570	02404	05793	<i>Hydro Sta.</i> 301
09336	302	73 19405724	156020257	02595	05633	<i>Hydro Sta.</i> 302
09336	303	73 19404930	156015177	03256	05120	303
09336	304	73 19404657	156014576	03623	04944	304
09336	305	73 19404231	156014480	03682	04669	305
09336	306	73 19402888	156014504	03668	03802	306
09336	307	73 19402654	156014895	03428	03650	307
09336	308	73 19402244	156014785	03496	03386	308
09336	309	73 19402044	156014591	03614	03257	309
09336	310	73 19402277	156014368	03751	03407	310
09336	311	73 19401538	156014937	03403	02930	311
09336	312	73 19401476	156015245	03214	02890	312
09336	313	73 19400925	156015422	03106	02534	<i>reference #</i> 313
09336	316	73 19403447	156014329	03775	04163	316
09336	320	73 19402070	156014320	03780	03273	320

100000

PARAMETER TAPE LISTING  
RA-5-3-72  
HONOKOHAU  
0, 20, 16

FEST=71000  
GLAT=2050000  
CMER=156/00/00  
GRID=15  
PLSCL=5000  
PLAT=19/40/00  
PLON=156/02/30  
S1LAT=58/23/29.514  
S1LON=153/57/40.528  
S2LAT=58/50/49.119  
S2LON=153/17/47.572  
E=1799.6  
VESNO=2120  
YR=72

- 1) Project No. 419 (4) Requested by Verification  
 2) H No. 9336 (5) Ship or Office \_\_\_\_\_  
 3) Field No. RA 5-3-72 (6) Date Required \_\_\_\_\_  
 7) Visual  Ft. (0) or Fathoms (1)  (8) Electronic  (fill out form 1/3)  
 0) NYX (SP 5) Distance from CENTER to East Edge (NYX = 1) 1310.9175 Meters  
 of West Edge (NYX = 0).  
 1) NYX (SP 241) Distance from Equator to South Edge 2,174,413.35798 Meters  
 of Sheet.  
 2) Central Meridian 156° 02' 00"  
 3) Survey Scale 1: 5,000  
 4) Size of Sheet (Check one) 36x60  42x60   
 5) X, Orientation of sheet (Check one)



30.748438  
 33  
 30.748466  
 X 30

922.45398  
 490.904

29.1325  
 X 45"

OK - AFTER  
 ALL UPDATING IN DUNK  
 R.C. ALL SIGNALS,  
 GRID, POS/LOGS  
 WITHIN FORM PRIOR  
 TO USE PLOT -  
 PLOT USE W/  
 + 8000X OFFSET

Grid Limits		
(16) Greatest Latitude	<u>19° 41' 45"</u>	(Projection Line Interval Page 4 Hydro Manual)
(17) Lowest Latitude	<u>19° 39' 45"</u>	(19) <u>00' 15"</u>
(18) Difference	<u>2' 00"</u>	(20) <u>8</u> YSK
(21) Greatest Longitude	<u>156° 02' 30"</u>	(21) <u>00' 15"</u>
(22) Lowest Longitude	<u>156° 01' 15"</u>	(25) <u>5</u> YSK
(23) Difference	<u>1' 15"</u>	



H-9336  
 Field No. RA-5-3-72  
 Date

PARAMETER CARD II

Semi major axis of the earth	6.378,206.4	FDI	1 2 3 4 5 6 7 8 9 10
X Constant - Distance from central meridian to origin of plotter SP 5		TXN	11 12 13 14 15 16 17 18 19 20
Y Constant - Distance from equator to origin of plotter SP 2/1		YCN	21 22 23 24 25 26 27 28 29 30
Central Meridian of Projection	156 02 00	CMR	31 32 33 34 35 36 37 38 39 40
Plotter Scale/Survey Scale	1:5000	SCA	41 42 43 44 45 46 47 48 49 50
North/south axis of sheet - to correspond to (Y axis - 0)		NYX	
Foot/Fathom indicator	0 - feet 1 - fathom	FCF	
H Identification No.		JR	51 52 53 54 55 56 57 58 59 60
		YR	61 62 63 64 65 66 67 68 69 70

FCF - 1

PARAMETER CARD III

Highest Lat. Intersection	19 39 45	YST	1 2 3 4 5 6 7 8 9 10
Lowest Lonr. Intersection	156 01 15	XST	11 12 13 14 15 16 17 18 19 20
Difference between Grid		DXY	21 22 23 24 25 26 27 28 29 30
Interval (Long)		XSN	31 32 33 34 35 36 37 38 39 40
Interval (Lat)		YSN	41 42 43 44 45 46 47 48 49 50

Computed  
 Punched  
 Checkdd  
 Date

NON-FLOATING AIDS OR LANDMARKS FOR CHARTS

PRESCRIBED BY  
PHOTOGRAMMETRY INSTRUCTION NO. 64.

ORIGINATING LOCATION

NOAA Ship RAINIER

DATE

11/10/72

TO BE CHARTED  
 TO BE DELETED

The following objects have (have not) been inspected from seaward to determine their value as landmarks:

ORIGINATING ACTIVITY  
 FIELD INSPECTION  
 FIELD EDIT  
 COMPILATION  
 FINAL REVIEW  
 QUALITY CONTROL AND REVIEW  
(See reverse for responsible personnel)

JOB NUMBER PH = 6401

SURVEY NUMBER  
T-13382

DATUM  
OHD

STATE: Hawaii

TP-

POSITION

METHOD AND DATE OF LOCATION  
(See instructions on reverse of this form)

CHARTING NAME

DESCRIPTION

LATITUDE

0 /

0.000000  
METERS

LONGITUDE

0 /

0.000000  
METERS

FIELD INSPECTION

COMPILATION

FIELD EDIT

CHARTS AFFECTED

KEAHUOLE Pt. N.E. RANGE MARKER  
Large, 4-finned, pyramidal target made of corrugated iron and painted an orange and white checkered pattern.

19°40'

09.251

284.5

156°01'

54.221

1579.1

P.1  
9/27/72

69-E-9255

CGGS 4115  
4110

ENTRANCE CHANNEL DIRECT-TONAL LIGHT  
Occ. W., R. & G. sectors located on a pole 27' above water

19°40'

22.766

156°01'

43.681

(sec)

NOTE:

Position scaled by U.S. Army Corps of Engineers

CGGS 4115  
4110

ENTRANCE CHANNEL LIGHT 3  
Fl. W., 2.5s Black square daymark on pole; green reflector. Light structure located on breakwater.

19°40'

22.111

156°01'

47.853

(sec)

NOTE:

Position scaled by U.S. Army Corps of Engineers

CGGS 4110

CHANNEL LIGHT 4  
Fl. R., 6s(1s Fl) Light on breakwater TR on pole

19°40'

20.111

156°01'

45.906

(sec)

NOTE:

Position scaled by U.S. Army Corps of Engineers

CGGS 4110

CHANNEL LIGHT 5  
Fl. G., 6s(1s Fl) Located on breakwater Black, square, daymark on pole; Green for location

19°40'

20.705

156°01'

43.197

(sec)

NOTE:

Position scaled by U.S. Army Corps of Engineers

CGGS 4110





ABSTRACT OF POSITION NUMBERS

RA-5-3-72  
H-9336

<u>VESSEL</u>	<u>DAY</u>	<u>POSITION NUMBERS</u>
2127	280	016-031 15 043-047 4 052-065 15
2127	288	066-093 27
2127	289	094-147 52 12

APPROVAL SHEET

RA-5-3-72  
H-9336

Kona Coast, Hawaii, 1972

In producing this sheet, hydrographic procedures were observed and the data was examined daily during the execution of the survey.

The data on the boat sheet and the accompanying records have been examined by me and are considered complete and adequate, and are hereby approved.

*G.E. Haraden*

G.E. HARADEN  
CAPT, NOAA

APPROVAL SHEET

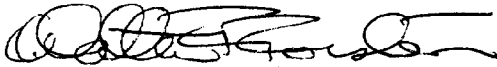
The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note: All exceptions are listed in the Verifier's Report.)

Examined and approved,



James Green  
Supervisory,  
Cartographic Technician

Approved and forwarded,



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

TIDE NOTE  
H-9336 (RA-5-3-72)

It is recommended that the tide station existing at Kailua Kona, Hawaii (latitude  $19^{\circ} 38.52' N$ , longitude  $155^{\circ} 59.97' W$ ) be used to control the soundings on this survey. Hourly heights will be furnished to the PMC Processing Division by the ship. Reduction to MLLW, missing tidal data, and copies of the marigrams will be furnished by Tides Division, Rockville. Hourly heights are complete for this sheet.

Predicted tides for boat sheet control were obtained from the Tide Tables, 1972, West Coast of North and South America using the Kailua subordinate. The tides were machine generated, and applied directly to the data when plotted by the computer.



4/16/74

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): Kailua Kona

Period: Aug. 16 - November 13, 1972

HYDROGRAPHIC SHEET: H9336

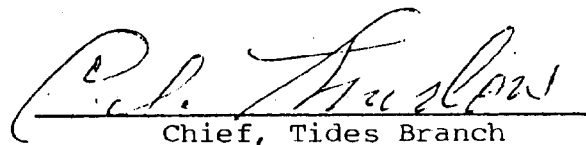
OPR: 419

Locality: West Coast of Hawaii Island

Plane of reference (mean lower low water): 2.5 ft.

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

Remarks: Zone direct on Kailua Kona gage.

  
Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H-9336 A, 1972

Name on Survey

On Chart No.  
 On previous survey No.  
 On U. S. Maps  
 From local information  
 On local Maps  
 P. O. Guide or Map  
 Rand McNally Atlas  
 U. S. Light List

Name on Survey	A	B	C	D	E	F	G	H	K	
HAWAII										1
HONOKOHAU										2
HONOKOHAU BAY										3
MALIU POINT										4
PACIFIC OCEAN										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25
										26

Approved  
 C. E. Hamilton  
 Staff Geographer  
 9 July 1975

HYDROGRAPHIC SURVEY STATISTICS  
HYDROGRAPHIC SURVEY NO. H-9336 A

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		4	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES			1			
CAHIERS	1 Raw Data & PLO.					
VOLUMES	3					
BUNDLE BOOKS						

T-SHEET PRINTS (List)  
Advanced T-13382

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				
POSITIONS CHECKED		117		
POSITIONS REVISED		1		
DEPTH SOUNDINGS REVISED		30		
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
Verification of Control		4	3	
Verification of Positions		4	3	
Verification of Soundings		12	12	
Smooth Sheet Compilation		28	36	
ALL OTHER WORK <i>Datum Adjustments</i>			6	
TOTALS		48	60	
PRE-VERIFICATION BY <u>Mrs. Karol Hoops</u>	BEGINNING DATE 1-12-74	ENDING DATE		
VERIFICATION BY <u>James L. Stringham</u>	BEGINNING DATE 1-25-74	ENDING DATE 6-10-74		
REVIEW BY <u>Mark A. Fruse</u> <i>Imp. R. H. Myers</i>	BEGINNING DATE 5-7-75	ENDING DATE 7-9-75		

*Case Files 4/7/76 (see H-9336 BL-40)*

H-9336A

Items for Future Presurvey Review

No significant changes in the bottom configuration since the prior survey of 1928-1929 have been noticed. However, the sunken rocks at latitude 19°40.37', longitude 156°01.87', and latitude 19°40.36', longitude 156°01.85', should be investigated for least depth.

<u>Position</u>	<u>Index</u>	<u>Bottom Change</u>	<u>Use</u>	<u>Resurvey</u>
<u>Lat.</u>	<u>Long.</u>	<u>Index</u>	<u>Index</u>	<u>Cycle</u>
194	1561	0	1	50 years

OFFICE OF MARINE SURVEYS AND MAPS  
MARINE CHART DIVISION  
MODIFIED HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9336A

FIELD NO. RA-5-3-72

Hawaii, Kona Coast, Honokohau Bay

SURVEYED: October 6-15, 1972

SCALE: 1:5,000

PROJECT NO.: OPR-419

SOUNDINGS: Raytheon DE-723  
Depth Recorder

CONTROL: Sextant Fixes  
on Shore  
Signals

Chief of Party ..... G. E. Haraden  
Surveyed by ..... M. R. McCaslin  
..... R. A. Schiro  
Automated Plot by ..... Gerber Digital Plotter  
(PMC)  
Verified and Inked by ..... J. L. Stringham  
Reviewed by ..... M. J. Friese  
..... Date: July 9, 1975  
Inspected by ..... G. K. Myers

1. Control and Shoreline

The source of control is adequately stated in Part F of the Descriptive Report.

The shoreline originates with advance manuscript T-13382 (1969-72). The mean high water line is shown for guidance only and, except for revisions in red determined by the hydrographer, the true position is shown on the topographic sheet previously discussed.

2. Hydrography

A. Depths at sounding-line crossings are in good agreement.

B. The usual depth curves were, in general, adequately delineated except in areas inshore where the existence of ledge and coral heads made passage dangerous.

C. The development of the bottom configuration and the investigation of least depths are adequate. However, little specific development and no hand lead verification of the two sunken rocks at latitude 19°40.37', longitude 156°01.87', and latitude 19°40.36', longitude 156°01.85', from T-13382 and H-5005, respectively, was accomplished.

### 3. Condition of the Survey

The survey records, automated plotting, and the Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual supplemented by the Instruction Manual - Automated Hydrographic Surveys, except as follows:

A. No bottom samples were obtained during the survey.

B. Data regarding sounding apparatus-Stamp No. 33, bar check-Stamp No. 35, and preliminary run and weather-Stamp No. 34 were not completely recorded in accordance with Sections 5-93, 5-94, and 5-95, respectively, of the Hydrographic Manual.

### 4. Junctions

An adequate junction was effected on the west with H-9334 (1972).

### 5. Comparison with Prior Surveys

A. H-5005 (1928-29) 1:20,000

This prior survey covers the entire area of the present survey. A comparison between the prior and present depths reveals that the bottom has remained unchanged. Some soundings, two rocks awash, one coral head, and several bottom characteristics were brought forward from the prior survey to supplement present hydrography in the common area.

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

### 6. Comparison with Chart 4140 (latest print date, Dec. 29, 1973)

A. Hydrography

The charted hydrography originates with the previously discussed prior survey, which requires no further consideration, and the boat sheet of the present survey.

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

B. Aids to Navigation

The fixed and floating aids to navigation adequately serve the purpose and mark the features intended within the common area of the present survey.

C. Controlling Depths

The charted controlling depth notes of the boat basin at Maliu Point are based on data furnished by the U.S. Corps of Engineers subsequent to the date of the present survey information.

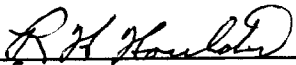
7. Compliance with Project Instructions

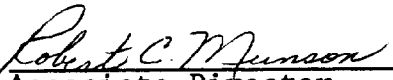
The present survey adequately complies with the Project Instructions.

8. Additional Field Work

This is a good basic survey and no additional field work is recommended.

Examined and Approved:

  
\_\_\_\_\_  
Chief  
Marine Chart Division

  
\_\_\_\_\_  
Associate Director  
Office of Marine Surveys  
and Maps





RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9336a

INSTRUCTIONS

- A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
  2. In "Remarks" column cross out words that do not apply.
  3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
4140 (19327)	7/15/74	S. Martof	Full Part Before After Verification Review Inspection Signed Via Drawing No. Examined for Notice to Mariners.
4001 (19007)	10/8/74	Tommy Alexander	None found. before <del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Examined for critical corr's, no corr's necessary at this scale.
4140 (19327)	8/19/75	Naiter	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Revised several sdgs on inset, breakers, coral limit added rock wash to main cht.
4102 (19004)	8/28/75	Naiter	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Exam No corr at this scale
4000 (540)	9/2/75	KARIS	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Examined - no correction at this scale
4140 (19320)	8/24/75	NAITO, R.	Full Part Before After Verification Review Inspection Signed Via Drawing No. Exam. Thru cht. 4140, No corr. at this scale
4179 (19010)	8/29/75	HAUSHMAN	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Exam thru 4102 No Corr
4000 (540)	9/21/77	Mr. Sager	Full Part Before After Verification Review Inspection Signed Via Drawing No. 15 No correction at this scale, CONSIDER FULLY APPLIED
4102 (19004)	10/26/77	C.S. Fisher	Full Part Before After Verification Review Inspection Signed Via Drawing No. No correction at this scale; consider Fully applied.
4179 (19010)	12/01/77	C.S. Fisher	Full Part Before After Verification Review Inspection Signed Via Drawing No. No correction at this scale; consider Fully applied.
4116 (19320)	2/7/78	M. J. ...	Consider fully app'd after signature thru Chart 4140 (7th Ed)
19007	4-1-83	L.A. ...	Consider fully app'd after signature. No Corr. at this scale (thru 19004)
19327	2-77		Fully App'd

HYDROGRAPHIC TITLE SHEET

H-9336B

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.

RA-5-4-72

State Hawaii

General locality Kona Coast, Hawaii Island

Locality Kailua Bay

Scale 1:5,000 Date of survey 24-26 Sept., 5 Oct. 1972

Instructions dated 15 June 1972 Project No. OPR-419-RA-72

Vessel NOAA Ship RAINIER Launches RA-3 and RA-4

Chief of party CAPT G.E. Haraden

Surveyed by ENS R.G. Hendershot, LTJG S. Hollinshead, CST P. Woodard

Soundings taken by echo sounder, ~~head lead, KOK~~ Raytheon Model DE-723, S/N 834  
leadline  
Ross Model 5000, S/N 1041

Graphic record scaled by Ship's personnel

Graphic record checked by Ship's personnel

Protracted by ~~Digital Computer PDP 8/e~~ PAC-Genber digital PLOT Automated plot by ~~Hydroplot Controller~~

Soundings penciled by \_\_\_\_\_

Soundings in ~~XMKOKS~~ feet at ~~XMLWX~~ MLLW \_\_\_\_\_

REMARKS: Survey H-9337 (RA-5-4-72) was plotted on the PDP 8/e

Hydroplot/Hydrolog System using AM 205 and visual data.

DESCRIPTIVE REPORT  
TO ACCOMPANY HYDROGRAPHIC SURVEY

~~H-9337~~ H-9336 B

RA-5-4-72

SCALE 1:5,000

1972

NOAA Ship RAINIER

G. E. Haraden  
CAPT., NOAA  
COMMANDING

---

A. Project

This survey was conducted in accordance with PROJECT INSTRUCTIONS: OPR-419-RA-72 dated 15 June 1972. Subsequent changes to these instructions do not affect this survey.

B. Area Surveyed

Sheet H-<sup>9334 B</sup>~~9337~~ (RA-5-4-72) covers Kailua Bay and immediately adjacent waters on the Kona Coast of Hawaii Island. The survey is bounded on the south by latitude 19°37'55"N and on the west by longitude 156°00'15"W.

The survey was conducted on 24-26 of September 1972 and on 5 October 1972.

The survey is joined on the south and west by contemporary survey H-9334 (RA-10-7-72), scale 1:10,000, 1972.

H-4790, scale 1:5,000, 1928 is the only prior survey of the area covered by H-933<sup>B</sup>~~7~~ (RA-5-4-72). and H-4798 (1928), 1:20,000.

C. Sounding Vessel

Sounding vessels for the survey were the NOAA Ship RAINIER's Bertram launches RA-3 and RA-4. RA-3 was used to obtain only 6 positions (Nos. 2000-2005), while the majority were obtained by RA-4 (see separates).

D. Sounding Equipment

The Ross Model 5000 fathometer, S/N 1041, was used by launch RA-3 to record soundings of 5 to 59 feet. The Raytheon Model DE-723-C fathometer, S/N 834, was used by launch RA-4 to record soundings

of 3 to 149 feet until a malfunction in the paper advance mechanism caused a halt in the survey operations on 25 September (JD 269). Another Raytheon Model DE-723-C fathometer, S/N 256, was used by RA-4 during the remainder of the day. On 26 October 1972, S/N 834 was reinstalled in launch RA-4 and was used for the remainder of the survey. Soundings between position numbers 226 and 227, which were affected by early indications of the malfunction, were rejected. Bar checks on the three fathometers were taken routinely in depths ranging from 6 to 42 feet.

Draft, initial, fine arc, phase, and velocity corrections were applied to the soundings of both Raytheon DE-723 fathometers. The applied transducer draft for launch RA-4 was 2.0 feet. The initial value on the fathometers was checked regularly during on-line surveying, and when found to differ from zero, was reset to zero. In check scanning the fathograms, the initial was considered before reading the sounding.

No fine arc errors greater than 1% of full scale were found during the check scan of the Raytheon fathograms. On 5 September 1972 and 8 November 1972 the Raytheon fathometer, S/N 834, was electronically phased using a Digital Phase Checker. The other Raytheon fathometer, S/N 256, was phase checked on 8 November 1972. Frequent A-F scale checks were made during on-line operations as a further check.

Instrument error, draft, and velocity corrections were applied to the Ross Model 5000 fathometer soundings obtained by launch RA-3. The applied transducer draft for RA-3 was 2.0 feet. The Ross fathometer was internally phased and adjusted so as to require no

phase correction. The digitized soundings printed on the logger printout were compared to the soundings obtained by scanning the Ross fathogram. Erroneous digitized soundings were corrected to the value read from the fathogram. The Ross fathometer stylus travels in a straight line; thus no fine arc corrections are necessary. No abstract of initial corrections was compiled in that any observed deviation in the initial appears only on the analog record and does not affect the digitized sounding. In check scanning fathograms, the initial correction was considered before reading the analog record.

Velocity tapes were compiled for velocity corrections on the Ross and Raytheon fathometer soundings. Velocity corrections were computed from water temperature and salinity observations obtained from a Nansen cast taken on 13 October 1972 at latitude  $19^{\circ}17.6'N$  and longitude  $155^{\circ}56.1'W$ . All other corrections to echo soundings were merged into the Transducer Correction/Table Indicator (TC/TI) tape for automated processing.

A lead line was used to obtain soundings at detached position numbers 288-294 and 311-314 which are located along the perimeter of the concrete pier in Kailua Kona, located at latitude  $19^{\circ}38.5'N$  and longitude  $155^{\circ}59.9'W$ .

For further sounding correction information see the Special Report, Corrections to Echo Soundings, OPR-419, NOAA Ship RAINIER, 1972.

#### E. Smooth Sheet

The smooth sheet will be mechanically plotted by the Electronic Data Processing Division at the Pacific Marine Center, using automated

processing tapes provided by the RAINIER. The boat sheet was produced aboard the RAINIER by the PDP 8/e Hydroplot/Hydrolog system, and is a Modified Transverse Mercator Projection with the central meridian at longitude 156°00'00"W and the control latitude at 2,050,000 meters north of the equator.

Positions and soundings were applied to a rough work sheet at the end of each working day by the Complot Model DP-3-5 plotter and later smoothed where necessary before plotting on the final boat sheet. Main scheme lines appear in black ink, crosslines and detached positions in red ink, and bottom samples in green ink. A few main scheme lines are also plotted in red to aid in interpreting depths in congested areas.

F. Control

This survey was controlled by three point sextant fixes on visual objects. Photogrammetric methods were used to establish 15 of the 17 signals used on the survey. The 2 remaining signals used on the survey were triangulation stations. The photogrammetric signals were compiled on advanced manuscript T-12542 which was used for the transfer of signals to the boat sheet (see separates). No signal location problems were encountered with the visual control of this survey.

G. Shoreline

Shoreline details were transferred to the boat sheet directly from advanced manuscript T-12542. Field edit of the manuscript was completed and verified by the RAINIER in 1972. No major changes in shoreline detail were found. Minor changes were inked in red on boat sheet H-<sup>9336 B</sup>9337 (RA-5-4-72).

Three rocks marked on the advanced manuscript were not found during field edit inspection and should be deleted. Two rocks to be deleted are located on the east side of the concrete pier at latitude 19°38'34"N, longitude 155°59'58"W and latitude 19°38'33"N, longitude 155°59'57"W. The third rock to be deleted is a submerged rock at latitude 19°38'11"N and longitude 155°59'37"W. For further information on shoreline details see the Field Edit Report, OPR-419, NOAA Ship RAINIER, 1972. *These rocks were not found on advance manuscript F-12542 (1968-72).*

#### H. Crosslines

Crosslines totaled 2.1 nautical miles or 11.1% of the total sounding line miles. Agreement between the main scheme line soundings and the crossline soundings is excellent. There is one discrepancy of five feet at position number 297 located at latitude 19°38'23"N and longitude 156°00'07"W. The steeply sloped bottom contour caused this discrepancy. All other coincident soundings agree within 2 feet.

#### I. Junctions

The agreement between the soundings of boat sheets H-<sup>9336B</sup>~~9337~~ (RA-5-4-72) and H-9334 (RA-10-7-72) is excellent. There are no discrepancies greater than 3 feet between coincident soundings.

#### J. Comparison with Prior Surveys

Five pre-survey review items were investigated in conjunction with boat sheet H-<sup>9336B</sup>~~9337~~. The 15 foot pre-survey review item located at latitude 19°38'31"N and longitude 155°59'56"W was verified with <sup>corrected</sup> a 16 foot sounding. The 16 foot pre-survey review item located at latitude 19°38'30"N and longitude 155°59'57"W was verified with <sup>smooth</sup>



*Smooth 21*  
A <sup>70</sup>17 foot sounding located <sup>South</sup> 18 meters west of the pre-survey review item.

The 18 foot pre-survey review item located at latitude 19°38'26"N and longitude 155°59'54"W was verified with an <sup>Smooth</sup>18 foot sounding.

The 27 foot pre-survey review item located at latitude 19°38'22"N and longitude 155°59'54"W was verified with a 29 foot sounding. *A 29 foot sdy. was found 120 meters north of the 25.2 item and a 27 foot sdy 120 meters south*

<sup>54</sup>The 53 foot pre-survey review item located at latitude 19°38'03"N and longitude 155°59'56"W was found 30 meters <sup>South</sup>west of the pre-survey review item and should be moved west to the <sup>Smooth</sup>53 foot sounding. *or to the 60 ft. sdy. 40 meters to the north.*

A datum change plus distortion of boat sheet H-4790; 1928; 1:5,000 caused the agreement between the 1972 survey and survey H-4790 to be poor. Boat sheet H-4790 is plotted using the unadjusted Old Hawaiian Datum, while boat sheet H-<sup>1336 B</sup>9337 is plotted on the adjusted Old Hawaiian Datum. This datum shift plus the distortion of boat sheet H-4790 caused the prior survey soundings to be improperly transferred. 32% of the compared soundings disagree by 4 feet or more, but the agreement is improved by accounting for the datum change by shifting the prior survey soundings 1/4 inch to the north-east. *using an adjusted Old Hawaiian Datum.* The 1972 survey soundings should supersede the prior survey

soundings in areas of disagreement. *Prior survey H-4798(1928), 1:20,000 was used and compared. The scale difference and sparsity of soundings precluded a good comparison, however the soundings involved were in general agreement.*

**K. Comparison with the Chart**

Comparison with the 1:5,000 scale chart 4164 (3rd Ed., Feb. 14, 1970) revealed a datum disagreement similar to the one mentioned in Section J of this report. The shoreline and soundings are plotted on the unadjusted Old Hawaiian Datum, while the triangulation reference station, KAILUA LIGHT, 1928 is plotted on the adjusted Old Hawaiian Datum. After accounting for this datum shift by shifting

the soundings on the chart approximately 1/4 inch to the northeast, the comparison of soundings demonstrates excellent agreement generally within 0-<sup>5</sup>/<sub>2</sub> feet.

The mooring buoys "1" and "2" charted east of the pier at latitude 19°38'28.4"N and longitude 155°59'56.4"W and latitude 19°38'32"N and longitude 155°59'55"W have been replaced by a series of buoys which are located by detached positions 266 through 287.

L. Adequacy of Survey

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

M. Aids to Navigation

There are four aids to navigation existing within the confines of this survey, one of which is listed in the Light List (Volume III, Pacific Coast and Pacific Islands, 1972, CG-162). Their positions were established by photogrammetric methods from advanced manuscript T-12542. The position and other data for Kailua Light given in the Light List agree with the photogrammetrically determined position and the characteristics observed during survey operations. For further information on all four aids see NOAA Form 76-40, included in this report.

N. Statistics

<u>Vessel</u>	<u>Miles Hydro</u>	<u>No. Positions</u>
RA-4	18.7	302
RA-3	0.3	6
TOTAL	19.0	308**

\*\*Twelve additional hand lead detached positions (Nos. 288-294, 311-314) were taken to locate the pier previously mentioned,

giving 320 total positions.

Ten bottom samples were taken (see Oceanographic Log Sheet-M in separates following the text). The survey covers an area of 0.31 square nautical miles.

O. Miscellaneous - Data Processing

Raw data gathered by RA-4 was hand-logged on line aboard the launch using logger format, and later converted to master format using AM 330. Raw data gathered by RA-3 was hand-logged aboard the launch using the PDP 8/e system and RA 174, Visual Logger Program, to generate a master format tape directly. After the initial plot, corrector tapes were prepared using standard PDP 8/e corrector tape format to correct soundings, include peaks and deeps, and correct errors in angles or signal numbers.

Separate master tapes and corresponding corrector tapes were prepared for each vessel and day.

Standard formats as specified in the Instruction Manual, Automated Hydrographic Surveys, were used for the TC/TI and Velocity Correction tapes. TRA corrector values and velocity table numbers shown on the Hydroplot/Hydrolog tapes are to be ignored for processing at PMC. The correct data is listed on the TC/TI tape.

Soundings displayed on the boat sheet have been reduced for predicted tides. Launch soundings have also been reduced with a launch draft of 2.0 feet. No TRA corrections were applied to the hand lead soundings taken from the pier.

P. Recommendations

The next edition of Chart 4164 should be published with all information plotted on the same datum.

Q. References to Reports

1. Corrections to Echo Soundings, OPR-419, NOAA Ship RAINIER, 1972.
2. Field Edit Report, OPR-419, NOAA Ship RAINIER, 1972.

Respectfully submitted,

*Roger G. Hendershot*

Roger G. Hendershot  
ENS, NOAA

**SEPARATES FOLLOWING THE TEXT**

1. **Tide Note**
  2. **Abstract of Corrections to Echo Soundings**
  3. **Signal Tape Listing**
  4. **NOAA Form 76-40, Nonfloating Aids or Landmarks for Charts**
  5. **C&GS Form 733M, Bottom Sediment Data**
  6. **Parameter Tape Listing**
  7. **Abstract of Position Numbers**
  8. **EDAT Form 1**
  9. **Approval Sheet**
-

TC/TI TAPE  
RA-5-4-72  
FATH: RAYTHEON 834  
LAUNCH 2124

085345 0 0011 0004 268 000000 000000  
085406 0 0010  
085420 0 0005  
085653 0 0008  
091415 0 0011  
091433 0 0010  
091447 0 0005  
091738 0 0008  
094030 0 0011  
094053 0 0010  
094106 0 0005  
094358 0 0008  
095036 0 0005  
095406 0 0010  
095419 0 0011  
095805 0 0010  
095810 0 0005  
100108 0 0008  
100532 0 0005  
100850 0 0010  
100916 0 0011  
102740 0 0010  
102813 0 0005  
102901 0 0010  
102921 0 0005  
104615 0 0010  
104628 0 0009  
104721 0 0004  
104736 0 0009  
104844 0 0004  
105406 0 0009  
110245 0 0011  
110305 0 0010  
110528 0 0005  
111643 0 0010  
111658 0 0005  
111723 0 0010  
111937 0 0011  
112650 0 0010  
113003 0 0005  
113606 0 0010  
113905 0 0011  
124750 0 0010

IC/TI TAPE

RA-5-4-72

FATH: RAYTHEON 256

LAUNCH 2124

135200 0 0013 0005 269 000000 000000

140605 0 0014

140724 0 0013

142253 0 0014

143517 0 0013

145105 0 0014

145732 0 0013

IC/TI TAPE

FATH: ROSS 1041

RA-5-4-72

LAUNCH 2123

085533 0 ~~0014~~ 0003 279 000000 000000

*See verifiers report.*

L188, 192

188 VELOCITY CORRECTION TAPE

189 RA-5-2-72

190 RA-5-4-72

191 LAUNCH 2124

192 TABLE 0005

\*

L193, 234

193	000042	0	0000	0005	000	000000	000000
194	000082	0	0002				
195	000122	0	0004				
196	000162	0	0006				
197	000202	0	0008				
198	000242	0	0010				
199	000282	0	0012				
200	000320	0	0014				
201	000364	0	0016				
202	000404	0	0018				
203	000446	0	0020				
204	000486	0	0022				
205	000528	0	0024				
206	000570	0	0026				
207	000610	0	0028				
208	000648	0	0030				
209	000688	0	0032				
210	000728	0	0034				
211	000768	0	0036				
212	000808	0	0038				
213	000875	0	0040				
214	000975	0	0045				
215	001075	0	0050				
216	001175	0	0055				
217	001275	0	0060				
218	001375	0	0065				
219	001475	0	0070				
220	001575	0	0075				
221	001675	0	0080				
222	001778	0	0085				
223	001878	0	0090				
224	001980	0	0095				
225	002080	0	0100				
226	002180	0	0105				
227	002280	0	0110				
228	002380	0	0115				
229	002475	0	0120				
230	002575	0	0125				
231	002675	0	0130				
232	002775	0	0135				
233	002875	0	0140				
234	002975	0	0145				

\*



L140, 145

140 VELOCITY CORRECTION TAPE

141 RA-5-2-72

142 RA-5-4-72

143 RA-5-5-72

144 LAUNCH 2124

145 TABLE 0004

\*

L146, 187

146 000042 0 0000 0004 000 000000 000000  
147 000082 0 0002  
148 000122 0 0004  
149 000162 0 0006  
150 000202 0 0008  
151 000242 0 0010  
152 000282 0 0012  
153 000320 0 0014  
154 000364 0 0016  
155 000404 0 0018  
156 000446 0 0020  
157 000486 0 0022  
158 000528 0 0024  
159 000570 0 0026  
160 000610 0 0028  
161 000648 0 0030  
162 000688 0 0032  
163 000728 0 0034  
164 000768 0 0036  
165 000808 0 0038  
166 000875 0 0040  
167 000975 0 0045  
168 001075 0 0050  
169 001175 0 0055  
170 001275 0 0060  
171 001375 0 0065  
172 001475 0 0070  
173 001575 0 0075  
174 001675 0 0080  
175 001778 0 0085  
176 001878 0 0090  
177 001980 0 0095  
178 002080 0 0100  
179 002180 0 0105  
180 002280 0 0110  
181 002380 0 0115  
182 002475 0 0120  
183 002575 0 0125  
184 002675 0 0130  
185 002775 0 0135  
186 002875 0 0140  
187 002975 0 0145

\*

L93, 97

093 VELOCITY CORRECTION TAPE

094 RA-5-4-72

095 RA-5-5-72

096 LAUNCH 2123

097 TABLE 0003

\*

L98, 139

098	000042	0	0000	0003	000	000000	000000
099	000082	0	0002				
100	000122	0	0004				
101	000162	0	0006				
102	000202	0	0008				
103	000242	0	0010				
104	000282	0	0012				
105	000320	0	0014				
106	000364	0	0016				
107	000404	0	0018				
108	000446	0	0020				
109	000486	0	0022				
110	000528	0	0024				
111	000570	0	0026				
112	000610	0	0028				
113	000648	0	0030				
114	000688	0	0032				
115	000728	0	0034				
116	000768	0	0036				
117	000808	0	0038				
118	000875	0	0040				
119	000975	0	0045				
120	001075	0	0050				
121	001175	0	0055				
122	001275	0	0060				
123	001375	0	0065				
124	001475	0	0070				
125	001575	0	0075				
126	001675	0	0080				
127	001778	0	0085				
128	001878	0	0090				
129	001980	0	0095				
130	002080	0	0100				
131	002180	0	0105				
132	002280	0	0110				
133	002380	0	0115				
134	002475	0	0120				
135	002575	0	0125				
136	002675	0	0130				
137	002775	0	0135				
138	002875	0	0140				
139	002975	0	0145				

\*

RA-5-4-72 PARAMETER TAPE LISTING

FEST=71000  
CLAT=2050000  
CMER=156/00/00  
GRID=15  
PLSCL=5000  
PLAT=19/37/30  
PLON=156/01/00  
S1LAT=58/23/29.514  
S1LON=153/57/40.528  
S2LAT=58/50/49.119  
S2LON=153/17/47.572  
Q=1799.6  
VESNO=2120  
YR=72

---

ABSTRACT OF POSITIONS  
 RA-5-4-72  
 Kona Coast, Hawaii, 1972

<u>VESSEL</u>	<u>JULIAN DAY</u>	<u>POSITION NUMBERS</u>	<u>REMARKS</u>
RA-4	268	1-136	
RA-4	269	139-265	
RA-4	270	266-310	266-294 - D.P.'s 307-310 - Bottom Samples 288-294 - Deleted
RA-3	279	2000-2005	
N/A	279	288-294 311-314	288-294 - Hand Lead D.P.'s 311-314 - " " " No Vessel Used

51

SIGNAL TAPE LISTING  
RA-5-4-72  
Kona Coast, Hawaii, 1972

401	19	38	4534	156	00	2626	T-12542
403	19	38	2761	156	00	2255	"
405	19	38	2704	156	00	1320	KAILUA LIGHT, 1928
407	19	38	2742	156	00	0432	T-12542
409	19	38	3184	155	59	5780	"
411	19	38	3493	155	59	5615	"
412	19	38	3360	155	59	5203	"
413	19	38	3386	155	59	4760	KAILUA MOKUAIKANA CHURCH SPIRE ( <i>reference sta.</i> )
414	19	38	3116	155	59	4932	T-12542
415	19	38	2836	155	59	4860	"
417	19	38	2491	155	59	4723	"
419	19	38	2433	155	59	3703	"
420	19	38	1922	155	59	3872	"
421	19	38	0946	155	59	3573	"
422	19	38	0501	155	59	3813	"
423	19	37	5730	155	59	3188	"
424	19	37	4615	155	59	2680	"

RAINIER DATA IDENTIFICATION		
OPR. <u>4/9</u>		
SHEET · RA. <u>5-4-72</u>		
TYPE OF DATA <u>TC/TI P/O</u>		
FLEXOWRITER _____ TELETYPE <u>✓</u>		
DAY	FROM POS.	TO POS.
REMARKS <u>for All Seasons</u>		

TC/TI TAPE  
 RA-5-4-72  
 PATH: KAYTHEON 834  
 LAUNCH 2124

085345 0 0011 0004 268 000000 000000  
 085406 0 0010  
 085420 0 0005  
 085653 0 0008  
 091415 0 0011  
 091433 0 0010  
 091447 0 0005  
 091738 0 0008  
 094030 0 0011  
 094053 0 0010  
 094106 0 0005  
 094358 0 0008  
 095036 0 0005  
 095406 0 0010  
 095419 0 0011  
 095805 0 0010  
 095810 0 0005  
 100108 0 0008  
 100532 0 0005  
 100850 0 0010  
 100916 0 0011  
 102740 0 0010  
 102813 0 0005  
 102901 0 0010  
 102921 0 0005  
 104615 0 0010

404625 0 0009  
104721 0 0004  
104736 0 0009  
104844 0 0004  
105406 0 0009  
110245 0 0011  
110305 0 0010  
110528 0 0005  
111643 0 0010  
111658 0 0005  
111723 0 0010  
111937 0 0011  
112650 0 0010  
113003 0 0005  
113606 0 0010  
113905 0 0011  
124750 0 0010  
130215 0 0005  
130236 0 0010  
130440 0 0011  
131625 0 0010  
131903 0 0005  
132806 0 0010  
133032 0 0011  
133955 0 0010  
134219 0 0005  
135145 0 0010  
135328 0 0011  
141413 0 0010  
141635 0 0005  
142200 0 0011  
142250 0 0012  
142318 0 0011  
142450 0 0012  
151212 0 0011  
154445 0 0009  
154547 0 0010  
083330 0 0008 0004 269 000000 000000  
083532 0 0005  
083838 0 0010  
083842 0 0011  
085200 0 0012  
085235 0 0011  
085347 0 0012  
090915 0 0011  
101950 0 0010  
102003 0 0011  
103056 0 0010  
103150 0 0011  
104038 0 0010  
104420 0 0011  
112415 0 0010  
112417 0 0011  
113200 0 0010  
124115 0 0011  
094300 0 0011 0004 270 000000 000000

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3-5-76 76-30  
(2-71)

DESIGNED BY  
PROGRAMMERS BY INSTRUCTION NO. 64.

U.S. DEPARTMENT OF COMMERCE—NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

NON-FLOATING AIDS OR LANDMARKS FOR CHARTS

ORIGINATING LOCATION

NOAA Ship RAINIER

ORIGINATING ACTIVITY

- FIELD INSPECTION
- FIELD EDIT
- COMPILATION
- FINAL REVIEW
- QUALITY CONTROL AND REVIEW

(See reverse for responsible personnel)

DATE 11/8/72

The following objects have (have not) been inspected from seaward to determine their value as landmarks:

JOB NUMBER	PH	SURVEY NUMBER	DESCRIPTION	DATUM		POSITION		LONGITUDE	METHOD AND DATE OF LOCATION (See instructions on reverse of this form)	CHARTS AFFECTED	
				6401	T-12542	LATITUDE	LONGITUDE				
CHARTING NAME	STATE: Hawaii		DESCRIPTION	LATITUDE	LONGITUDE	PARAMETERS	PARAMETERS	FIELD INSPECTION	COMPILATION	FIELD EDIT	
<del>HOTEL</del>			Kona Hilton Hotel <del>at</del> top (yellow in evening)	19°38'	155°59'	36.0m				F.3.a 10/6/72	C&GS 41140 41164
LAILUA LIGHTHOUSE			White, pyramidal, concrete light tower.	19°38'	156°00'	13.1m				F.3.a 10/6/72	C&GS 41140 41164
CHURCH SPIRE*			Tall spire on the north end of stone and mortar church building	19°38'	155°59'	17.60m		(sec.)		P.1 9/25/72	C&GS 41140 41164
FISHING BOOM			Fishing boom located on the Lailua pier	19°38'	155°59'	386.8m		(meters)		P.1 9/25/72	C&GS 41164
									*NOTE:	Church spire located on photo 63-S(C)-7915	
										As position scaled agrees with published G.P. position, published position was shown.	



C. ANGE #1

(1) Project No. 419 (4) Requested by Verification

(2) H No. 9337 (5) Ship or Office \_\_\_\_\_

(3) Field No. RA5-4-72 (6) Date Required \_\_\_\_\_

(7) Visual  Ft. (0) or Fathoms (1)  (8) Electronic  (fill out form #3)

(9) XKN (SP 5) Distance from CENTER to East Edge (NYX = 1) 1748.3 Meters  
 or West Edge (NYX = 0).

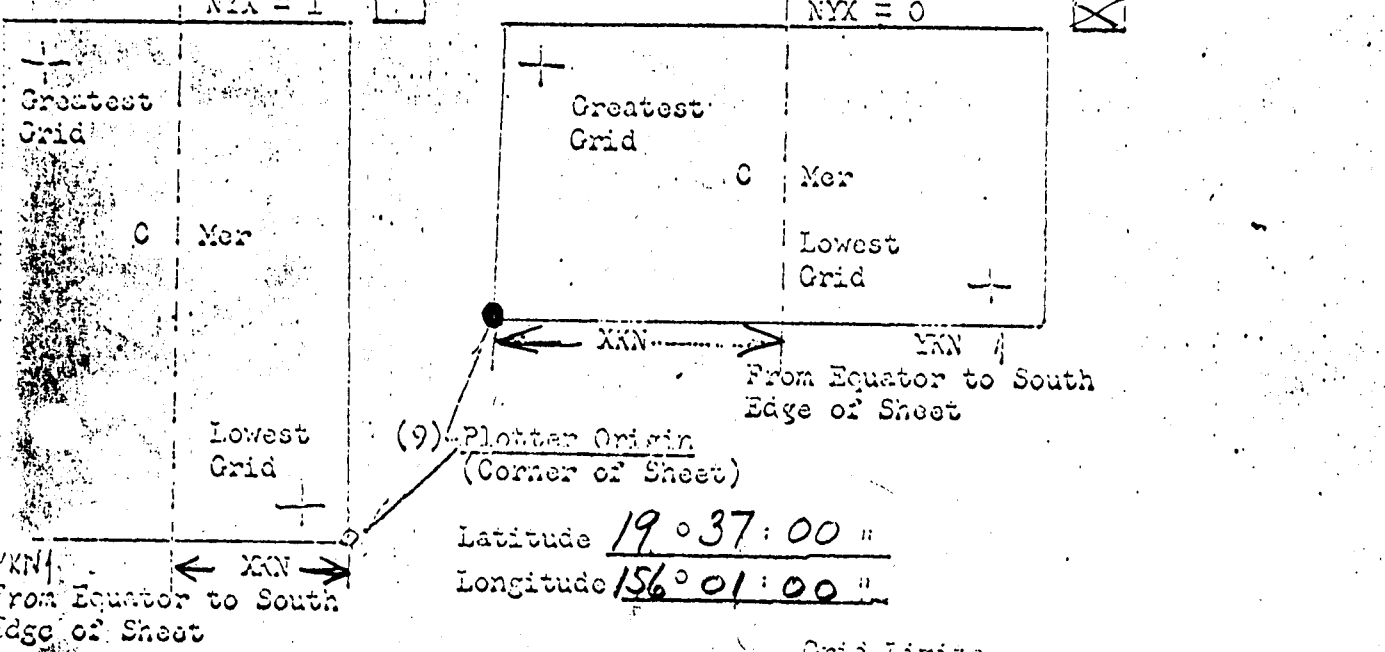
(1) YKN (SP 241) Distance from Equator to South Edge of Sheet. 2,169,801.1 Meters ✓

(2) Central Meridian 156° 00' 00"

(3) Survey Scale 1:5,000

(4) Size of Sheet (Check one) 36x60  42x60

(5) NYX, Orientation of sheet (Check one)



(9) Plotter Origin (Corner of Sheet)  
 Latitude 19° 37' 00"  
 Longitude 156° 01' 00"

Grid Limits		
(16) Greatest Latitude	<u>19° 39' 15"</u>	(Projection Line Interval Page 4 Hydro Manual)
(17) Lowest Latitude	<u>19° 37' 15"</u>	(19) <u>00' 15"</u>
(18) Difference	<u>0 2' 00"</u>	(20) <u>8</u> YSN
(21) Greatest Longitude	<u>156° 00' 45"</u>	(21) <u>00' 15"</u>
(22) Lowest Longitude	<u>155° 59' 00"</u>	(25) <u>7</u> XSN
(23) Difference	<u>0 1' 45"</u>	

H-9337

Field No. 11-23-73  
 Date 11-23-73

PARAMETER AND UNIT PARAMETER CARDS

PARAMETER CARD II

semi major axis of the earth	6.378,206.4	RDA	1 6	2 3	3 7	4 8	5 2	6 0	7 6	8 4	9 0	10 7
X Constant - Distance from central meridian to origin of plotter SP 5		YZW	1 1	2 7	3 4	4 8	5 3	6 0	7 0	8 0	9 4	10 4
Y Constant - Distance from equator to origin of plotter SP 241		YKN	1 2	2 1	3 6	4 9	5 8	6 0	7 1	8 1	9 0	10 7
Central Meridian of Projection	156 00 00 00	CR	1 5	2 6	3 1	4 6	5 0	6 0	7 0	8 0	9 0	10 6
Plotter Scale/Survey Scale	*10/93.6876 1:51000	SCA	1 2	2 0	3 9	4 9	5 7	6 3	7 3	8 5	9 0	10 1
North/south axis of sheet - to correspond to (Y axis - 0)		NTX										0
East/False indicator	0 - Feet 1 - Fathom	FOR										0
Identification No.		JN										0
		YR										7

FOR - 1

PARAMETER CARD III

Lowest Lat. Intersection	19 37 15	YST	1 7	2 0	3 6	4 3	5 5	6 0	7 0	8 0	9 0	10 5
Lowest Long. Intersection	155 59 00	XST	1 5	2 6	3 1	4 5	5 4	6 0	7 0	8 0	9 0	10 6
Difference between Grid	15	DXY	1 1	2 5	3 0	4 0	5 0	6 0	7 0	8 0	9 0	10 2
Interval (Long)		XSN										0 7
Interval (Lat)		YSN										0 8

Computed  
 Punched  
 Checked  
 Date

S I G N A L P L O T T E R C A R D S

H-NO.		LATITUDE	LONGITUDE	X	Y	X
09337	401	72 19384534	156002626	02065	06801	401
09337	403	72 19382761	156002255	02291	05656	403
09337	405	72 19382704	156001320	02863	05620	405
09337	407	72 19382742	156000432	03407	05644	407
09337	409	72 19383184	155595780	03806	05929	409
09337	411	72 19383493	155595615	03906	06129	411
09337	412	72 19383360	155595203	04159	06043	412
09337	413	72 19383386	155594760	04430	06060	413
09337	414	72 19383116	155594932	04324	05886	414
09337	415	72 19382836	155594860	04368	05705	415
09337	417	72 19382491	155594723	04452	05482	417
09337	419	72 19382433	155593703	05076	05445	419
09337	420	72 19381922	155593872	04973	05115	420
09337	421	72 19380946	155593573	05156	04485	421
09337	422	72 19380501	155593813	05009	04197	422
09337	423	72 19375730	155593188	05391	03700	423
09337	424	72 19374615	155592680	05702	02980	424

000017

**APPROVAL SHEET**

**OPR-419**

*9336B*

**H-9537 (RA-5-4-72)**

**September 24, 1972 - October 5, 1972**

**Kailua Bay, Hawaii**

In producing this sheet hydrographic procedures were observed and the data was examined daily during the execution of the survey. The data on the boat sheet and the accompanying records have been examined by me and are considered complete and adequate, and are approved.

*G.E. Haraden*

**G.E. Haraden**

**CAPT, NOAA**

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 Green  
Supervisory,  
Cartographic Technician

Approved and forwarded,

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

---

**TIDE NOTE**

**H-9337 (RA-5-4-72)**

It is recommended that the tide station existing at Kailua Kona, Hawaii (latitude 19°38.52'N and longitude 155°59.97'W) be used to control the soundings on this survey. Hourly heights will be furnished to the PMC Processing Division by the ship. Reduction to MLLW, missing tidal data, and copies of the marigrams will be furnished by Tides Division, Rockville. Hourly heights are complete for this sheet.

Predicted tides for boat sheet control were obtained from the Tide Tables, 1972, West Coast of North and South America using the Kailua Bay station. The tides were machine generated, and applied directly to the data when plotted by the computer.

4/16/74

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): Kailua Kona

Period: Aug. 12 - Nov. 13, 1972

HYDROGRAPHIC SHEET: H933<sup>6B</sup>

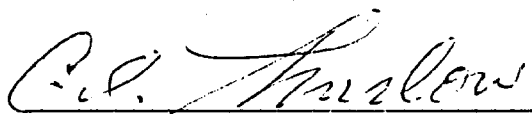
OPR: 419

Locality: West Coast of Hawaii Island

Plane of reference (mean lower low water): 2.5 ft.

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

Remarks: Zone direct on Kailua Kona gage.

  
Chief, Tides Branch

GEOGRAPHIC NAMES

Survey No.

H9337 B, 1972

Name on Survey

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

	A	B	C	D	E	F	G	H	K
✓ HAWAII									1
✓ KAILUA BAY									2
✓ KAILUA KONA									3
✓ KALAE PAAKAI									4
✓ KUKAILIMOKU POINT									5
✓ LANIAKEA									6
✓ ONE <sup>0</sup> BAY									7
✓ PACIFIC OCEAN									8
									9
									10
									11
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									23
									24
									25
									26

Approved by:  
 Char. E. Harrington  
 Staff Geographer  
 6 Aug 1974



HYDROGRAPHIC SURVEY STATISTICS  
 HYDROGRAPHIC SURVEY NO. H-9336B

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		4	
DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES	2 field records and raw fathograms					
CAHIERS						
VOLUMES						
BUNDLE	1 (4) envelopes raw printouts					

T-SHEET PRINTS (List)

Advanced Manuscript T-12542

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				
POSITIONS CHECKED		299		
POSITIONS REVISED	3	3		
DEPTH SOUNDINGS REVISED	60	60		
DEPTH SOUNDINGS ERRONEOUSLY SPACED				
SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED				
	TIME (MANHOURS)			
Verification of Control		10	6	
Verification of Positions		8	6	
Verification of Soundings		21	22	
Smooth Sheet Compilation		40	40	
ALL OTHER WORK <i>Datum Adjustments</i>			6	
<b>TOTALS</b>		<b>79</b>	<b>80</b>	
PRE-VERIFICATION BY Mr. Greene	BEGINNING DATE 1-14-74	ENDING DATE		
VERIFICATION BY <i>James L. Stringer</i>	BEGINNING DATE 1/25/74	ENDING DATE 6/11/74		
REVIEW BY <i>Mark J. Fries</i>	BEGINNING DATE 5-7-75	ENDING DATE 7-8-75		

*Imp. B. Myers 36 hr 10/29/75*

*Carsten 4/11/76*

Reg. No. H-9336 a > b

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. H-9336 a > b

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-9336B

Items for Future Presurvey Reviews

No significant changes in the bottom configuration have been noticed since the prior surveys of 1928.

<u>Position Index</u>		<u>Bottom Change Index</u>	<u>Use Index</u>	<u>Resurvey Cycle</u>
<u>Lat.</u>	<u>Long.</u>			
193	1561	0	0	50 years
193	1560	1	1	50 years

OFFICE OF MARINE SURVEYS AND MAPS  
MARINE CHART DIVISION  
MODIFIED HYDROGRAPHIC SURVEY REVIEW

REGISTRY NO. H-9336B

FIELD NO. RA-5-4-72

Hawaii, Kona Coast, Kailua Bay

SURVEYED: September 24-26, October 5, 1972

SCALE: 1:5,000

PROJECT NO.: OPR-419

SOUNDINGS: Ross 5000 Depth Recorder, CONTROL: Sextant Fixes  
Raytheon DE-723 Depth Recorder, Leadline on Shore  
Recorder, Leadline Signals

Chief of Party ..... G. E. Haraden  
Surveyed by ..... R. G. Hendershot  
..... S. J. Hollinshead  
..... P. T. Woodard (Civilian)  
Automated Plot by ..... Gerber Digital Plotter  
..... (PMC)  
Verified and Inked by ..... J. L. Strigham  
Reviewed by ..... M. J. Friese  
..... Date: July 8, 1975  
Inspected by ..... G. K. Myers

1. Control and Shoreline

The source of control is adequately stated in Part F of the Descriptive Report.

The shoreline originates with advance manuscript T-12542 (1963-72). The mean high water line is shown for guidance only and, except for revisions in red determined by the hydrographer, the true position is shown on the topographic sheet previously discussed.

2. Hydrography

A. Depths at sounding-line crossings are in agreement.

B. The usual depth curves are adequately delineated except in foul areas or where ledge made passage dangerous. The development of the bottom configuration and the investigation of least depths are adequate.

### 3. Condition of the Survey

The survey records, automated plotting, and the Descriptive Report are adequate and conform to the requirements of the Hydrographic Manual supplemented by the Instruction Manual - Automated Hydrographic Surveys.

### 4. Junctions

An adequate junction was effected on the west and south with H-9334 (1972).

### 5. Comparison with Prior Surveys

A.	H-4790 (1928)	1:5,000
	H-4798 (1928)	1:20,000

These prior surveys constitute full coverage of the present survey area. A detailed comparison between the prior and present depths reveals good agreement, with the exception of some offshore areas where random differences of 2-4 feet are found. These differences are mainly attributed to different surveying methods employed.

Several soundings, bottom characteristics, and rocks awash were brought forward from H-4790 (1928) in order to supplement the present hydrography. With these additions, the present survey is adequate to supersede the prior survey in the common area. Also, the extended coral ledge charted in the immediate vicinity of latitude 19°38.33', longitude 155°59.7' from H-4790 should be revised to reflect a field edit investigation of 1972. ✓ 4/3/77 DJK

### 6. Comparison with Chart 4164 (latest print date, March 30, 1974)

#### A. Hydrography

The charted hydrography originates with the previously discussed prior surveys supplemented by partial application of depths from the boat sheet (Bp 86475) and verified smooth sheet of the present survey, and from a 1953 after-dredging survey by the Hawaii Territorial Board of Harbor Commissioners.

The 8-foot sounding charted at latitude 19°38.49', longitude 155°59.99', from the boat sheet of the present survey was misplotted and should be deleted from the chart. ✓ 2/2/77 DJK

The rocky ledge charted at latitude  $19^{\circ}38.51'$ , longitude  $155^{\circ}59.81'$ , was misinterpreted from T-12542 and should be revised to piles as shown on the present survey. <sup>2/21/72</sup>

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

B. Aids to Navigation

The charted aid to navigation adequately serves the purpose and marks the feature intended within the common area of the present survey. Several mooring buoys located on the present survey in the vicinity of latitude  $19^{\circ}38.1'$ , longitude  $155^{\circ}59.95'$ , are not charted.

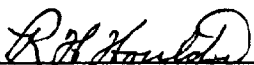
7. Compliance with Project Instructions

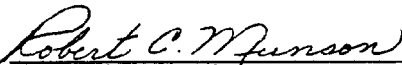
The present survey adequately complies with the project instructions.

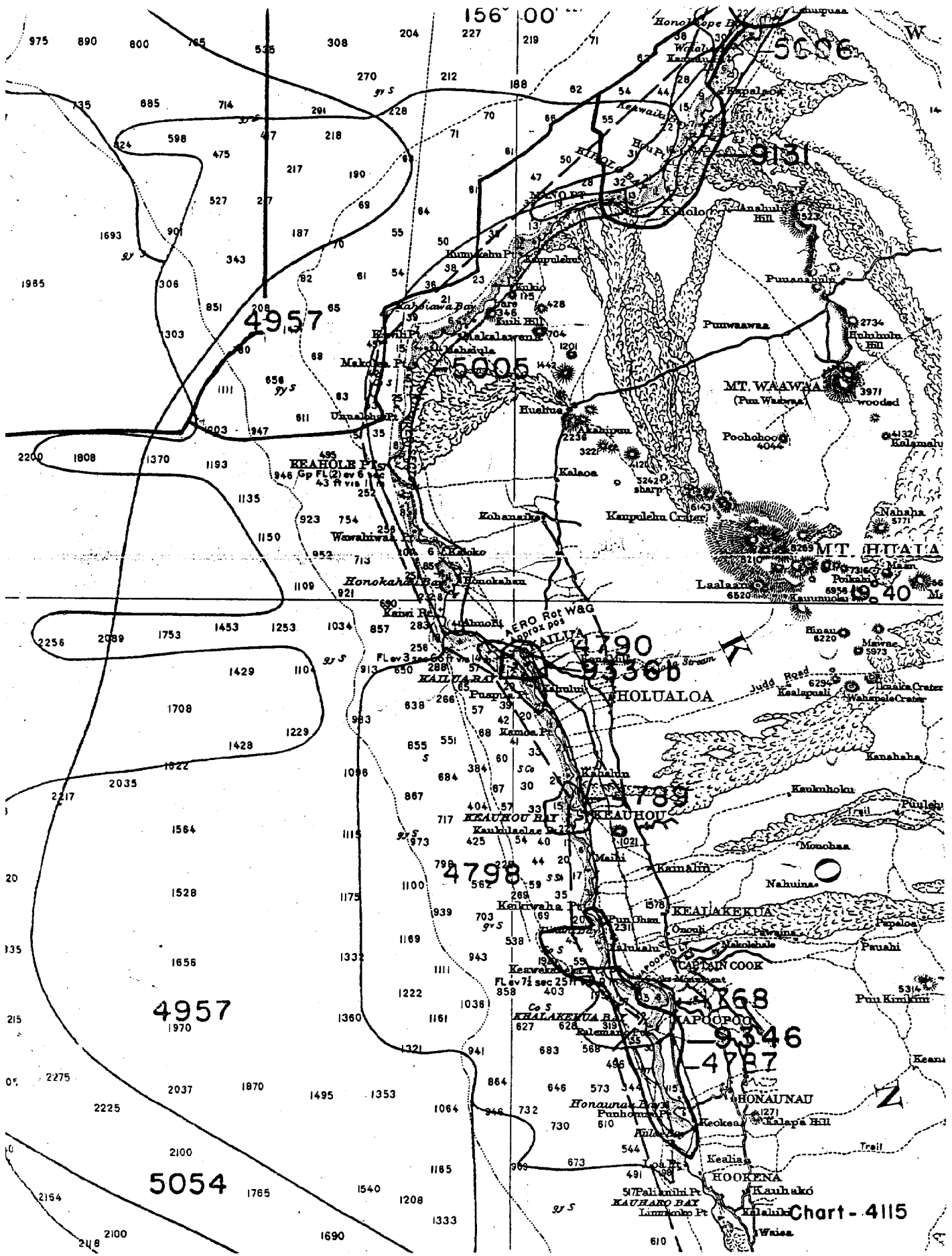
8. Additional Field Work

This is a good basic survey and no additional field work is recommended.

Examined and Approved:

  
\_\_\_\_\_  
Chief  
Marine Chart Division

  
\_\_\_\_\_  
Associate Director  
Office of Marine Surveys  
and Maps



156 00

5606

4957

5005

MT. WAAWAA  
(Pun. Waawaa)

MT. HIALEA

AERO Rot W&G  
approx pos

4790

3330b

WOLUALOA

4739

4798

4739

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Chart - 4115

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9336b

INSTRUCTIONS

- A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.
1. Letter all information.
  2. In "Remarks" column cross out words that do not apply.
  3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
4164 (19331)	7/15/74	B. Martof	Full Part Before After Verification Review Inspection Signed Via Drawing No. Examined for Notice to Mariners None Found. before
4001 (19007)	10/8/74	T. Alexander	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Exam'd for critical corr's, no corr's necessary at this scale. 10/8/74
4164 (19331)	8/10/75	Naitor	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Revised curves, snags, added rocks
4102 (19004)	8/28/75	Naitor	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Exam No corr at this scale
4000	9/2/75	KANIS	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. No correction at this scale
4115 (19320)	8/29/75	NAITO, R.	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. EXAM. THRU CNT. 4140, NO CORR. AT THIS SCALE
4140 (19327)	8/29/75	NAITO, R.	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. App'd misc corr. thru CNT. 4164
4179 (19010)	8/29/75	HAUSMAN, W	<del>Full Part Before</del> After Verification Review Inspection Signed Via Drawing No. Exam thru 4102, No Corr
4164 (19331)	1/27/77	Forber	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. App'd corrections throughout. Revised curves, snags, added rocks, added reefs, revised foul areas
4000 (540)	9/21/77	M. Sager	Full <del>Part Before</del> After Verification Review Inspection Signed Via Drawing No. 15 NO. correction at this scale CONSIDER FULLY APPLIED
4102 (19004)	10/26/77	C.S. Forber	Fully appl after review, inspection and signature. No correction at this scale; consider fully appl.
4115 (19320)	2/7/78	M. J. Fium	Consider hydro fully app'd after signature thru Chart 4140 (7th Ed.)
19007	4-1-83	L.A. Simmons	Consider fully app'd after signature thru 19010 #14 19007. No Corr.
19327	3-7-77		Fully App'd
19010	1977		Fully App'd