

H-10052

Diagram No. 4115-2

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic
Field No. FA-20-2-82
Office No..... H-10052

LOCALITY

State Hawaii
General Locality Island of Hawaii
Locality Laupahoehoe Point to Hakaiau

1982

CHIEF OF PARTY
CMDR W.F. Forster

LIBRARY & ARCHIVES

DATE March 20, 1984

☆U.S. GOV. PRINTING OFFICE: 1980-766-230

CEA 6
ENTS:

193201 }
190101 } to sign off see
190071 } Record of Application
190041 }
5401 }

HYDROGRAPHIC TITLE SHEET

H-10052

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.

FA-20-2-82

State Hawaii

General locality Island of Hawaii

Locality Laupahoehoe Point to Hakalau

Scale 1:20,000

Date of survey Sept. 27 to Oct. 2, 1982

Instructions dated July 30, 1982

Project No. OPR-T126-FA-82

Vessel 2023, 2025, 2026, and 2027

Chief of party Cmdr. W. F. Forster, NOAA

Surveyed by Ens. P. T. Steele, Ens. F. J. Migaiolo, Ens. A. F. Francis

Soundings taken by echo sounder, hand lead, pole Ross Finline 5000

Graphic record scaled by Ship Personnel

Graphic record checked by Ship Personnel

Verification

Performed by Robert N. Mihailov

Automated plot by PMC Xynetics Plotter

Evaluation

Performed by Gordon E. Kay

Soundings in fathoms feet at MLW MLLW

REMARKS: Notes and check marks in black ink were performed during Evaluation and/or Quality Control at the Pacific Marine Center, Seattle, Washington.

STANDARDS CK'D 3-23-84

C. W. J.

AWD15 - 6/28/84 J. M. J.

155 30

155 20

155 10

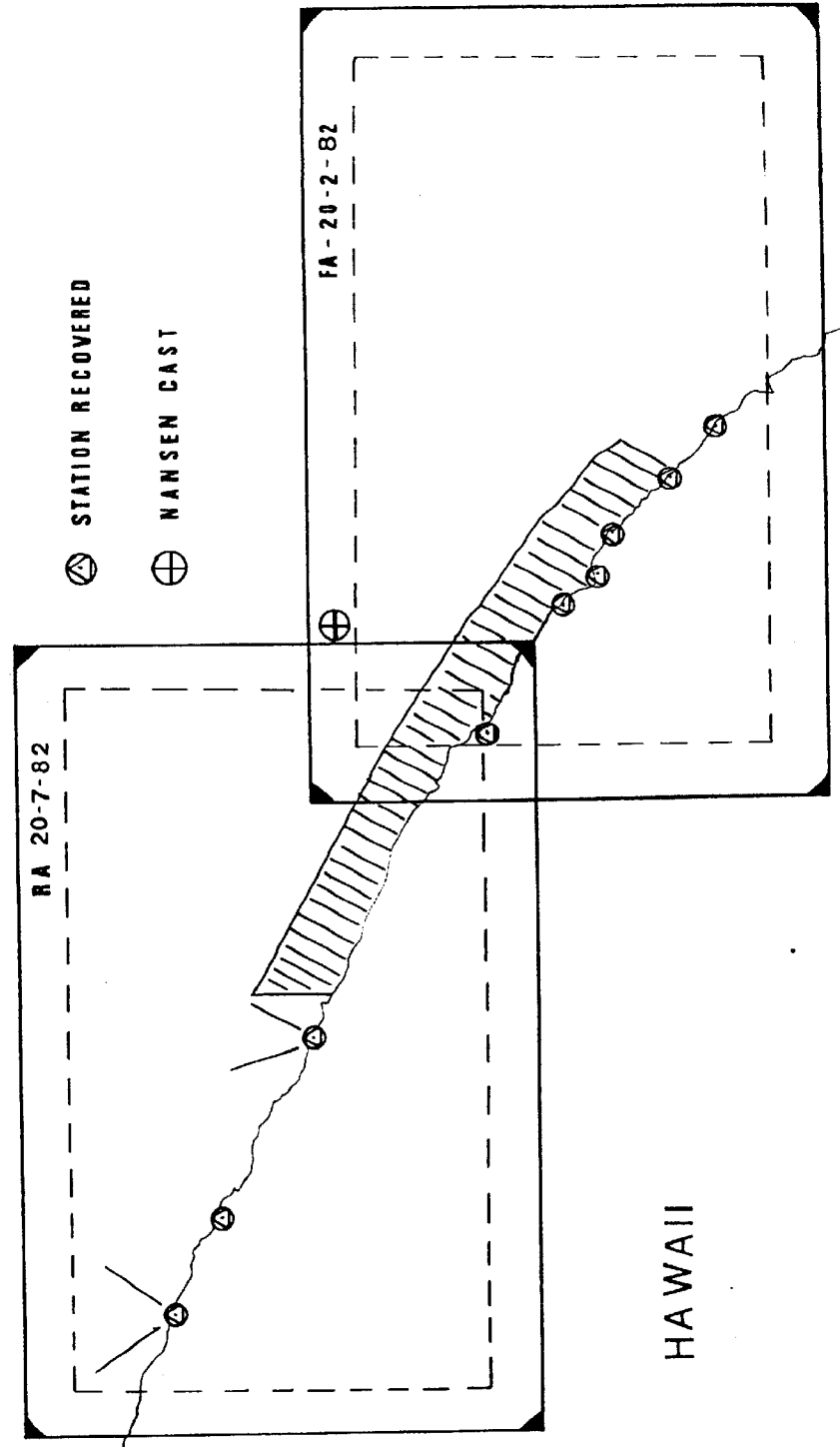
SEPT

OCT

MONTHLY PROGRESS SKETCH
OPR-T126 -FA-82
ISLAND OF HAWAII
NOAA SHIP FAIRWEATHER S-220
SCALE OF NOS CHART 19320

CDR. W.F.FORSTER CMOG

SQ NM SOUNDING LINE	12
LNW SOUNDING LINE	108.9
BOTTOM SAMPLES	14
HANSEN CAST	1
HYDRO CONTROL STATIONS	9
WATER SAMPLES	14
TIDE GAUGE INSTALLED	1



20 00

20 10

A. Project

This survey was conducted in accordance with Project Instruction No. OPR-T126-FA-82, Hawaiian Islands, dated July 30, 1982 and change number 1 dated September 7, 1982. The PMC OPORDER, the Hydrographic manual, fourth edition, and the Data Requirements Letter updated April 8, 1982 are applicable to this survey. ✓

B. Area Surveyed

This survey area is located on the Northeast coast of the Island of Hawaii. It ranges northwest along the coast from Hakalūa Bay to Laupahoehoe Pt. The Shoreline in this area is characterized by 200 to 300 foot bluffs covered with dense vegetation, and cut with numerous water falls. ✓

This survey is bounded by three contemporary surveys. The survey is bounded to the northwest by H-9986 and the southeast by H-9921. Hydrography was run from the surf zone seaward to a junction with H-9974 toward the north and H-9921 toward the east. ✓

Hydrography began on September 27, 1982 (JD 270) and finished on October 2, 1982 (JD 275). ✓

C. Sounding Equipment

Hydrographic data acquisition was conducted with Jensen survey launch FA-3 (2023). Launch FA-5 (2025) was utilized for acquiring all bottom samples in the survey area. FAIRWEATHER (2020) was used to obtain all Nansen cast data used on this survey. Detached positions were taken on close shoreline features with a Mini-Ranger III equipped inflatable boat (2027). ✓

D. Sounding Equipment and Corrections to Echo Soundings

All survey launches with the exception of inflatable boat (2027) were equipped with Ross Fine Line 5000 narrow beam echo sounders as shown in Table 1, Sounding Equipment.

TABLE 1 SOUNDING EQUIPMENT

Launch	Model	Analog S/N	Digitizer S/N	Inverter S/N	Transceiver S/N
2023	Ross 5000	1907	1047	1046	1047 ✓
2025	Ross 5000	1047	1054	1102	1048 ✓

Depths on this survey ranged from 0.8 to 139 fathoms. ✓

All echo sounding equipment was monitored closely and the initial adjusted as required. Phase calibration and belt tension adjustments were conducted each morning before hydrography.

All data was scanned at least twice to ensure analog/digital agreement and to make depth insertions. The effect of excessive wave and swell were corrected at this time in accordance with section 4.9.8.2 of the Hydrographic manual. No data was lost to sounding equipment malfunction. ✓

Velocity of sound in water was calculated from one deep water Nansen cast taken on 28 September 1982 at 20° 02.6'N by 155° 13.0'W. Reversing thermometers and the Beckmen Salinometers S/N 59435 and S/N 4919 were calibrated in March 1982 by the Northwest Regional Calibration Center.

Wind and sea conditions on the working grounds did not permit bar checks. Launch TRA values of 0.3 feet were selected based upon historical data from previous FAIRWEATHER projects.

Settlement and Squat for launches FA-3 (2023), FA-4 (2024), and FA-5 (2025) was determined at Shilshole Bay Marina, Seattle, in March 1982 and again for FA-3 (2023) and FA-4 (2024) in Old Woman's Bay, Kodiak, on 30 July 1982. Settlement and Squat for FA-6 (2026) was determined at Kaneohe Bay, Oahu, on 8 October 1982. Settlement and Squat for all launches was conducted in accordance with section 4.9.4.2 of the Hydrographic manual. Vessel speeds producing correctors greater than 0.2 feet were not usual during hydrography eliminating the need to apply settlement and squat correctors. ✓

E. Hydrographic Sheets

All field sheets were plotted aboard the FAIRWEATHER using two PDP8/E computers (S/N 09524 and S/N 5557-5).

All hydrographic data for this survey will be forwarded to the Pacific Marine Center in Seattle, Washington, for verification and smooth plotting. ✓

The final field sheet is plotted on an 18 X 50 inch sheet of mylar at a skew of 351° and a scale of 1:20,000.

F. Control Stations

Horizontal control for this survey was performed by RAINIER personnel in 1981 and recovered as described by FAIRWEATHER personnel less than one year later in 1982. All control is based upon the old Hawaiian datum.

Location of fixed aids to navigation and land marks for charts was accomplished using Third Order Class I methods and standards. All accuracy requirements were met and no unconventional methods were used. ✓

For further details see the Horizontal Control Report for this project.

G. Hydrographic Position Control

Sounding position control was accomplished using Motorola Mini-Ranger III and Wilde T-1 theodolites in standard range-azimuth configuration. Real time plotting was done manually to ensure line and sounding spacing. Non-real time plotting routines were used to produce the final field sheets (see Section R, Automated Data Processing). ✓

Mini-Ranger equipment was baseline calibrated on 8 September 1982 prior to hydrography and on 3 October 1982 at the close of hydrography on the Island of Hawaii. In both instances a HP-3808A EDM was used to measure a 100 meter baseline. All baseline calibrations were conducted in accordance with Appendix M of the PMC OORDER.

No systematic errors were observed between the beginning and ending BLC's; the final correctors are the average of the two baseline values for each console/RT and transponder combination. ✓

Daily critical systems checks were attempted initially using theodolite inter-

section and sextant fix methods, but were not found practical due to the control geometry and sea conditions. Non-critical system check methods were abandoned for the same reasons. To compensate for the lack of system checks, and insure data quality the 3 October 1982 BLC was scheduled. In this way the five days of hydrographic data collection were closely bracketed by Base Line Calibration data in lieu of critical system checks. ✓

No unusual operating or calibrating methods were used and no malfunctions were detected during operations. Low signal strength, poor control geometry and other systematic errors were avoided. No unusual atmospheric conditions were encountered. ✓

Further information is contained in the Electronic Control Report for this project. ✓

H. Shoreline

The shoreline for this survey came from 1:20,000 scale digitized copies of registered Class I shoreline manuscripts. Manuscripts TP-00068 and TP-00069 were digitized at the Pacific Marine Center in Seattle. 68 ✓

No field edit was performed in conjunction with this survey. All shoreline verification necessary for this survey has been encompassed by the field edit associated with surveys H-9986 and H-9921 by the RAINIER in 1981. The completed shoreline from TP-00068 and TP-00069 is considered adequate to support hydrography on this survey. Selected shoreline features of particular interest to mariners, such as rocks and reefs, were independently located using hydrographic methods. Agreement between hydrographic and photogrametric positions of these specific features was in accordance with the requirements of the PMC OORDER. ✓

I. Crosslines

A total of 12.8 nautical miles of crosslines were run for this survey. This figure comprised 15.7% of the 81.5 nautical miles of main scheme hydrography. Overall agreement between mainscheme and crossline hydrography was excellent when sounding coincidence and the steep nature of the bottom contours are taken into consideration. ✓

J. Junctions

This survey junctions with three contemporary surveys. The junction surveys from northwest to southeast are as follows: H-9986, a 1:20,000 scale RAINIER survey begun in 1981 and completed by FAIRWEATHER in 1982; H-9974, a 1:80,000 scale RAINIER survey also conducted in 1981; and H-9921, a 1:20,000 scale FAIRWEATHER survey from 1980. Comparison with junctional sounding from surveys H-9986 and H-9921 were in very good agreement, meeting the requirements of section 11.2 of the Hydrographic manual.

The following discrepancies were noted between surveys H-1005² and H-9974: ✓

LOCATION LAT/LONG	DEPTH ² H-1005 ²	DEPTH H-9974	RECOMENDATIONS
20° 00.52'N ✓ 155° 14.00'W	83	91	Use shoaler sounding from H-1005 ² survey to compile charts

LOCATION LAT/LONG	DEPTH H-10053	DEPTH H-9974	RECOMENDATIONS
20° 00.52' ³⁰ N ✓ 155° 14.68' ³⁰ W ✓	93	101	Use shoaler sounding from H-1005 ² 3 survey to compile charts
20° 00.17' ³⁰ N ✓ 155° 13.66' ³⁰ W ✓	77	85	"
20° 00.17' ³⁰ N ✓ 155° 13.55' ³⁰ W ✓	88	96	"
20° 00.17' ³⁰ N ✓ 155° 13.02' ³⁰ W ✓	95	104	"
19° 59.52' ³⁰ N ✓ 155° 12.21' ³⁰ W ✓	80	74	Supercede earlier soundings with more accurately positioned sounding from H-1005 ² 3
19° 59.55' ³⁰ N ✓ 155° 11.69' ³⁰ W ✓	99	92	"
19° 57.87' ⁵¹ N ✓ 155° 09.95' ⁵¹ W ✓	97	98	Use shoaler sounding from H-1005 ² 3 survey to compile charts

The factors resulting in the discrepancy between the soundings on H-9974 and H-1005²~~3~~ were due to the large difference in scale of the surveys and an irregular steeply sloping bottom. Overall agreement between H-1005²~~3~~ and H-9974 is good.

K. Comparison With Prior Surveys

No PSR items occur on this survey. No prior surveys were made available during field operations for this survey by C353. Repeated requests for prior survey materials, as listed in 6.10.1 of the Project Instructions, resulted in a verbal confirmation on 16 October 1982 by CPMI that no prior survey materials were available or required for this survey. ✓

L. Comparison With The Chart

The only chart that encompasses the area of this survey is the 1:250,000 scale chart of Hawaii Island, 19320 (13ED, 10 July 82). The one depth on the chart that falls within the survey area is a ten fathom sounding at 19° 59.45'N and 155° 13.85'W. This corrolates very closely with this survey when difference in scales is considered. ✓

M. Adequacy

This survey is accurate, complete and fully adequate to supercede all prior surveys. There is no incomplete or sub-standard portions. The Commanding Officer inspected all work on a daily basis. No further field work is necessary. ✓

N. Aids to Navigation

One aid to navigation falls within the limits of this survey: Laupahoehoe Pt. Light. The location and characteristics of Laupahoehoe Pt. Light were verified with U. S. Coast Guard Light List, 1982 edition, and the NOS chart 19320. Geodetic position information for this aid was obtained from the horizontal ✓

control report filed by the RAINIER in 1981 (OPR-T126-RA-81). Laupahoehoe Pt. Light effectively serves its intended purpose as a non-floating aid to visual navigation. Ookaka Mill stack has not been previously described as land mark for charts and therefore could not be verified by comparison with prior publications. *This feature is located on H-9786 (1981-82)*

O. Statistics

Jensen survey launch FA-3 (2023) was used to collect the bulk of the data for this survey. Approximately 81 nautical miles of sounding lines were run, accounting for 524 separate positions spanning over 17 square miles. Jensen survey launch FA-5 (2025) was utilized for the collection of 7 bottom samples. FAIRWEATHER provided logistic support on the working grounds and took one Nansen cast. Main tidal data was gathered at the Hilo harbor ADR tide gauge. A 3-day tidal zoning gauge was operated at Laupahoehoe Point.

P. Miscellaneous

There were no anomalous tidal currents or races discovered within the limits of this survey.

Due to very hazardous surf conditions inshore, it was not possible to survey to the zero fathom curve. No Hazards to navigation exist on this survey.

Q. Recomendations

FAIRWEATHER recomends that this survey be used in conjunction with other contemporary surveys to update the existing 1:250,000 scale chart of the area (19320), or produce new larger scale charts as required.

R. Automated Data Processing

The following is a list of the Hydroplot programs used for data acquisition and processing during this survey.

<u>Number</u>	<u>Program Name</u>	<u>Version Date</u>
RK 201	Grid, Signal and Lattice Plot	4/18/75
RK 212	Visual Station Load and Plot	4/1/74
RK 300	Utility Package	10/21/82
RK 330	Data Reformat and Check	5/4/76
PM 360	Electronic Corrector Abstract	2/2/76
AM 500	Predicted Tide Generator	11/10/72
RK 530	Velocity Correctors	5/10/76
RK 561	Geodetic Calibration	2/19/75
AM 602	Elinore	5/21/75

S. Referral to Reports

The following separate reports covering OPR-T126-FA-82, Hawaii, can be referred to for further detail on sepecific items:

S. Referral to Reports (cont.)

Horizontal Control Report
Electronic Control Report

Corrections to Echo Soundings Report
Geographic Names Report
Field Tide Note

Additionally:

Horizontal Control Report, RAINIER, 1981

FA 20-2-82 PARAMETER LISTING
SCALE 1:20000
SKEW 321,18,50

FEST=70000
CLAT=2176000
CMER=154/55/00
GRID=60
FLSCL=20000
PLAT=20/00/45
PLON=155/17/50
VESNO=2020
YR=82
ANDIST=0.0

Field Tide Note
OPR-T126-FA-82
Hawaii, Hawaiian Islands

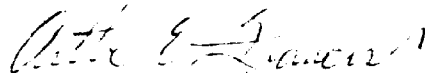
Field tide reduction of soundings was based on predicted tides from Hilo, Hawaii. Correctors were interpolated by the Hydroplot system using program AM 500. All times of both predicted and recorded tides were based on Universal Coordinated Time (UCT). Predicted tides were acceptable for hydrography with no discrepancies attributable to tides errors.

The tide station at Hilo, Hawaii (161-7760) was the primary gage for project OPR-T126-FA-82. Levels were run by FAIRWEATHER personnel at the beginning and end of the project. Three wire levels were run to five benchmarks on 23 October 1982 (JD 266). A closure of 0.6 mm was found for the entire leveling run of .68 km. Closing levels were run to four benchmarks on October 3, 1982 (JD 276). A closure of 1 mm was seen for the entire leveling run of .43 km.

Tide data from this station was used to control surveys FA-20-2-82 (H-10053) and RA-20-7-82 (H-9986). Data from station 161-7760, Hilo, Hawaii, will be transmitted at a later date by the local tide observer in charge of the Hilo gage. All hydrography was run between September 27, 1982 (JD 270) and October 2, 1982 (JD 275). No gage anomalies were seen during hydrographic operations.

A separate gage used solely for zoning purposes was established at Lapahoehoe Pt., Hawaii (station number 161-7725). Fisher/Porter ADR gage number 7404A0407M8 was installed on October 3, 1982 (JD 276) and remained until October 6, 1982 (JD 279) when it was removed. Opening levels were run to three temporary benchmarks on October 3, 1982 (JD 276) and a closure of 2.2 mm was seen for the entire leveling run of .091 km. Closing levels were run on October 6, 1982 (JD 279) to the same three temporary benchmarks and a closure of 2.2 mm was seen for the entire leveling run of .093 km. No gage anomalies were seen during operation. Times of hydrography abstracts are appended to this field tide note.

Submitted by:



Arthur E. Francis
Ensign, NOAA
NOAA Ship FAIRWEATHER

Approved by:



Cdr. Walter F. Forster
Commanding Officer
NOAA Ship FAIRWEATHER

DATE: February 10, 1983

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

Tide Station Used (NOAA Form 77-12): 161-7760 Hilo Hawaii

Period: September 27-October 2, 1982

HYDROGRAPHIC SHEET: H-10052

OPR: T126

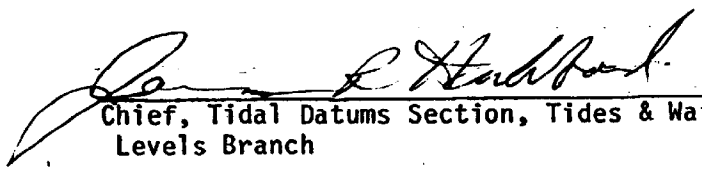
Locality: NE Coast of Hawaii

Plane of reference (mean lower low water): 3.69 ft.

Height of Mean High Water above Plane of Reference is 2.0 ft.

REMARKS: Recommended Zoning:

1. North of $19^{\circ}58.0'$ apply -20 minute time correction and x1.14 range ratio.
2. South of $19^{\circ}58.0'$ apply -10 minute time correction and x1.14 range ratio.


Chief, Tidal Datums Section, Tides & Water
Levels Branch

GEOGRAPHIC NAMES

Name on Survey HAKALU TO LAUPAHOEHOE POINT	A ON CHART NO. 10220		B ON PREVIOUS SURVEY		C ON U.S. QUADRANGLE MAPS PAPAALOIA		D FROM LOCAL INFORMATION		E ON LOCAL MAPS		F P.O. GUIDE OR MAP		G RAND McNALLY ATLAS		H U.S. LIGHT LIST		K	

HAWAII (Title)																		1
HAIKU POINT	X		X															2
HAKALAU	X		X															3
HAKALAU BAY			X															4
HAWAII (ISLAND)	X		X															5
HONOCHINA			X															6
KAIAAKEA POINT			X															7
KUKU POINT			X															8
LAUPAHOEHOE	X		X															9
LAUPAHOEHOE POINT	X		X															10
MAULUA BAY	X		X															11
NINOLE	X		X															12
PAPAALOIA			X															13
PELEULI POINT			X															14
WAIEHU POINT			X															15
WELOKA	X		X															16
NAHAKU POINT																		17
																		18
																		19
										Approved:								20
																		21
										<i>Charles E. Harrington</i>								22
										Chief Geographer - M/CG 2X5								23
																		24
										22 SEPT. 1983								25

VELOCITY TABLE 1

OPR-T126-FA-82, Hawaii Island, Hawaii
Sept. 27 - Oct. 2, 1982

001	000010	0	0000	0001	001	000000	000000
002	000032	0	0001				
003	000050	0	0002				
004	000069	0	0003				
005	000087	0	0004				
006	000105	0	0005				
007	000124	0	0006				
008	000143	0	0007				
009	000161	0	0008				
010	000179	0	0009				
011	000207	0	0010				
012	000250	0	0012				
013	000290	0	0014				
014	000325	0	0016				
015	000365	0	0018				
016	000400	0	0020				
017	000435	0	0022				
018	000475	0	0024				
019	000515	0	0026				
020	000550	0	0028				
021	000620	0	0030				
022	000700	0	0035				
023	000815	0	0040				
024	000890	0	0045				
025	001020	0	0050				
026	001130	0	0055				
027	001320	0	0060				
028	001510	0	0065				
029	999999	0	0070				

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2025 R/AZ B.S. SHEET : FA20-2-82

TIME	DAY	PATTERN 1
215804	274	-00004
234830		-00001
000748	275	-00001
004500		+00000

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2023 R/AZ SHEET : FA20-2-82

TIME	DAY	PATTERN 1
212230	270	-00004
200700	271	-00006
231430		-00006
193400	272	-00004
192700	273	-00004
000000	274	-00004
193000		-00004
200400		-00004
000755	275	-00004
184130		-00006
192530		-00004
195700		+00000

001		HAWAII ISLAND SIGNAL LISTING			
002		OPR T126 FA 82			
003		FA 20-2-82 (H1005 ²)			
004					
005	LAUPAHOEHOE2	1981		191551	NOAA SHIP RAINIER;UNPUBLISHED
006	129 3	19 59	48787 155 14	33866	250 0004 000000
007					
008	KUKU POINT	1981		191551	NOAA SHIP RAINIER;UNPUBLISHED
009	134 3	19 58	07162 155 12	17651	250 0068 000000
010					
011	KAIAAKEA POINT	1981		191551	NOAA SHIP RAINIER;UNPUBLISHED
012	135 3	19 57	06517 155 10	50431	250 0020 000000
013					
014	LAUPAHOEHOE POINT LIGHT			191551	
015	208 6	19 59	48375 155 14	35945	139 0014 000000
016					
017	LAUPAHOEHOE2 RM1	1981		191551	NOAA SHIP RAINIER;UNPUBLISHED
018	305 3	19 59	48739 155 14	33776	250 0003 000000
019					
020	LAUPAHOEHOE2 RM2	1981		191551	NOAA SHIP RAINIER;UNPUBLISHED
021	306 3	19 59	42963 155 14	35447	250 0009 000000
022					
023	LAUPAHOEHOE2 RM3	1982		191551	NOAA SHIP FAIRWEATHER;UNPUBLISHED
024	307 3	19 59	48629 155 14	33860	250 0004 000000

ABSTRACT OF POSITIONS

H-100582 Console # 701
 FA-20-2-82 (or Mobile unit)

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR #		TYPE OF HYDRO						Sheets where Plotted		Rejected or Duplicated Positions	
			S1 XPDR #	M1 S2 XPDR #	MS	XL	MS SPLITS.	PSR #	DEVEL. #	BS or DPs	Main Sheet	Enlargement #		
270	2000- 2055	03	305	5	X							X		
271	2056- 2135	03	305	7	X							X		
271	2136- 2149	03	305	7		X						X		
272	2150- 2229	03	135	5	X							X		
273/ 274	2230- 2365	03	135	5	X							X		
274	2366- 2383	03	135	5		X						X		
274	2384- 2396	03	135	5		X						X		
274	2397	03	135	5								X		
274	2398- 2487	03	135	5	X							X		2411, 2412, 2413 2429, 2434
275	2488- 2501	03	135	5		X						X		
275	2502- 2514	03	307	7	X							X		
275	2515- 2523	03	135	5	X							X		
275	6264- 6272	03	307	9								X		

ABSTRACT OF POSITIONS

H- **100572** Console # **272**
 FA- **20-2-82** (or Mobile unit)

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR #			TYPE OF HYDRO					Sheets where Plotted		Rejected or Duplicated Positions
			S1	M	S2	MS	XL	MS SPLITS.	PSR #	DEVEL. #	BS or DPS	Main Sheet	
275	8003	03	135 / 5							X		X	

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

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

VESSEL 2025	DATE	PROJ. NO. OPR-T126-FA		YEAR 82	CHECKED BY T.B.		DATE CHECKED 10 Nov. 82				
		LATITUDE	LONGITUDE		FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)					
SERIAL NO.	DATE	SAMPLE POSITION		DEPTH (Fathoms)	WEIGHT OF SAM- PLER	AP- PROX. PENE- TRA- TION	LENGTH OF CORE	COLOR OF SEDI- MENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
6266	1 Oct	19 59.74	155 13.88	31				gn	gn M		FJM
6267	"	19 59.06	155 12.83	33				gn	gn M		"
6268	"	19 58.67	155 12.29	30					CRS S		"
6269	"	19 57.60	155 10.98	27					Hrd, Sh		"
6270	"	19 56.59	155 10.00	35					Hrd		"
6271	"	19 56.19	155 09.03	35					Hrd, Co		"
6272	"	19 55.28	155 08.10	36				bk	P, bk Sh		"

NOAA FORM 76-40
(8-74)

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

NONFLOATING AIDS OR LANDMARKS FOR CHARTS

Replaces C&GS Form 567.
 TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT
(If field Party, Ship or Office)
NOAA Ship Fairweather

STATE
Hawaii

LOCALITY
N.E. Hawaii Island

DATE
09/82

OPR PROJECT NO.
OPR T126-Fa-82

HAVE HAVE NOT
 The following objects have been inspected from seaward to determine their value as landmarks.

JOB NUMBER
H-9986 and H-10052

DATUM
Old Hawaiian

METHOD AND DATE OF LOCATION
(See instructions on reverse side)

ORIGINATING ACTIVITY
 HYDROGRAPHIC PARTY
 GEODETIC PARTY
 PHOTO FIELD PARTY
 COMPILATION ACTIVITY
 FINAL REVIEWER
 QUALITY CONTROL & REVIEW GRP.
 COAST PILOT BRANCH
 (See reverse for responsible personnel)

CHARTING NAME
Light (3670)

DESCRIPTION
(Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses.)
Laupahoehoe Point Light, 1981

POSITION
 LATITUDE LONGITUDE
 ° / ° / // //
 D.M. Meters D.P. Meters
 19 59 48.375 35.945
 1487.53 155 14 104.885

OFFICE

FIELD
* By Rainier
Preliminary adjusted position

CHARTS AFFECTED
* F-2-6-L 11/81 19320

L-402(84)

RESPONSIBLE PERSONNEL	
TYPE OF ACTION	NAME
OBJECTS INSPECTED FROM SEAWARD	<i>Todd A. Baxter</i> Todd A. Baxter, Lt. NOAA
POSITIONS DETERMINED AND/OR VERIFIED	<i>Walter F. Forster</i> Walter F. Forster, CDR. NOAA
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES	

ORIGINATOR

- PHOTO FIELD PARTY
 HYDROGRAPHIC PARTY
 GEODETIC PARTY
 OTHER (Specify)

FIELD ACTIVITY REPRESENTATIVE

OFFICE ACTIVITY REPRESENTATIVE

- REVIEWER
 QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64)

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

Enter the number and date (including month, day, and year) of the photograph used to identify and locate the object.

EXAMPLE: 75E(C)6042
8-12-75

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

- F - Field
- L - Located
- V - Verified
- 1 - Triangulation
- 2 - Traverse
- 3 - Intersection
- 4 - Resection
- 5 - Field Identified
- 6 - Theodolite
- 7 - Planetable
- 8 - Sextant

A. Field positions* require entry of method of location and date of field work.

EXAMPLE: F-2-6-L
8-12-75

*FIELD POSITIONS are determined by field observations based entirely upon ground survey methods.

FIELD (Cont'd)

B. Photogrammetric field positions** require entry of method of location or verification, date of field work and number of the photograph used to locate or identify the object.

EXAMPLE: P-8-V
8-12-75
74L(C)2982

II. TRIANGULATION STATION RECOVERED

When a landmark or aid which is also a triangulation station is recovered, enter 'Triang. Rec.' with date of recovery.

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

**PHOTOGAMMETRIC FIELD POSITIONS are dependent entirely, or in part, upon control established by photogrammetric methods.

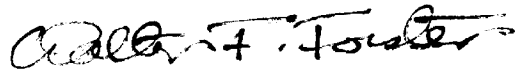
The Commanding Officer inspected all field sheets and field data on a daily basis. All survey sheets, reports, and records are complete. This survey is adequate for charting purposes and no additional field work is deemed necessary.

Submitted by:



Jeffrey A. Koch
Ensign, NOAA
NOAA Ship FAIRWEATHER

Approved by:



Walter F. Forster
Commander, NOAA
Commanding Officer
NOAA Ship FAIRWEATHER

HYDROGRAPHIC SURVEY STATISTICS

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	BOAT SHEETS & PRELIMINARY OVERLAYS	1
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS	3

DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES						
CAHIERS			1			
VOLUMES						
BOXES			1			

T-SHEET PRINTS (List) TP-00068, TP-00069

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	TOTALS
POSITIONS ON SHEET			526
POSITIONS CHECKED		526	526
POSITIONS REVISED		1	1
SOUNDINGS REVISED		19	19
SOUNDINGS ERRONEOUSLY SPACED		-0-	-0-
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		-0-	-0-
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	3	Verification & Evaluation	3
VERIFICATION OF CONTROL		6 3	9
VERIFICATION OF POSITIONS		28 5	33
VERIFICATION OF SOUNDINGS		54 11	65
COMPILATION OF SMOOTH SHEET		47 4	51
APPLICATION OF TOPOGRAPHY		-0- -0-	-0-
APPLICATION OF PHOTOBATHYMETRY		-0- -0-	-0-
JUNCTIONS		8 4	12
COMPARISON WITH PRIOR SURVEYS & CHARTS		8 8	8
VERIFIER'S REPORT		8 5	16
OTHER		5 5	5
TOTALS	3	151 48	202

Pre-Verification by James S. Green (Evaluation - Gordon E. Kay)	Beginning Date 12/28/82	Ending Date 12/28/82
Verification by Robert N. Mihailov Matthew S. Sanders	Beginning Date 1/19/83	Ending Date 1/10/84
Verification Check by Stanley H. Otsubo, James S. Green	Time (Hours) 31	Date 1/31/84
Marine Center Inspection by	Time (Hours)	Date
Quality Control Inspection by	Time (Hours)	Date
Requirements Evaluation by	Time (Hours)	Date

PACIFIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO: H-10052

FIELD NO: FA-20-2-82

Hawaii, Island of Hawaii, Laupahoehoe Point to Hakalau

SURVEYED: September 27 to October 2, 1982

SCALE: 1:20,000

PROJECT NO: OPR-T126-FA-82

SOUNDINGS: Ross Fineline 5000

CONTROL: Motorola Mini-
ranger/T-2
Range/Azimuth

Chief of Party.....Cmdr. W. F. Forster

Surveyed By.....Ens. P. T. Steele
Ens. F. J. Migaiolo
Ens. A. F. Francis

Automated Plot By.....PMC Xynetics Plotter

Verified By.....Robert N. Mihailov
Matthew S. Sanders

Evaluated By.....Gordon E. Kay

1. INTRODUCTION

H-10052 is a basic hydrographic Survey conducted by the NOAA Ship FAIRWEATHER (S-220) in accordance with the following:

Project Instructions for OPR-T126-FA-82, Hawaiian Islands, dated July 30, 1982.

Change No. 1, September 7, 1982

Change No. 2, November 17, 1982

Change No. 3, January 20, 1983

H-10052 is situated along the northeast coast of the Island of Hawaii between Laupahoehoe Point southeast to Hakalau. The coastline is very rugged with extremely steep faced cliffs extending to the rocky shoreline.

During the verification and evaluation/quality control, the following was changed.

- a. Projection parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.
- b. Tide level corrections used on H-10052 are from observed tides, (see Tide Note for Hydrographic Sheet (H-10052) attached).

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are discussed in paragraphs F and G of the Ship's Descriptive Report and in the Electronic and Horizontal Control Reports for OPR-T126-FA-82.

The smooth sheet was plotted using N.G.S. published positions and preliminary adjusted field positions, on the Old Hawaiian Datum.

The shoreline comes from the following unreviewed manuscripts.

Number	Class	Scale	Date of Photography	Date of Field Edit
TP-00068	I	1:20,000	Dec. 1976, Mar. 1977	Nov. 1981
TP-00069	I	1:20,000	Dec. 1976, Jan. 1977	Oct. 1980

3. HYDROGRAPHY

Soundings at crosslines are in good agreement. The hydrography contained in this survey (H-10052), is adequate to determine the bottom configuration and least depths.

Standard depth contours were adequately drawn and developed with the exception of the 0-fathom, 1-fathom, 2-fathom, 3-fathom and 5-fathom depth contour where hydrography was terminated at the breakers.

4. CONDITION OF SURVEY

The hydrographic records and final reports adequately conform to the requirements of the Hydrographic Manual, 4th edition, revised through change 3, and Hydrographic Guidelines that are in effect as of this date, with the following exceptions:

a. Mini-Ranger system checks were not performed due to sea and weather conditions and poor intersection angles. System checks for short range electronic positioning systems are required at the beginning and end of each workday (Hydrographic Manual, sections 1.3.3.2.4 and 4.4.3.3); however, no degradation of data quality is apparent as a result of this deviation from standard procedures.

b. Range-azimuth operations were conducted from station Laupahoehoe 2, RM1 with an instrument initial on Laupahoehoe Point Light. The distance between these two stations is less than 100 meters. Section 4.4.4 of the Hydrographic Manual establishes a minimum distance of 500 meters between a station and an azimuth mark for range-azimuth control.

c. Check azimuths are required for checking the initial pointing for range-azimuth operations (Hydrographic Manual 4.4.4 and the cover letter for PMC OORDER Appendices Q, R, S, and T, dated April 22, 1982). This requirement was not adhered to.

5. JUNCTIONS

<u>Survey</u>	<u>Year</u>	<u>Scale</u>	<u>Relative Location</u>
H-9921	1981	1:20,000	Southeast
H-9974	1981	1:80,000	Northeast
H-9986	1981-82	1:20,000	Northwest

A comparison of hydrography within the common areas indicates adequate agreement of soundings and depth curves; however, a formal junction has not been effected with H-9921 and H-9974 since these surveys have been previously forwarded to Headquarters.

6. COMPARISON WITH PRIOR SURVEYS

There are no prior surveys located within the limits of H-10052, and there are no Presurvey Review Items or items for investigation located within the limits of H-10052.

7. COMPARISON WITH CHART

H-10052 was compared with Chart 19320, 13th Edition, July 10, 1982, at a scale of 1:250,000.

a. Hydrography - There are only three charted soundings that fall within the limits of H-10052, (sources unknown). The 120 and 91 fathom charted soundings appear to be 10 fathoms deeper than present depths, a 10 fathom charted sounding agrees well with present survey depths. There are nine charted rocks within the limits of H-10052. All but one rock can be accounted for by features located on this survey. This rock is located on the chart at latitude 19°56'48"N, longitude 155°10'30"W, and originates from an unknown source. It is recommended that the chart compiler determine the source of this charted rock and if the position is valid, retain this rock as charted. Except for the above mentioned rock, H-10052 supersedes the charted data within the common areas.

There have been no dangers to navigation identified or reports submitted by the NOAA Ship FAIRWEATHER or by the Pacific Marine Center, Seattle, Washington, during processing of H-10052.

b. Controlling Depths - There are no controlling depths located within the limits of H-10052.

c. Aids to Navigation - There are no floating aids and only one fixed aid to navigation located within the limits of H-10052. The fixed aid is Laupahoehoe Point Light located at latitude 19°59'48.375"N, longitude 155°14'35.945"W which adequately marks the feature intended.

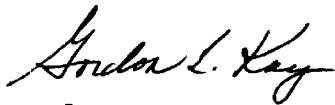
8. COMPLIANCE WITH INSTRUCTIONS

H-10052 complies with the project instructions and changes listed in section 1 of this report.

9. ADDITIONAL FIELD WORK

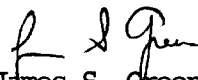
H-10052 is a good basic survey. Additional field work is not recommended or required at this time.

Submitted,



Gordon E. Kay
Cartographer-Evaluator
February 8, 1984

This survey has been verified and evaluated. I have examined this survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting. This survey is recommended for approval.



James S. Green
Supervisory Cartographer



**U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration**

National Ocean Survey
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

December 7, 1982

TO: N/MOP211 - James S. Green

FROM: *Ned C. Austin*
N/MOP21 - Ned C. Austin

SUBJECT: Correction of Registry Number for Survey FA-20-2-82

The correct registry number for Survey FA-20-2-82 is H-10052 and is assigned by memorandum from C353 to CPM1 dated September 30, 1982. An erroneous registry number (H-10053) was provided verbally to the FAIRWEATHER.

All hydrographic data should be changed to reflect the correct registry number.

cc: N/MOP22
C.O., FAIRWEATHER



ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10052

I have reviewed the smooth sheet, accompanying data, and reports of this hydrographic survey. Except as noted in the Evaluation Report, the hydrographic survey meets or exceeds Charting and Geodetic Services (C&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

Paul W. Leager 2/29/84
Chief, Nautical Chart Branch (Date)

CLEARANCE:

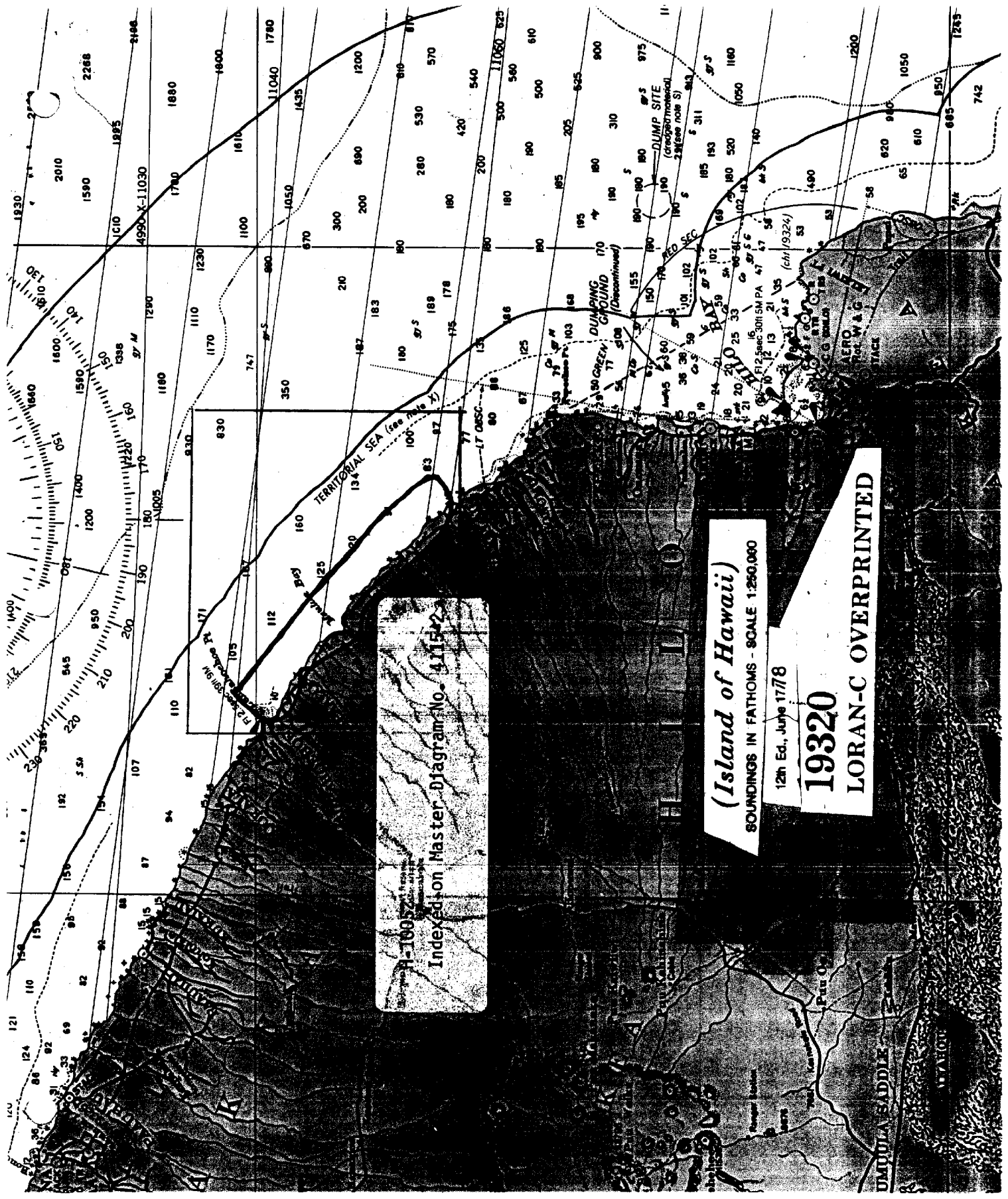
N/MOP2:LWMordock

SIGNATURE AND DATE:

Leager 3/2/84

After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

Robert Townsend 3/2/84
Director, Pacific Marine Center (Date)



11-18052
Indexed on Master Diagram No. 111542

(Island of Hawaii)
SOUNDINGS IN FATHOMS - SCALE 1:250,000

12th Ed., June 1978

19320
LORAN-C OVERPRINTED

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10052

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	JOE CARTOGRAPHER	REMARKS
19010	9-24-84	B Fernandez	Full Part ^{FREE PART} Before After Verification Review Inspection Signed Via
19320	7-6-88	Charles E Jones	Drawing No. 15 Exam for crit corr only. No Corr.
19320	7-6-88	Charles E Jones	Full Part ^{FULL} Before After Verification Review Inspection Signed Via Drawing No. 16
540	5-1-90	Ray R. Leonard	Full Part Before After Verification Review Inspection Signed Via Drawing No. 18
19010	7/31/90	Alan B. Downing	Full Part Before After Verification Review Inspection Signed Via Drawing No. Full application of sndgs from SS thru 19004
19004	7/12/90	Arundson	Full Part Before After Verification Review Inspection Signed Via Drawing No. Full application of Sndgs from SS thru 19320
19007	8/6/90	Arundson	Full Part Before After Verification Review Inspection Signed Via Drawing No. full application of sndgs. from SS thru 19004.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
			Full Part Before After Verification Review Inspection Signed Via Drawing No.
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