9908

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-20-4-80

Office No. H-9908

LOCALITY

State Hawaii

General Locality Island of Hawaii

Locality Haena to Cape Kumukahi

1980

CHIEF OF PARTY
CAPT A.J. Patrick

LIBRARY & ARCHIVES

DATE February 16, 1984

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

9908

AREA 6
CHARTS
19320
19010
19007
19004
} to sign off see Record of Application

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: H-9908

FIELD NO.: FA 20-4-80

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: Hawaii

General locality: Island of Hawaii

Locality: Haena to Cape Kumukahi

Scale: 1:20,000 Date of survey: Sept. 21 - Oct. 21, 1980

Instructions dated: August 4, 1980 Project No.: OPR-T126-RA,FA-80

Vessel: NOAA Ship FAIRWEATHER Launches 2023, 2024, 2025

Chief of party: CAPT Archy J. Patrick

Surveyed by: LCDR D. C. Boutle, Royal Navy; LTJG V. D. Ross, LTJG C. P. Hancock

Soundings taken by echo sounder, hand lead, pole: Ross Fineline Model 5000

Graphic record scaled by: Ship's Personnel

Graphic record checked by: Ship's Personnel

Verification ~~Protracted~~ by: Gordon E. Kay, Robert N. Mihailov Automated plot by: PMC Xynetics Plotter

Evaluation ~~Verification~~ by: Gordon E. Kay

Soundings in fathoms ~~feet~~ at ~~MLW~~ MLLW

REMARKS: Marginal notes and revisions in black were made by the evaluator.

STANDARDS CK'D
2-16-84 GKay

Navals Checked 3/7/84 SDV

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

☆ U.S. GOVERNMENT PRINTING OFFICE: 1976—665-661/1222 REGION NO. 6

PROGRESS SKETCH
OPR-T126-FA-80
NOAA SHIP FAIRWEATHER S-220
HAWAII ISLAND, HAWAII
CAPT. A. J. PATRICK, CMDG
SCALE OF NOS CHART 19320
–1980–

	SEPT	OCT	NOV
LNM SOUNDING LINE	36	1031	594
SQ NM SOUNDING LINE	3	1237	44
BOTTOM SAMPLE	0	92	75
NANSEN CTD CAST	0	4	3
LNM FIELD EDIT	20	20	0

△ STA. ESTABLISHED
⊙ STA. RECOVERED
⊖ TIDE GAGE
NANSEN CTD CAST

STATIONS RECOVERED & ESTABLISHED

SEPTEMBER

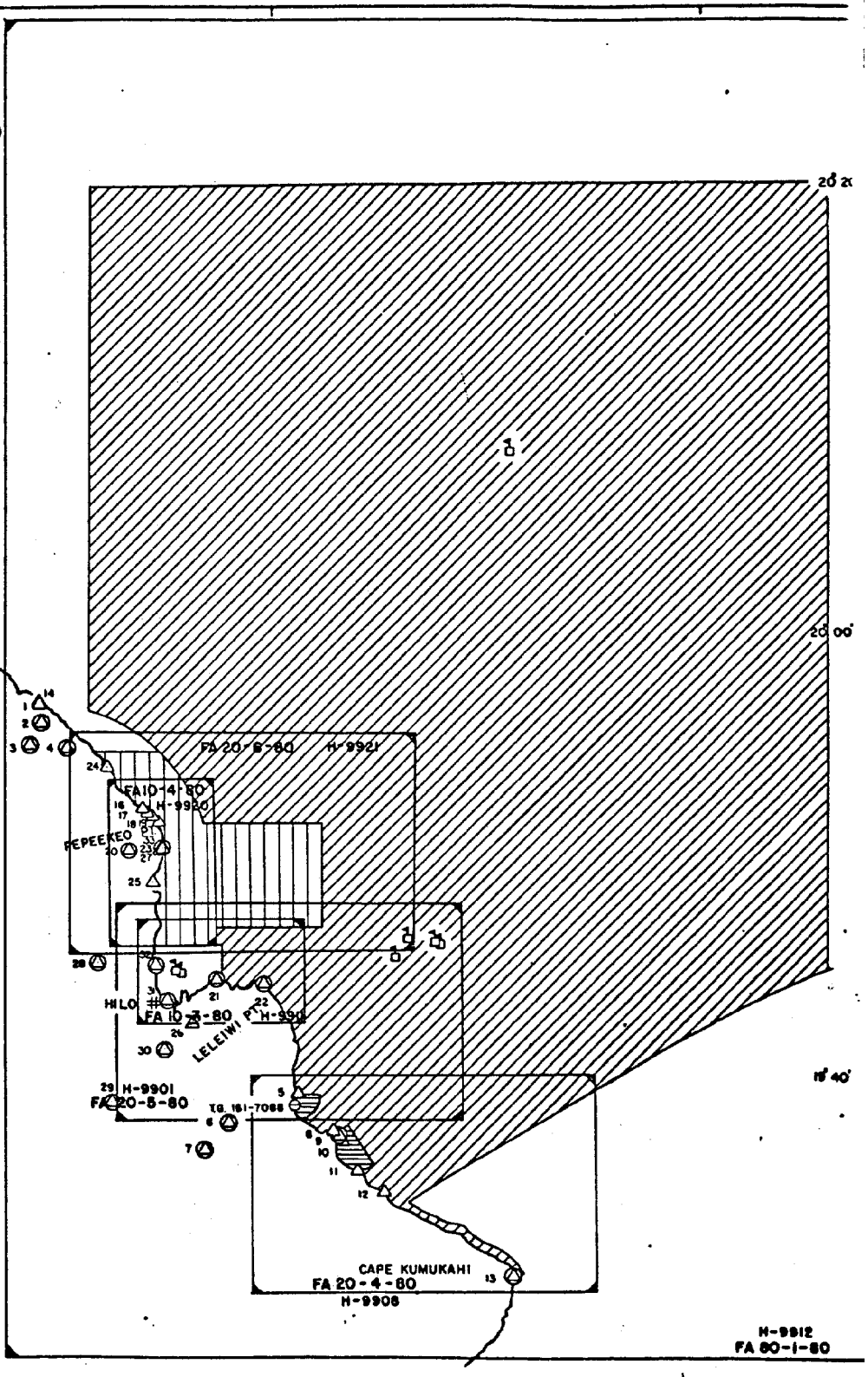
1 KAYDIST, 1980
2 HAIKU, 1877
3 COOK HGS, 1949
4 HONOHINA, 1877
5 WAHINII, 1980 M/R
6 OLAA STACK
7 KEAAU, 1949
8 KALOLI 2, 1949 - RM 3, 1980 M/R
9 KALOLI 2, 1949 M/R
10 KALOLI 2, 1949 - RM 4, 1980 M/R
11 POOL, 1980 M/R
12 OPIHI RK, 1980 M/R
13 CAPE KUMUKAHI LT.
14 KAYDIST RM 1, 1980 RAYDIST
15 KALOLI 2, 1949 - RM 5, 1980 RAYDIST M/R

OCTOBER

16 KAHOLA, 1980 M/R
17 WAIEHU, 1980 M/R
18 HAIPO, 1980 M/R
19 LOEA, 1980 M/R
20 ALALA HGS, 1877 M/R
21 KEOKEA 2, 1951 M/R
22 LELEIWI USGS, 1912 M/R

NOVEMBER

23 PEPEEKEO, 1980
24 HAKALAU, 1980 M/R
25 ONOMEA, 1980
26 GENERAL LYMAN FIELD STACK
27 PEPEEKEO STACK
28 KAIWIKI NEW USGS, 1949
29 WAIAKEA MAUKA USGS, 1949
30 WAIAKEA NEW USGS, 1949
31 COCONUT POINT LIGHT M/R
32 PAUKAA POINT LIGHT
33 PEPEEKEO POINT LIGHT M/R



DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY H-9908 (FA 20-4-80)
Scale: 1:20,000, Year: 1980
NOAA Ship FAIRWEATHER
Chief of Party: Commander Walter F. Forster

A. PROJECT

This hydrographic survey was conducted in accordance with Project Instructions OPR-T126-FA-80, Hawaii, Hawaiian Islands, dated August 4, 1980. There were four amendments to the instructions which are listed in Table I. The PMC OPORDER and Data Requirements Letter, dated April 11, 1979, are applicable to this survey.

Table I

Change No.	Date
1	August 8, 1980
2	August 15, 1980
3	September 9, 1980
4	November 28, 1980

B. AREA SURVEYED

The area covered by this survey covers from latitude 19°31'16"N, at Cape Kumukahi, to latitude 19°39'06"N, and extends offshore to at least the 150 fm contour. This survey began on September 21, 1980 (J.D. 265) and was concluded on October 21, 1980 (J.D. 295).

C. SOUNDING VESSELS

All soundings were obtained by launches FA-3 (EDP No. 2023, hull 1011) and FA-4 (EDP No. 2024, hull 1010). Bottom samples were collected by FA-5 (EDP No. 2025, hull 1001). There were no unusual vessel configurations or problems.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All soundings were taken by Ross Fineline echo sounders. There were no unusual faults in the equipment. Serial numbers of the sounding equipment are as follows:

Vessel	Analog	Transceiver	Digitizer	Inverter
FA-3 (2023)	1054	1047	1054	1046
FA-4 (2024)	1097	1046	1047	1054

Corrections

1. Velocity of Sound - MarTek casts, Nansen casts and bar check data were used to calculate velocity corrections for smooth plotting, but no velocity corrections were applied to the final field sheet submitted with this report. An abstract of corrections to echo soundings in the appendix contains velocity correctors. More information can be found in the Corrections to Echo Soundings Report, OPR-T126-FA-80.

2. Instrument Initial - Echo sounder operators monitored the initial setting during operations and reinitialed the analog recorder when necessary.

3. Phase Calibrations - The phase calibration for each echo sounder was checked each day before operations and when necessary at night by the ET Department.

4. Settlement and squat corrections for dynamic draft changes were determined using a level and level rod as described in section 4.9.4.2 of the Hydrographic Manual. These corrections were found to be less than 0.1 fathoms for all vessel speeds used and thus no corrections were applied.

The MarTek unit used was serial number 395, calibrated by the Northwest Regional Calibration Center in September 1979 and March 1980. The salinometer used for the Nansen casts was an Industrial Instruments RS-7B28298, calibrated by Northwest Regional Calibration Center in April 1980.

Velocity of Sound Stations

Date	Position	Nansen	MarTek
October 7, 1980	19°46'24"N 154°53'36"W	X	
October 16, 1980	20°08'00"N 154°49'00"W	X	
November 19, 1980	19°45'30"N 155°02'48"W (Outside Hilo Harbor)		X
November 19, 1980	19°44'28"N 155°05'45"W (Inside Hilo Harbor)		X
November 20, 1980	19°46'00"N 154°55'00"W	X	

For more information, see Corrections to Echo Soundings Report, OPR-T126-FA-80.

E. HYDROGRAPHIC SHEETS

The Final Field Sheet was constructed aboard the ship on mylar using program RK 201, the PDP 8/e computer and the Complot plotter, serial number 6166-22.

There are no enlargement or overlay sheets. The parameters for this sheet are attached at the end of the report. There are no irregularities in projection, scale or other properties. The field records will be sent to the PMC Processing Division for verification and smooth plotting.

F. CONTROL STATIONS

Horizontal control for this survey was provided by existing and newly established triangulation stations which were located to third order Class I standards. There were no unconventional methods used or anomalies in closure. Traverse was the method used to locate the monumented and described stations. Ten photogrammetrically located points were used as signals (signal numbers 300-309) for range/visual hydrographic control. The following is a list of the control stations on the sheet that have been monumented and described:

FIX, 1966 Lighthouse
CAPE KUMUKAHI ~~LT~~, 1949
OPIHI ROCK, 1980
POOL, 1980
KALOLI 2, 1949
WAHINII, 1980

Stations KALOLI 2, 1949, RM 3 ~~1980;~~ KALOLI 2, 1949, RM 4 1980; KALOLI 2, 1949, RM 5 ~~1980~~ and WAHINII, RM 1 ~~1980~~ were all located to third order Class I accuracy and were used for hydrographic control. For more information, see Horizontal Control Report, OPR-T126-FA-80.

G. HYDROGRAPHIC POSITION CONTROL

Sounding line position control during this survey was provided by utilizing the range/azimuth and range/visual methods. Range measurements were provided by both the Motorola Mini-Ranger III and the Raydist systems. The Raydist station used was the Red base station, serial number 124, located on KALOLI 2, 1949, RM 5 ~~1980~~, signal number 100.

Hydro launch FA-3 (2023) was used with both Raydist and Mini-Ranger control.

FA-3 Components

Mini-Ranger console and R/T unit - S/N 702
Raydist Navigator - S/N 018
Raydist Mobile Transmitter - S/N 28
Navigation Interface - S/N 20 (J.D. 275/276 - S/N 37)
Strip Chart - S/N 11692

Hydro launch FA-4 (2024) was used exclusively with Mini-Ranger control.

FA-4 Components

Mini-Ranger console and R/T unit - S/N 701

Hydro launch FA-5 which was used for bottom samples employed Raydist control only.

FA-5 Components

Raydist Navigator - S/N 21
Raydist Mobile Transmitter - S/N 83
Navigation Interface - S/N 10
Strip Chart Recorder - S/N 11311

Four stations were used for range and azimuth control. See the abstract of positions in the appendix for shore station equipment usage.

The Raydist system was calibrated before and after operations each day. A mean corrector for the day was calculated and applied to the data. Calibration was accomplished by the range/range method using Mini-Ranger and program RK 561; or using simultaneous theodolite cuts calculated using program RK 300.

Mini-Ranger system checks were done each day before and after operations when weather permitted. Theodolite intersections calculated by program RK 300 and sextant fixes calculated by program RK 561 were the methods used.

Launch FA-4 (2024) encountered problems with the Raydist on J.D. 280 while running range/visual hydrography in the vicinity of Cape Kumukahi. The Raydist mast on station FIX 1966 was being tested with a Red base station on low power in preparation for use during the upcoming ship hydrography. When the station began transmitting, a lane jump occurred in the system on FA-4. The number of lost lanes was determined by a sextant fix using photogrammetric signals. The lanes were reset and double checked by returning to a known point on the coastline where a fix had been taken previously at the end of an inshore line. On the next sounding line, jumps again occurred. Again the lanes were reset and checked in the same manner. No more data was gathered on that day. An end of day calibration was taken and it agreed well with the morning calibration.

A baseline calibration of the Mini-Ranger system was performed before the start of hydrography on September 28, 1980 (J.D. 272). A mid-project calibration was conducted on October 28, 1980 (J.D. 302), after hydrography was completed on this survey. For console 702, used on launch FA-3 (2023), the correctors were determined by the average of the results of these two calibrations. However, the mid-project calibration of console 701, used on launch FA-4 (2024), showed significant changes in correctors. The last day that console 701 was used on this survey (J.D. 282) was 20 days prior to the mid-project calibration and system checks taken twice daily up to day 282 confirmed the correctors of the initial baseline calibration. Therefore, these initial correctors were applied to all data using consode 701 on this survey.

For more information, see Electronic Control Report, OPR-T126-FA-80.

H. SHORELINE

The entire shoreline on this survey was field edited and all additions and corrections have been transferred from the Field Edit Manuscripts to the Final Field Sheet. The only changes to the manuscripts as originally compiled were to the foul limits and the addition of nearshore rocks which were redrawn based on field edit data and the hydrographer's notes. These changes are plotted in red ink on the Final Field Sheet. Manuscripts TP-00822 and TP-00070 were used as the source for shoreline on this survey. The zero fathom curve could not be developed by the hydrographer due to the heavy surf conditions. All sounding lines were ended just outside the surf limits.

For more information, see the field edit reports for manuscripts TP-00822 and TP-00070.

I. CROSSLINES

A total of 12.1 miles of crosslines were run or 8.4 percent of the main scheme mileage. In general, agreement between the crosslines and the main scheme was within one fathom over gently sloping bottom and 2 fathoms over steep bottom. Occasionally a larger discrepancy occurred. This can be attributed to a combination of the following factors: steep bottom, narrow sounding beam width and large seas causing the launch to roll or pitch violently. At times depths recorded on the echo sounder oscillated by as much as 20 fathoms as the launch changed its attitude.

J. JUNCTIONS

The survey junctions to the south with a contemporary survey by the RAINIER, H-9918 (RA 20-7-80). The contours match and the soundings agree within 2 fathoms or less. The overlap is sufficient.

To the north the junction is with contemporary survey H-9909 (FA 20-5-80). Despite the complex contours and rough bottom in the area of the junction, there are no discrepancies and coincident soundings agree well. Coverage of the junction area is complete.

West of 154°54'W, this survey junctions offshore with contemporary survey H-9912 (FA 80-1-80). The work on the 1:80,000 scale survey was done by the ship and there is only a 1 or 2 sounding overlap in most cases. The bottom is very steep throughout the overlapping area and most of the soundings fit the contour patterns well. However, discrepancies of as much as 15 fathoms exist between comparable soundings on the two surveys. In all but one case the depths recorded by the ship were shoaler. All of these overlapping soundings were measured with the Ross echo sounder, except for position 434, H-9912 (FA 80-1-80), where the depth recorded simultaneously by the UGR echo sounder was used because the trace on the Ross was poor. The depths in the junction area range from 120 to 200 fathoms which is approaching the limit of operation for the Ross echo sounder. Because of the steeply sloping bottom and heavy sea conditions, the trace was not always good and therefore was subject to some interpretation, especially for the launch data.

East of 154°54'W, this survey junctions offshore with survey H-8991, a 1:30,000 scale survey done by the McARTHUR in 1968. By examining the sounding line patterns on H-8991 and talking to an officer who participated in that survey, it seems that there was a large overland propagation path for one navigation signal in the area of the junction. Considering this, the steepness of the bottom slope, the wider echo beam of the McARTHUR, and the orientation of the sounding lines parallel to the contours, discrepancies should be expected. The depths of the prior survey are generally shoaler than those of the current survey, but the sounding discrepancies range from 10 fathoms deeper to 30 fathoms shoaler than current survey depths. There is an isolated 29 fathom shoal sounding at 19°32'40"N, 154°49'34"W, and an isolated 25 fathom shoal sounding at 19°32'29"N, 154°49'19"W, on the prior survey. These were not found on the current survey. The 29 fathom depth is surrounded by depths of 60 to 97 fathoms on the current survey, with no indication of shoaling. Lines were run at 200 meter spacing over this entire area which is four times as dense as the 800 meter spacing requirement for these depths. It is recommended that this shoal not be carried forward to the current survey. The 25 fathom sounding is surrounded by 38 to 49 fathom depths on the current survey. There is minimal evidence of shoaling near position 2279, where a 3 fathom rise off the bottom was not investigated beyond the 200 meter densification pattern. The 25 fathom depth is doubtful, but it is recommended that it be carried forward since it was not disproved. see Evaluation Report section 5

K. COMPARISON WITH PRIOR SURVEYS

The only prior survey in the area is H-8991, discussed above. There were no presurvey review items.

L. CHART COMPARISON

Chart 19320, 12th edition, June 17, 1978, is the largest scale chart which covers the survey area. The chart shows only two soundings in the survey area, and both are in agreement with the new survey. see Evaluation Report section 7

The 100 fathom contour, shown on the chart to extend 1.75 nm northeast from Kaloli Point, is wrong. The new survey shows that this contour is less than 1 mile from shore and it is recommended that the chart be revised accordingly.

The chart shows 7 detached submerged rocks which lie 0.3 to 0.6 nm offshore. No such detached rocks were found (see table below). This shore is foul with rocks and ledges, but it drops off steeply and no such dangers exist further than 0.1 nm offshore.

Position of Charted Rocks		Depth on Survey	Recommendation
19°38.2'N	154°58.0'W	29	Remove from chart
19°37.9'N	154°57.8'W	24	Remove from chart
19°36.3'N	154°55.7'W	72	Remove from chart
19°35.7'N	154°55.2'W	162	Remove from chart
19°32.6'N	154°50.2'W	26	Remove from chart

Position of Charted Rocks		Depth on Survey	Recommendation
19°32.3'N	154°49.6'W	9	This position is only 0.1 nm from current shoreline but charted 0.3 nm off. It should be removed and the shoreline revised.
19°31.6'N	154°48.4'W	48	Remove from chart

There are numerous other rocks awash and submerged rocks charted along the entire shoreline. They are generally charted too far offshore, probably due to cartographic license and the chart scale. The stippled areas along the shore indicate dangers too far offshore and should be removed.

There are no charted features bearing the notation "reported," "PA," "ED," or "PD." There were no newly found dangers.

M. ADEQUACY OF SURVEY

This survey is adequate to supersede prior source data for charting, except that the 25 fathom shoal sounding from survey H-8991, 1:30,000 scale, 1968, mentioned under section ~~I~~ J. should be carried forward. see Evaluation Report section I

N. AIDS TO NAVIGATION

Cape Kumukahi Light is the only aid to navigation on this survey. This light was relocated by the RAINIER which was working concurrently in the same area.

O. STATISTICS

Vessel	Positions	Miles of Hydro	Sq. Miles of Hydro
FA-3	~~408~~ 384	54.7	5.5
FA-4	~~253~~ 214	46.8	4.2
TOTAL	~~661~~ 624	101.5	9.7

Bottom Samples by FA-5 - 27

Tide Station: Shipman Ranch #161-7088

Temperature and Salinity Casts: 2 Nansen casts for this survey H-9908
2 MarTek and 3 Nansen casts were taken for the project, all of which were outside the limits of this survey.

P. MISCELLANEOUS

To aid the field editors in locating rocks and determining foul limits and the surf line, the hydrographers made annotations describing the coastline on the raw data printouts at the inshore end of each line.

Q. RECOMMENDATIONS - See sections J and L.

R. AUTOMATED DATA PROCESSING

The following programs were used to process the data of this survey.

Version Date	Tape Number	Purpose
04/18/75	RK 201	Grid, Signal and Lattice Plot
04/01/74	RK 212	Visual Station Table Load
10/07/80	RK 214	Range/Visual Non-Real Time Plot
02/05/78	RK 216	Range/Azimuth Non-Real Time Plot
02/10/76	RK 300	Utility Computations
05/04/76	RK 330	Reformat and Format Check
02/02/76	PM 360	Electronic Corrector Abstract
11/10/72	AM 500	Predicted Tide Generator
05/10/76	RK 530	Velocity Correction Computations
02/19/75	RK 561	Geodetic Calibration
05/21/75	AM 602	Editor

S. REFERRAL TO REPORTS

The following reports contain information related to this survey.

Field Edit Reports, TP-00822 and TP-00070
Horizontal Control Report, OPR-T126-FA-80
Electronic Control Report, OPR-T126-FA-80
Corrections to Echo Sounding Report, OPR-T126-FA-80
Coast Pilot Report, OPR-T126-FA-80
Geographic Names Report, OPR-T126-FA-80
Shipman Ranch Tide Station Reports

SEPARATES FOLLOWING TEXT

A. HYDROGRAPHIC SHEET PROJECTION PARAMETERS

B. FIELD TIDE NOTE AND TIMES OF HYDROGRAPHY

C. GEOGRAPHIC NAMES

D. ABSTRACTS OF CORRECTIONS TO ECHO SOUNDINGS (VELOCITY AND TC/TI TAPE PRINTOUTS)

E. ABSTRACTS OF CORRECTIONS TO ELECTRONIC POSITION CONTROL

F. LIST OF STATIONS

G. ABSTRACT OF POSITIONS

H. BOTTOM SAMPLES (LOG SHEETS M)

I. LANDMARKS FOR CHARTS (NOAA FORMS 76-40)

J. APPROVAL SHEET

A. PARAMETER TAPE LISTING

```
FEST=40000
CLAT=2147662.6
CMEE=154/55/00
GRID=60
PLSCL=20000
PLAT=19/37/15
PLON=155/01/00
VESNO=2020
YR=80
ANDIST=0.0
```

B.

FIELD TIDE NOTE

OPR-T126-FA-80

Field tide reduction of soundings was based on predicted tides from Honolulu, Hawaii, corrected to Hilo, Hawaii, and were interpolated by PDP 8/E computer utilizing AM500. All times of both predicted and recorded tides are GMT.

Two tide gages were utilized for this project.

SITE	LOCATION	PERIOD
Hilo, #161-7760 (ETG)	19°44'00"N 155°03'31"W	Permanent Secondary Gage
Shipman Ranch, #161-7088 (ADR)	19°38'50"N 154°59'06"W	63 day 16 Sep-17 Nov 1980

HILO

This gage was leveled by RAINIER personnel on September 5 and November 25, 1980 (see Field Tide Note OPR-T126-RA-80). FAIRWEATHER personnel met with the tide observer on September 19 to insure that he contact the ship immediately if the gage should malfunction. Personnel from the Pacific Tide Party visited the Hilo Gage on November 2-5. Leveling and routine maintenance was performed.

SHIPMAN RANCH

Five bench marks were set on 15 September 1980. On 16 September, the tide staff, floatwell and gage were installed. Levels were run to the staff and the gage was started at 234800 GMT. One hour later, it was discovered that the gage had double punched. It was then restarted at 004800 GMT, 17 September. Sometime between the next observation at 223603 GMT, 17 September, and 191815 GMT, 19 September, the gage lost 2 hours 5 minutes 45 seconds. The gage was still punching on the correct six-minute intervals and there is no place on the tape that indicates that the punch had jammed or stopped. The gage was restarted at 192405 GMT, 19 September. The following day at 184810 GMT, 20 September, the gage was again found to be slow by 4 hours 42 minutes 10 seconds. Again, there are no double punches or indications of a jammed punch and it was still punching nearly exactly on the proper six-minute increments. (No hydrography or field edit was conducted during these periods.) The tape was cut at this point. A new motor and punch block were installed; the advance pawl was adjusted and various moving parts were lubricated. The gage was restarted at 201800 GMT, 20 September. The gage ran well throughout the remainder of the installation. The gage was stopped at 190630 GMT, 26 September, at which time the intake on the floatwell was changed from 3/8" diameter to 3/16" diameter in order to improve damping of the swell. The gage was restarted at 200000 GMT, 26 September. The height of the floatwell changed slightly; so two separate average gage-staff differences should be used for the observation prior to the orifice change and for those

following this change. Field edit, but no hydrography, was conducted during this down time. Correctors will have to be interpolated for this period.

The mean gage-staff differences were:

7.08 feet	234800, JD 260 - 190630, JD 270
6.92 feet	200000, JD 270 - 184338, JD 322

Leveling to the staff was performed on 16 September and 17 November 1980. The elevations determined compared very closely between the two runs with a maximum discrepancy of .004 m.

ZONING

Data collected by the Hilo tide gage (#161-7760) will be used in determining correctors for all of the surveys and field edit T-sheets: H-9908, H-9909, H-9911, H-9912, H-9920, H-9921, TP-00822, TP-00070, T-13261, and TP-00069.

Data collected by the Shipman Ranch tide gage (#161-7088) will be used in determining correctors for the following surveys and field edit T-sheets: H-9908, H-9909, H-9912, H-9911 (as far west as 155°01.0'W), H-9921 (as far west as 155°01.0'W), TP-00822, TP-00070 (as far west as 155°01.0'W).

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

ON HILO AND SHIPMAN RANCH TIDE GAGES

ABSTRACT OF TIDE OF HYDROGRAPHY AND ~~for~~ FIELD EDIT

Date 3 Dec 1980

Project No. OPR-T126-FA-80 Vessel Fairweather S-220

Date of Survey Sept - Nov. 1980

Field Sheet No. FA20-4-80 Registry No. H-9908

Field Sheet is (Complete)/Incomplete

J.D.	Time (Z)		J.D.	Time (Z)
265	213000	-	266	011400
266	194500	-	267	013700
267	204000	-	268	004000
268	223000	-	268	232000
270	191500	-	270	220000
273	200000	-	274	024830
274	233100	-	275	022919
275	212448	-	276	015310
277	202256	-	278	001930
278	195700	-	278	234800
279	193045	-	280	002930
280	200345	-	280	223645
281	220345	-	282	012740
282	195015	-	282	204730
282	224500	-	283	002015
295	201420	-	295	215015

J.D.	Time (Z)		J.D.	Time (Z)
		-		

NOAA FORM 76-155
(11-72)

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

SURVEY NUMBER

H-9908

GEOGRAPHIC NAMES

Name on Survey	A ON CHART NO. 19320	B ON PREVIOUS SURVEY NO. H-8991	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS Road Map	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	Field Edit Manuscripts TP-00822 TP-00070	
AUWAE			X	X	X				X	1
CAPE KUMUKAHI	X	X	X	X	X			X	X	2
HAENA	X		X	X					X	3
HAWAII	X	X	X	X	X			X	X	4
HONOLULU LANDING			X	X	X				X	5
KALAMANU			X	X	X				X	6
KALELE			X	X					X	7
KALOLI POINT	X		X	X	X				X	8
KEAUHOU			X	X					X	9
KIPAEPAE			X	X	X				X	10
KIPU POINT			X	X	X				X	11
MAKAUKIU POINT	X		X	X	X				X	12
MAKUU	X		X	X	X				X	13
MOKUOPIHI POINT				X					X	14
NANAWALE BAY	X		X	X	X				X	15
OPIHI ROCK			X	X	X				X	16
PAKI (BAY)			X	X	X				X	17
~~SAND HILL~~			X	X	X				X	18
~~WAIAKAHIULA~~	X									19
Hawaii (state-title block)										20
						Approved:				21
										22
						Chas. S. Harrison				23
						Chief Geographer - N			CG2x5	24
						16 June 1983				25

NOAA FORM 76-155 SUPERSEDES C&GS 197

D. ABSTRACT OF CORRECTIONS TO ECHO SOUNDINGS

```
001 VELOCITY CORRECTOR TAPE LISTING FOR VESSEL 2023
002 HAWAII 1980 SURVEYS
003 000012 1 0002 0002 001 202300 000000
004 000015 1 0001
005 000018 0 0000
006 000035 0 0001
007 000065 0 0002
008 000075 0 0003
009 000080 0 0004
010 000085 0 0005
011 000101 0 0006
012 000120 0 0007
013 000140 0 0008
014 000158 0 0009
015 000178 0 0010
016 000197 0 0011
017 000243 0 0015
018 000326 0 0020
019 000419 0 0025
020 000515 0 0030
021 000610 0 0035
022 000710 0 0040
023 000821 0 0045
024 000930 0 0050
025 001027 0 0055
026 001133 0 0060
027 001255 0 0065
028 001396 0 0070
029 001635 0 0075
030 001925 0 0080
031 002200 0 0085
032 002500 0 0090
033 002825 0 0095
034 003200 0 0100
035 003550 0 0105
036 003900 0 0110
037 004265 0 0115
038 004625 0 0120
039 004975 0 0125
040 005325 0 0130
041 005625 0 0135
```

042	005850	0	0140
043	006575	0	0150
044	007150	0	0160
045	007525	0	0170
046	007825	0	0180
047	008075	0	0190
048	008400	0	0200
049	008825	0	0210
050	009325	0	0220
051	009850	0	0230
052	011550	0	0280
053	014000	0	0330
054	015800	0	0380
055	017300	0	0430
056	018750	0	0480
057	020100	0	0530
058	021400	0	0580
059	022550	0	0630
060	023650	0	0680
061	024700	0	0730
062	025700	0	0780
063	026600	0	0830
064	027400	0	0880
065	028250	0	0930
066	029000	0	0980
067	029850	0	1030
068	030700	0	1080

```
001 VELOCITY CORRECTOR TAPE LISTING FOR VESSEL 2024
002 HAWAII SURVEYS 1980
003 000015 0 0000 0003 001 202400 000000
004 000035 0 0001
005 000045 0 0002
006 000065 0 0003
007 000075 0 0004
008 000085 0 0005
009 000101 0 0006
010 000120 0 0007
011 000140 0 0008
012 000158 0 0009
013 000178 0 0010
014 000197 0 0011
015 000243 0 0015
016 000326 0 0020
017 000419 0 0025
018 000515 0 0030
019 000610 0 0035
020 000710 0 0040
021 000821 0 0045
022 000930 0 0050
023 001027 0 0055
024 001133 0 0060
025 001255 0 0065
026 001396 0 0070
027 001635 0 0075
028 001925 0 0080
029 002300 0 0085
030 002500 0 0090
031 002825 0 0095
032 003200 0 0100
033 003550 0 0105
034 003900 0 0110
035 004265 0 0115
036 004625 0 0120
037 004975 0 0125
038 005325 0 0130
039 005625 0 0135
040 005950 0 0140
```

041 006575 0 0150
042 007150 0 0160
043 007525 0 0170
044 007825 0 0180
045 008075 0 0190
046 008400 0 0200
047 008825 0 0210
048 009325 0 0220
049 009850 0 0230
050 011550 0 0280
051 014000 0 0330
052 015800 0 0380
053 017300 0 0430
054 018750 0 0480
055 020100 0 0530
056 021400 0 0580
057 022550 0 0630
058 023650 0 0680
059 024700 0 0730
060 025700 0 0780
061 026600 0 0830
062 027400 0 0880
063 028250 0 0930
064 029000 0 0980
065 029850 0 1030
066 030700 0 1080

```
001 000015 0 0000 0004 001 202500 000000
002 000035 0 0001
003 000045 0 0002
004 000075 0 0003
005 000080 0 0004
006 000085 0 0005
007 000101 0 0006
008 000120 0 0007
009 000140 0 0008
010 000158 0 0009
011 000178 0 0010
012 000197 0 0011
013 000243 0 0015
014 000326 0 0020
015 000419 0 0025
016 000515 0 0030
017 000610 0 0035
018 000710 0 0040
019 000821 0 0045
020 000930 0 0050
021 001027 0 0055
022 001133 0 0060
023 001255 0 0065
024 001396 0 0070
025 001635 0 0075
026 001925 0 0080
027 002200 0 0085
028 002500 0 0090
029 002825 0 0095
030 003200 0 0100
031 003550 0 0105
032 003900 0 0110
033 004265 0 0115
034 004625 0 0120
035 004975 0 0125
036 005325 0 0130
037 005625 0 0135
038 005850 0 0140
039 006575 0 0150
040 007150 0 0160
041 007525 0 0170
042 007825 0 0180
043 008075 0 0190
044 008400 0 0200
045 008825 0 0210
046 009325 0 0220
047 009850 0 0230
048 011550 0 0280
049 014000 0 0330
050 015800 0 0380
051 017300 0 0430
052 018750 0 0480
053 020100 0 0530
054 021400 0 0580
055 022550 0 0630
056 023650 0 0680
057 024700 0 0730
058 025700 0 0780
059 026600 0 0830
060 027400 0 0880
061 028250 0 0930
062 029000 0 0980
063 029850 0 1030
064 030700 0 1080
```

Velocity Table 4 - Vessel 2025
OPR-T126-FA-80
Northeast Coast of Hawaii Island

```
001 TC/TI TAPE PRINTOUT FOR VESSEL 2023, HAWAII 1980 SURVEYS
002 213231 0 0003 0002 275 202300 000000
003 235959 0 0003 0002 320 202300 000000 ✓
```

```
001 TC/TI TAPE PRINTOUT FOR VESSEL 2024, HAWAII 1980 SURVEYS
002 213015 0 0003 0003 273 202400 000000
003 235959 0 0003 0003 320 202400 000000 ✓
```

```
001 TC/TI TAPE PRINTOUT FOR VESSEL 2025, HAWAII 1980 SURVEYS
002 190600 0 0003 0004 277 202500 000000
003 235959 0 0003 0004 322 202500 000000 ✓
```

E. ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2023 SHEET : H-9908

TIME	DAY	PATTERN 1		PATTERN 2
213231	275	-00022	100	
~~021301~~	~~276~~	~~00022~~		
202256	277	+00024	100	
~~215300~~		~~+00004~~		
~~000300~~	~~278~~	~~+00004~~		
195700	278	-00013	100	
193045	279	+00000	100	
~~234230~~		~~+00000~~		
~~000014~~	~~280~~	~~+00000~~		
220345	281	-00004	103	
~~000000~~	~~282~~	~~-00004~~		
224800	282	-00001	102	
~~230015~~		~~-00001~~		
201423	295	-00006	207	
~~215100~~	~~999~~	~~+00000~~		

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2023 SHEET : H9908

TIME	DAY	PATTERN 1		PATTERN 2
200345	280	-00007	100	
195015	282	-00014	100	
~~203430~~		~~00014~~		
~~204000~~	~~999~~	~~+00000~~		

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2024 SHEET : M-9908

TIME	DAY	PATTERN 1	PATTERN 2
213900	273	-00004 101	
~~000029~~	~~274~~	~~00004~~	
233000	274	+00003 107	
~~000000~~	~~275~~	~~+00003~~	
~~212448~~		~~+00003~~	
~~000000~~	~~276~~	~~+00003~~	
~~221247~~	~~281~~	~~+00003~~	
~~225219~~		~~+00003~~	
~~001308~~	~~282~~	~~+00003~~	
~~013000~~	~~999~~	~~+00000~~	

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2025 SHEET : M-9908

TIME	DAY	PATTERN 1	PATTERN 2
201000	277	-00100 107	
004000	278	-00002 109	
~~010100~~	~~999~~	~~+00000~~	

FA-20-4-80

```
001            HAWAII ISLAND SIGNAL LISTING
002
003 KALOLI 2 1949, RM 5 1980          FAIRWEATHER 1980
004 100 3  19 37 29359 154 56 57468   250 0007 330040 ✓
005
006 KAYDIST RM 1 1980                 FAIRWEATHER 1980
007 101 5  19 56 58039 155 10 50157   250 0072 330040
008
009 FIX 1966                          RAINIER 1980
010 102 0  19 31 09221 154 48 47412   250 0008 330040
011
012 KALOLI 2 1949, RM 5 1980          FAIRWEATHER 1980 ✓
013 110 4  19 37 29359 154 56 57468   250 0007 000000
014
015 OPIHI ROCK 1980                   FAIRWEATHER 1980
016 201 5  19 34 54763 154 54 52388   250 0007 000000 ✓
017
018 POOL 1980                         FAIRWEATHER 1980
019 202 5  19 35 53298 154 56 02403   250 0005 000000 ✓
020
021 KALOLI 2 1949, RM 4 1980          FAIRWEATHER 1980
022 203 7  19 37 21659 154 56 53003   250 0010 000000 ✓
023
024 KALOLI 2 1949                     QUAD 191544 QSN 1005
025 204 5  19 37 29474 154 56 56479   250 0007 000000 ✓
026
027 KALOLI 2 1949, RM 3 1980          FAIRWEATHER 1980
028 205 3  19 37 34361 154 57 02028   250 0007 000000 ✓
029
030 WAHINII 1980                      FAIRWEATHER 1980
031 206 0  19 39 21635 154 58 54865   250 0004 000000
032
033 WAHINII RM 1 1980                 FAIRWEATHER 1980
034 207 5  19 39 21412 154 58 55281   250 0004 000000 ✓
035
036 OLA'A SUGAR CO. STACK 1949  QUAD 191551 QSN 1125
037 208 6  19 38 02656 155 02 01510   139 0000 000000
038                 Lighthouse
039 CAPE KUMUKAHI LT 1949-1980 QUAD 191544 QSN 1002 RAINIER 1980
040 209 3  19 31 09628 154 48 49069   139 0000 000000 ✓
041
042 KEOKEA 2 1951                     QUAD 191551 QSN 1092
043 210 0  19 44 25398 155 02 42676   250 0003 000000
044
045 LELEIWI USGS, 1912                QUAD 191551 QSN 1104
046 211 0  19 44 21840 155 00 22968   250 0006 000000
047
048 ALALA 1877                        QUAD 191551 QSN 1007
049 212 0  19 50 18781 155 06 42654   250 0231 000000
```

051 PEPEEKEO PT LT 1949 QUAD 191551 QSN 1136
052 213 0 19 51 01041 155 05 07509 139 0045 000000
053
054 PAUKAA PT LT 1975 QUAD 191551
055 214 0 19 45 54911 155 05 33023 139 0000 000000
056
057 HILO HARBOR COMMISSIONERS WATER TANK 1951 QUAD 191551 QSN 1049
058 215 6 19 43 54526 155 03 26463 139 0060 000000
059
060 KAIWIKI NEW USGS, 1949 QUAD 191551 QSN 1077
061 216 0 19 45 32480 155 08 04161 250 0369 000000
062
063 HILO SUGAR CO STACK 1949 QUAD 191551 QSN 1066
064 217 3 19 44 27677 155 05 33837 139 0060 000000
065
066 COCOANUT PT LT 1976 QUAD 191551 QSN 1022
067 218 3 19 43 47770 155 05 20208 250 0010 000000
068 HILO HARBOR
069 BREAKWATER LT 1980 FAIRWEATHER 1980
070 219 6 19 44 45132 155 04 39926 243 0004 000000
071
072 PEPEEKEO STACK 1980 FAIRWEATHER 1980
073 220 6 19 50 47192 155 05 19362 243 0010 000000
074
075 KOHOLA 1980 FAIRWEATHER 1980
076 221 4 19 52 16957 155 06 00462 250 0006 000000
077
078 WAIEHU 1980 FAIRWEATHER 1980
079 222 4 19 52 03837 155 05 42689 250 0005 000000
080
081 HAIPO 1980 FAIRWEATHER 1980
082 223 4 19 51 55530 155 05 35550 250 0015 000000
083
084 LOEA 1980 FAIRWEATHER 1980
085 224 4 19 51 45245 155 05 27270 250 0008 000000
086
087 HONOHINA 1977 QUAD 191551 QSN 1069
088 225 0 19 54 58197 155 09 34970 250 0215 000000
089
090 HAKALAU 1980 FAIRWEATHER 1980
091 226 0 19 54 12727 155 07 40960 250 0007 000000
092
093 KOHOLA RM2 1980 FAIRWEATHER 1980
094 227 0 19 52 17744 155 06 02220 250 0008 000000
095
096 NUDE (PHOTO) TP-00822
097 300 5 19 33 54366 154 53 31013 243 0006 000000 ✓
098
099 N SAND HILL (PHOTO) TP-00822
100 301 5 19 33 29235 154 52 43259 243 0014 000000 ✓

✓ = USED FOR CONTROL

```
102 S SAND HILL                          ( PHOTO ) TP-00822
103 302 5  19 33 23545 154 52 31340  243 0014 000000 ✓
104
105 GUAVA                                ( PHOTO ) TP-00822
106 303 5  19 33 03677 154 51 51762  243 0006 000000 ✓
107
108 N MAK                                ( PHOTO ) TP-00822
109 304 5  19 32 56236 154 51 11321  243 0006 000000 ✓
110
111 ARCH                                 ( PHOTO ) TP-00822
112 305 5  19 32 41646 154 50 50360  243 0003 000000
113
114 DUNE                                 ( PHOTO ) TP-00822
115 306 5  19 32 30519 154 50 31184  243 0004 000000 ✓
116
117 KIPU                                 ( PHOTO ) TP-00822
118 307 5  19 32 14715 154 49 40629  243 0010 000000 ✓
119
120 YELLOW N                             (PHOTO ) TP-00822
121 308 5  19 32 00651 154 49 12906  243 0010 000000 ✓
122
123 YELLOW S                             ( PHOTO ) TP-00822
124 309 5  19 31 44553 154 48 50586  243 0010 000000 ✓
125
126 LAST                                 ( PHOTO ) TP-00822
127 310 5  19 30 23007 154 48 53310  243 0004 000000 ✓
```

✓ = USED FOR CONTROL

G. ABSTRACT OF POSITIONS H-9908

Vessel: 2023 Mini-Ranger console/RT - 702

J.D.	Position No.	Control	Stations		Raydist Sta or Transponders	Remarks
274/275	2000-2047					Rejected
275/276	2048-2104	R/Az	100	203	Red	Mainscheme
277	2105-2116	R/Az	100	203	Red	Crossline
277-279	2117-2288	R/Az	100	203	Red	Mainscheme
279/280	2289-2305	R/Az	100	203	Red	Crossline
280	2306-2340	R/Vis	100		Red	Mainscheme
281/282	2341-2389	R/Az	203	203	702	Mainscheme
282	2390-2408	R/Vis	100		Red	Mainscheme
282	2409					Rejected
282	2410-2415	R/Az	202	202	701	Crossline
282/283	2416-2431	R/Az	202	202	701	Mainscheme
	2432-2436					Not used
295	2437-2456	R/Az	207	207	704	Mainscheme & splits

Vessel: 2024 Mini-Ranger console/RT - 701

J.D.	Position No.	Control	Stations		Transponders	Remarks
273/274	4000-4075	R/Az	202	202	704	Mainscheme
274-276	4076-4190*	R/Az	207	207	701	Mainscheme
281	4191-4198	R/Az	207	207	701	Crossline
	4199-4201					Rejected
281	4202-4205	R/Az	207	207	701	Split
281	4206-4211	R/Az	207	207	701	Do not plot - search for stray
281	4212-4215	R/Az	207	207	701	Split
281/282	4216-4236	R/Az	207	207	701	Do not plot - search for stray
282	4237-4253	R/Az	207	207	701	Mainscheme

*Positions 4076, 4083-4085, 4094-4095, 4105-4106, 4117-4118 rejected because they are beyond the sheet limits.

Vessel: 2025 All Raydist Control

J.D.	Position No.	Control	Stations		Raydist Sta	Remarks
277	6003-6008	R/Az	100	205	Red	Bottom samples
277	6009-6012	R/Az	100	203	Red	Bottom samples
278	6013-6014	R/Az	100	205	Red	Bottom samples
278-279	6015-6029	R/Vis	100		Red	Bottom samples

H.

1 of 2

NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

H.

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
2025	OPR-T126-FA-80	80	FA 20-4-80		

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE N	SAMPLE POSITION LONGITUDE W	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
6003	277 3 Oct 80	19°38'37"	154°58'57"	8.0				bk	Crs S		EAK
6004	"	19 38 06	154 58 27	5.0					Co		"
6005	"	19 37 45	154 57 42	4.5				bk	Crs S		"
6006	"	19 37 47	154 57 01	37.5					Co		"
6007	"	19 38 02	154 56 54	70.0					hrd	Sampler hung up on bottom	"
6008	"	19 37 30	154 56 26	85.0					Crs S, M	Sample on 2nd attempt	"
6009	"	19 36 58	154 56 58	5.2					hrd	2 attempts	"
6010	"	19 36 18	154 56 42	6.0				bk	Crs S	Sample on 2nd attempt	"
6011	"	19 36 45	154 56 08	45.0					Crs S (hrd)	Very small amount	"
6012	"	19 35 59	154 56 01	6.2					hrd	2 attempts	"
6013	278 4 Oct 80	19 38 39	154 57 34	47.0					fine S		
6014	"	19 39 14	154 57 09	60.0					brk Co (hrd)		

Use more than one line per sample if necessary.

U.S.GPO:1978-765-092/1190 Region No. 6

27

NOAA FORM 75-44
(11-72)

FA-20-4-80

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

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

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
FA-5 2025	OPR-T126-FA-80	80			

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE N	SAMPLE POSITION LONGITUDE W	DEPTH (Fathoms)	WEIGHT OF SAMPLER	APPROX. PENETRATION	LENGTH OF CORE	COLOR OF SEDIMENT	FIELD DESCRIPTION	REMARKS (Unusual conditions, cohesiveness, dented cutter, stat. no., type of bottom relief i.e., slope, plain, disposition, etc.)	OBS. INIT.
6015	JD 278/4 Oct	19°38'51"	154°58'18"	22.0					fine gray SAND	Boulders encrusted with	DGH
6016	"	19 35 37	154 55 26	58.0					coarse br S, brk Sh	coral are characteristic	
6017	"	19 38 56	154 58 55	3.0					Blds, Co	of this shoreline	
6018	"	19 35 11	154 55 00	60.0					hrd, crs S	to depths of at	
6019	"	19 34 45	154 54 33	51.0					crs S, P	least 4 fm. This	
6020	"	19 34 24	154 54 03	62.0					crs S, brk Sh	was verified visually	
6021	"	19 34 07	154 53 28	42.0					fne S, Co	in the clear water.	
6022	"	19 33 47	154 52 58	74.0					fne bk S		
6023	"	19 33 30	154 52 21	62.0					crs bk S, P		
6024	"	19 33 12	154 51 49	42.0					fne br S,		
6025	279 5 Oct 80	19 33 11	154 51 05	22.5					Co		EAK
6026	"	19 32 34	154 50 31	8.0					hrd	2 attempts	"
6027	"	19 32 19	154 49 47	15.0					hrd	" "	"
6028	"	19 32 08	154 49 06	30.0					Co	small amount on 2nd attempt	"
6029	"	19 31 35	154 48 27	26.0					Co	small amount	"

Use more than one line per sample if necessary.

☆ U.S.GPO:1978-765-092/1190 Region No. 8

NOAA FORM 76-40
(8-74)
Replaces C&GS Form 567.

NONFLOATING AIDS

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

ORIGINATING
- ☐ HYDROGRAPHIC
- ☐ GEODETIC PARTY
- ☐ PHOTO FIELD PARTY
- ☒ COMPILATION ACTIVITY
- ☐ FINAL REVIEWER
- ☐ QUALITY CONTROL & REVIEW
- ☐ COAST PILOT BRANCH

(See reverse for responsible personnel)

☒ TO BE CHARTED ☐ TO BE REVISED ☐ TO BE DELETED	REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
	Coastal Mapping Div. A.M.C. Norfolk, Va.	Hawaii	Hawaii - North Coast	

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
	CM-7712	TP-00822	Old Hawaiian

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See Instructions on reverse side) OFFICE	METHOD AND DATE OF LOCATION FIELD	CHARTS AFFECTED
	Hawaii Island	-		-				
LIGHT	Cape Kumukahi Light. (Cape Kumukahi Lighthouse, 1949)	19 - 31	09.628 296.0	154-48	49.069 1430.7	VIS 776 SAAS 1333 13 Feb 1979	Triang. Rec. 9/80	19320
	NC/dip file	-		-				
		-		-				29
		-		-				
		-		-				
		-		-				
	Field inspected from Seaward by Easton & A.F. Thimble Position recovered by NOAA Ship Rainier, October 1980	-		-				
		-		-				
Dropped points scaled by: Date: " " checked by: Date: New positions plotted by: Date: " " checked by: Date:		-		-				

Triangulation positions plotted by: Date: checked by:

J. APPROVAL SHEET

The survey sheets and records were examined daily by the commanding officer. The survey is complete and adequate to supersede prior source data for charting, except for the item noted in section M. Captain A. J. Patrick was the commanding officer during the field work for this survey, but was relieved by Commander Walter F. Forster prior to submission of this report.

Submitted by:

Christopher P. Hancock
LTJG, NOAA

Approved by:

Walter F. Forster
CDR, NOAA

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER H-9908

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	

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS	1 narw					
VOLUMES						
BOXES			1 - Smooth Plo Sound Vol			

T-SHEET PRINTS (List) TP-00700, TP-00822

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	AMOUNTS: VERIFICATION	AMOUNTS: TOTALS
POSITIONS ON SHEET			
POSITIONS CHECKED	0	624	624
POSITIONS REVISED		28	28
SOUNDINGS REVISED		100	100
SOUNDINGS ERRONEOUSLY SPACED		0	0
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	0
	TIME – HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	3	*(VER)/(EVAL)	3
VERIFICATION OF CONTROL		12/04	16
VERIFICATION OF POSITIONS		105/04	109
VERIFICATION OF SOUNDINGS		159/12	171
COMPILATION OF SMOOTH SHEET		40/23	63
APPLICATION OF TOPOGRAPHY		08/00	08
APPLICATION OF PHOTOBATHYMETRY		NA/NA	NA
JUNCTIONS		02/05	07
COMPARISON WITH PRIOR SURVEYS & CHARTS		00/04	04
VERIFIER'S REPORT / Evaluation Report		10/12	22
OTHER		00/16	16
TOTALS	3	336/80	419

Pre-Verification by: James S. Green	Beginning Date: 5/12/81	Ending Date: 5/12/81
Verification by: G. E. Kay, R. N. Mihailov	Beginning Date: 6/26/81 8/5/83	Ending Date: 6/27/83 8/19/83
Evaluation by: G. E. Kay	Time (Hours): 37	Date: 8/25/83
Verification Check by: Stanley H. Otsubo, James S. Green	Time (Hours):	Date:
Marine Center Inspection by: ~~HIT~~	Time (Hours):	Date:
Quality Control Inspection by:	Time (Hours):	Date:
Requirements Evaluation by:		

*Time in this column is for Verification (VER) and Evaluation (EVAL)

PACIFIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO: H-9908 FIELD NO: FA-20-4-80

Hawaii, Island of Hawaii, Haena to Cape Kumukahi

SURVEYED: September 21 - October 21, 1980

SCALE: 1:20,000 PROJECT NO: OPR-T126-RA, FA-80

SOUNDINGS: Ross Fineline Model 5000 CONTROL: Mini-Ranger
Range/Range
Range/Azimuth

Chief of Party.....CAPT Archy J. Patrick

Surveyed By.....LCDR N. C. Boutle, R.N.
LTJG C. P. Hancock
LTJG V. D. Ross

Automated Plot By.....PMC Xynetics Plotter

Verified By.....Robert N. Mihailov

Evaluated By.....Gordon E. Kay

1. INTRODUCTION

H-9908 is a basic hydrographic survey conducted by the NOAA Ship FAIRWEATHER in accordance with the following:

Project Instructions for OPR-T126-RA,FA-80, Hawaii, Hawaiian Islands, dated August 4, 1980
Change No. 1, August 8, 1980
Change No. 2, August 15, 1980
Change No. 3, September 9, 1980
Change No. 4, November 28, 1980

This survey is situated along the northeast coast of the Island of Hawaii. This coastline is very rugged with steep faced cliffs extending to the rocky shoreline.

During the verification/evaluation, the following data was changed:

a. Projection parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.

b. List of Stations has been changed to reflect preliminary adjusted field positions and names to be consistent with the National Geodetic Service (NOS) listing.

c. Tide level values used on H-9908 are from observed tides (see 77-12 on the following separate).

The digital records for this survey have been updated to include all categories of information required to comply with N/CG letter, Policy of Certification and Delivery of Hydrographic Surveys, December 12, 1982. Certain descriptive information, however, may not be included in the digital record due to the restrictions of the presently available cartographic codes. The user should refer to the smooth sheet for complete information.

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in paragraphs F and G of the ship's Descriptive Report, and in the Horizontal and Electronic Control Reports of OPR-T126-RA,FA-80.

The smooth sheet was plotted using preliminary adjusted field positions and photogrammetrically located positions on the Old Hawaiian Datum.

Some hydrographic data was rejected due to weak positioning control. This data was pseudo'd in with no control at either the start or end of lines. The area of data rejection is southeast of Kipu Point at approximately latitude 19°32'00"N, longitude 154°49'00"W.

The shoreline comes from the following unreviewed Class I manuscripts, at a scale of 1:20,000:

Number	Date of Photography	Date of Field Edit
TP-00070	December 1976, January 1977	October 1980
TP-00822	December 1976, February 1977	October 1980

The dashed line symbology depicting breakers on the Class I manuscript is further defined on the final field sheet as submerged ledges. Furthermore, several ledges inside that limit are shown on the field sheet as field edit information and are not shown on the Class I. These ledges have been added to the smooth sheet without supporting positional information. The informational note, "foul with submerged ledges" was also added to the smooth sheet.

3. HYDROGRAPHY

Soundings at crosslines are in good agreement. The hydrography contained within this survey, H-9908, 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, and 3-fathom contour, where hydrography was terminated due to the rocky and dangerous shoreline.

4. CONDITION OF SURVEY

The hydrographic records and final reports adequately conform to the requirements of the Hydrographic Manual, July 4, 1976 edition.

5. JUNCTIONS

H-9908 junctions with the following surveys:

H-8991, 1:30,000 (1968) is an offshore survey. A butt junction was accomplished approximately along the 200-fathom depth contour, starting at the western inshore limit of H-8991 at latitude 19°34'30"N, longitude 154°53'25"W, extending southeastward to latitude 19°32'27"N, longitude 154°48'26"W. At this point the junction occurs along the 100-fathom depth contour, proceeding south 1.5N.M. to the end of H-9908, where it junctions with H-9918.

Soundings from H-8991 inshore from the above butt junction do not consistently match present sounding data. This inconsistency is attributed to the use of a wide beam echo sounder used on H-8991 and the overland propagation affect of a shore signal (see ship's Descriptive Report paragraph J and H-8991 Verifier's Report attached at the end of this report). There are two shoal soundings, a 29-fathom shoal at latitude 19°32'40"N, longitude 154°49'34"W, and a 25-fathom shoal at latitude 19°32'29"N, longitude 154°49'19"W. Present survey depths do not indicate any shoaling in these areas. N/CG242, Standards Section, was requested to review the echograms at these two points for possible scanning errors. N/CG242 replied that the 29 should reduce to a 56 and the 25 to a 35. Therefore, these soundings have not been carried forward and the data on H-8991 inshore of the above junction is superseded by H-9908.

Depth contours are in coincidence and marginal notes have been inked in red on H-9908.

H-9909, 1:20,000 (1980) is an inshore survey and junctions along the northern limit of H-9908. No problems were encountered in making a junction, but six soundings from H-9909 have been transferred onto H-9908. Depth contours are in coincidence and marginal notes have been inked in violet.

H-9912, 1:80,000 (1980) is an offshore survey and junctions along the northeastern limit of H-9908. No problems were encountered in making a junction. Depth contours are in coincidence and marginal notes have been inked in orange.

H-9918, 1:20,000 (1980) is an inshore survey and junctions along the southern limit of H-9908. No problems were encountered in making a junction, but three soundings from H-9918 have been transferred onto H-9908. Depth contours are in coincidence and marginal notes have been inked in brown.

6. COMPARISON WITH PRIOR SURVEY

There are no prior survey data contained within the limit of H-9908.

7. COMPARISON WITH CHART

H-9908 was compared with Chart 19320, 12th edition, June 17, 1978, 1:250,000. There are no presurvey review items or items for investigation located within the survey limits of H-9908.

a. Hydrography - There are only two soundings within the limits of H-9908. These soundings come from an unknown source, but are in agreement with H-9908. There are 19 rocks located within the limits of this survey. All of these rocks can be accounted for by features located on this survey. For a very good disposition of seven submerged rocks, see ship's Descriptive Report paragraph L.

H-9908 is an adequate hydrographic survey and should supersede the charted data over their common areas.

b. Controlling Depths - There are no controlling depths contained within the limits of H-9908.

c. Aids to Navigation - There is one fixed aid that adequately marks the feature intended. It is Cape Kumukahi Light, latitude 19°31'09.628"N, longitude 154°48'49.069"W. There are no floating aids to navigation located within the limits of H-9908.

8. COMPLIANCE WITH INSTRUCTIONS

H-9908 complies with the project instructions and changes listed in section 1 of this report.

9. ADDITIONAL FIELD WORK

H-9908 is a good basic hydrographic survey. Additional field work is neither recommended nor required at this time.

Submitted by,

Gordon E. Kay

Gordon E. Kay
Cartogrpher

This survey (H-9908) has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services standards and requirements for use in nautical charting. This survey, H-9908, is recommended for approval.

James S. Green

October 8, 1981

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): 161-7088 Shipman Ranch, HI.

Period: September 21 - October 21, 1980

HYDROGRAPHIC SHEET: H-9908

OPR: T-126

Locality: East Coast of Hawaii

Plane of reference (mean lower low water): 0.82 ft.

Height of Mean High Water above Plane of Reference is 1.80 ft.

REMARKS: Zone Direct

for Donald Carrier
Chief, Datums and Information Branch

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-9908

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.

11/21/83
Chief, Nautical Chart Branch (Date)

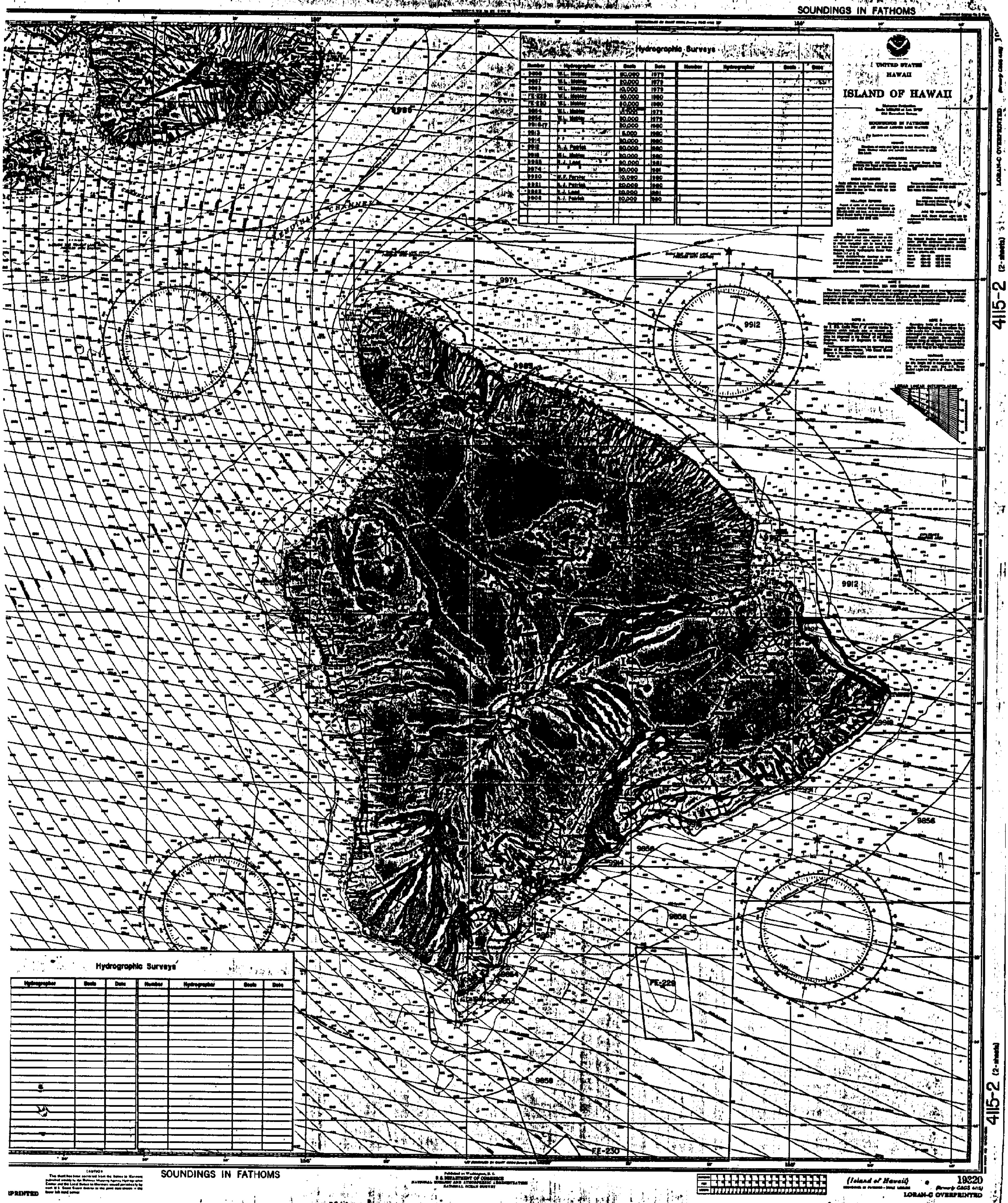
CLEARANCE:

SIGNATURE AND DATE:

N/MOP2:RLSandquist 11/21/83

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.

11/21/83
Director, Pacific Marine Center (Date)


SOUNDINGS IN FATHOMS
Hydrographic Surveys
UNITED STATES
HAWAII
ISLAND OF HAWAII
9974
9912
9985
9856
9858
FE-229
FE-230
Hydrographic Surveys
SOUNDINGS IN FATHOMS
(Island of Hawaii)
19320
LORAN-C OVERPRINTED
4115-2 (2-sheets)
4115-2 (2-sheets)

FORM C&GS-8352
(3-25-63)

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9908

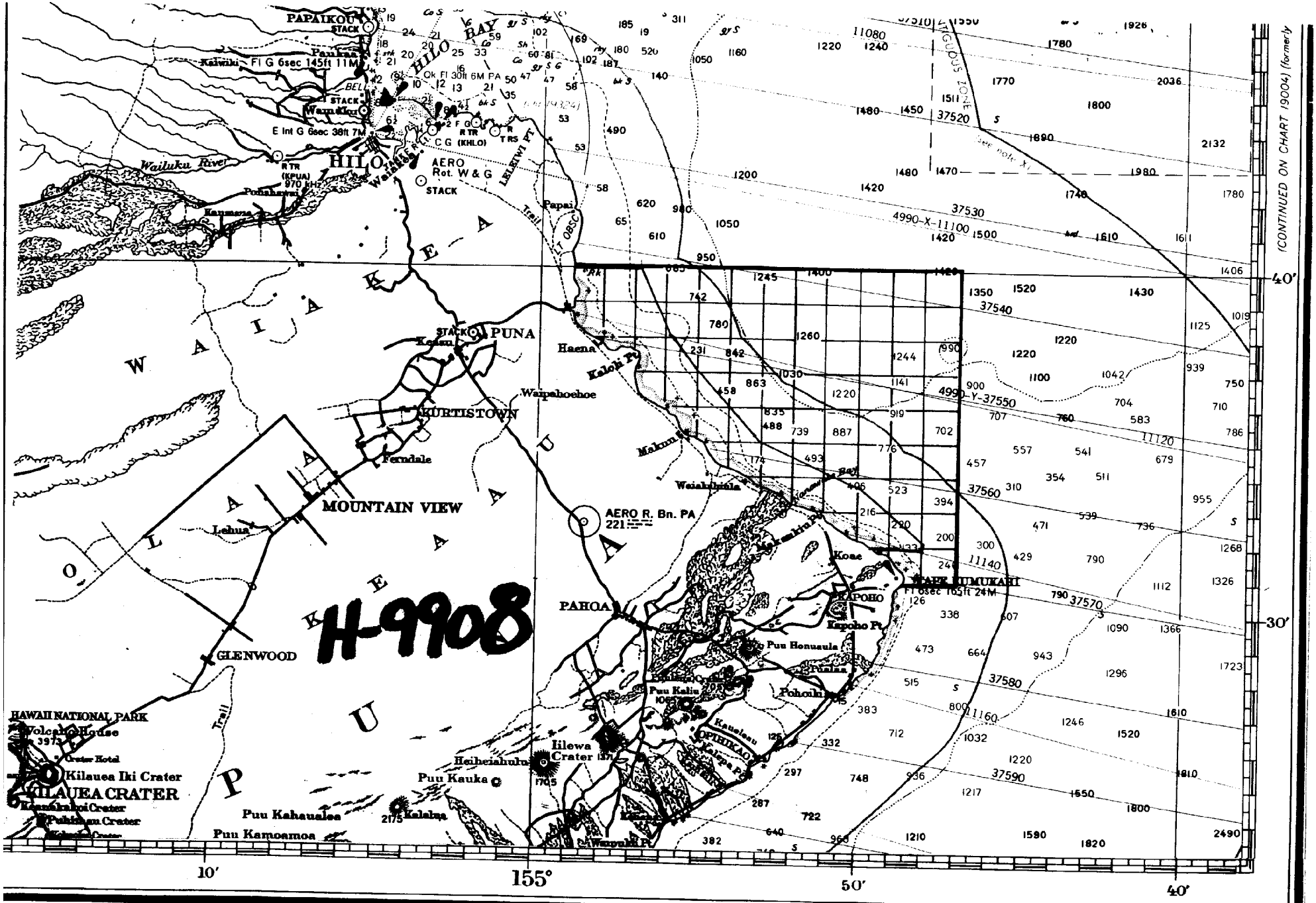
INSTRUCTIONS

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
19320	4/9/84	K Van Ness	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via
			Drawing No. 16, August 4, 1982
		JOC	
19010	9/24/84	B. Fernandez	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via
			Drawing No. 15
19010	3/14/89	D.H. Clark	Full ~~Part~~ Before After ~~Verification Review Inspection~~ Signed ~~Via~~
			Drawing No. 3 Sndgs applied & 2 rocks
19004	10-24-90	R. A. Lillie	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 36
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.
			Full Part Before After Verification Review Inspection Signed Via
			Drawing No.

FORM C&GS-8352 SUPERSEDES ALL EDITIONS OF FORM C&GS-975.

USCOMM-DC 8558-P63



FATHOMS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
FEET	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102
METERS	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31

(Island of Hawaii)

SOUNDINGS IN FATHOMS - SCALE 1:250,000

19320

(formerly C&GS 4115)

LORAN-C OVERPRINTED