9920

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-10-4-80.....
Office No.....H-9920.....

LOCALITY

State .....Hawaii.....
General Locality ....Island of Hawaii.....
Locality .....Loea Point to Puakaa Point.....

.....

1980

CHIEF OF PARTY
CDR W.F. Forster

LIBRARY & ARCHIVES

DATE .....November 28, 1983.....

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

9920

AREA 6
CHTS:
·19320 App 1/28/84 CX
·19004
·540
·19007
·19010

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO.
H-9920

FIELD NO.
FA-10-4-80

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 Hawaii Island

Locality Loea Point to Paukaa Point

Scale 1:10,000 Date of survey Oct. 30 - Nov. 15, 1980

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

Vessel NOAA Ship FAIRWEATHER and Launches 2023, 2025

Chief of party CDR W. F. Forster

Surveyed by ENS A. F. Trimble; LTJG C. P. Hancock; LT T. A. Baxter

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

Graphic record scaled by Ship's Personnel

Graphic record checked by ENS A. F. Trimble, LT T. A. Baxter

Verification ~~Protracted~~ by R. N. Mihailov Automated plot by PMC Xynetics Plotter

Evaluation ~~Verification~~ by B. A. Olmstead

Soundings in fathoms feet at MLW MLLW

REMARKS: Revisions and marginal notes in black were made by the Evaluator, and/or Quality Control

12-5-83
STANDARDS CK'D
Clay
AWOIS Decker 10/27/83 SJV

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

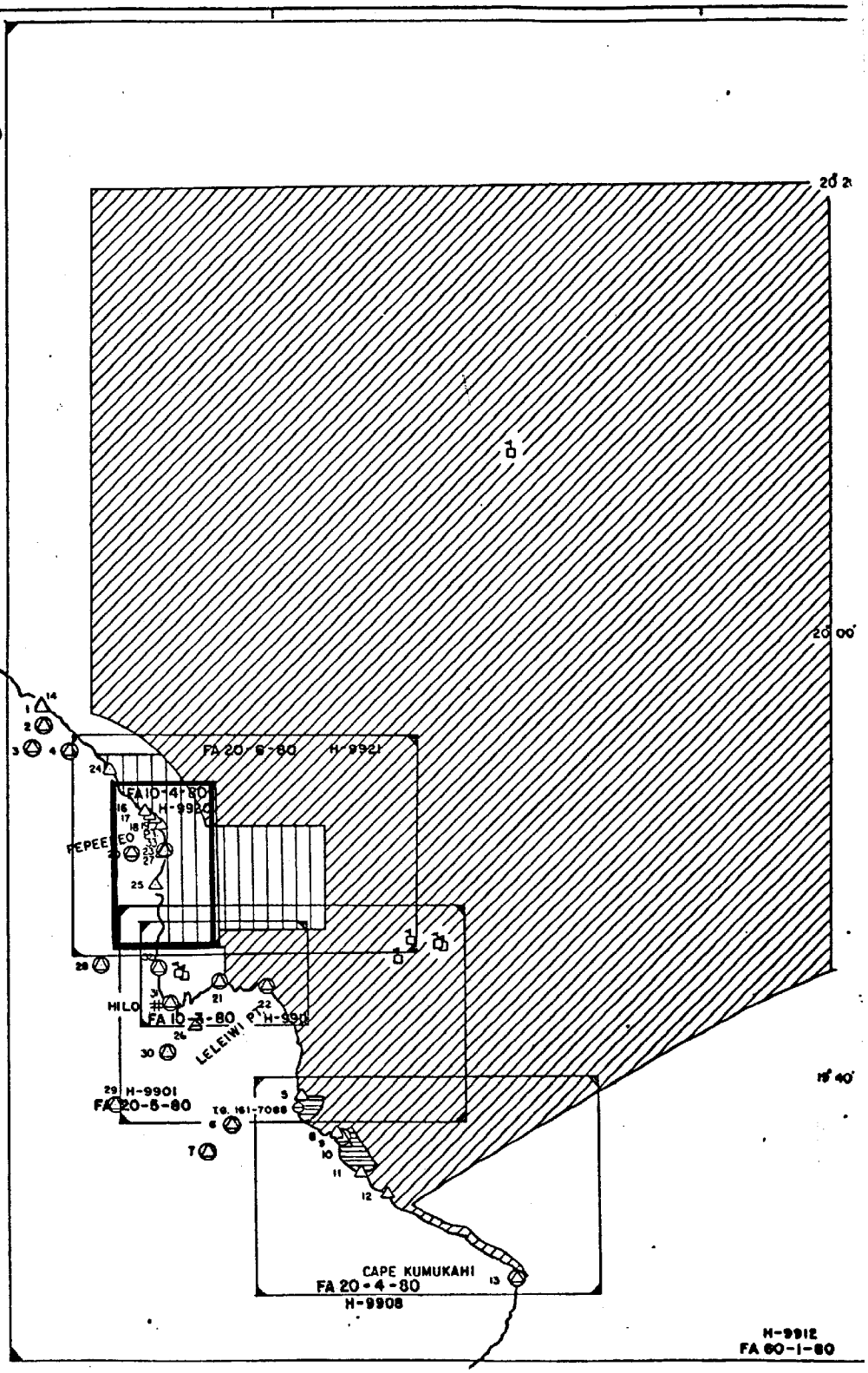
1 KAYDIST, 1980
2 HAIKU, 1877
3 COOK HGS, 1949
4 HONOHINA, 1877
5 WAHINII, 1980 M/R
6 OLAA STACK
7 KEAAU, 1949
8 KALOLI 2, 1949 - RM 3, 1980 M/R
9 KALOLI 2, 1949 M/R
10 KALOLI 2, 1949 - RM 4, 1980 M/R
11 POOL, 1980 M/R
12 OPIHI RK, 1980 M/R
13 CAPE KUMUKAHI LT.
14 KAYDIST RM 1, 1980 RAYDIST
15 KALOLI 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-9920 (Field Number FA 10-4-80)
Scale: 1:10,000
Year: 1980
NOAA SHIP FAIRWEATHER
Commanding Officer: Commander Walter F. Forster

A. PROJECT

This hydrographic survey was conducted in accordance with Project Instructions OPR-T126-RA,FA-80, Hawaii, Hawaiian Islands (dated August 4, 1980). The four amendments to the instructions are listed in Table 1. The PMC OPORDER, the Hydrographic Manual, and the Data Requirements Letter, dated April 11, 1979, also apply to this survey. See Evaluation Report Section I

TABLE 1

Project Amendments

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 lies on the northeast coast of the island of Hawaii and ranges southward along the coast from Loea Point to the town of Paukaa, just north of Paukaa Point.

It is bounded on the north by latitude 19°51'35"N and on the south by 19°46'06"N. In that portion of the survey bounded by latitudes 19°46'06"N and 19°47'00"N, hydrography was run from the shoreline seaward to longitude 155°02'45"N. North of this section, all hydrography was run seaward to at least 35 fathoms.

Hydrography was run from October 30, 1980 (JD 305) to November 15, 1980 (JD 320).

C. SOUNDING VESSELS

All hydrography was run by survey launch FA-3 (2023) on this survey, and all bottom samples obtained by survey launch FA-5 (2025). The NOAA Ship FAIRWEATHER (2020) was used for oceanographic casts.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

All survey vessels were equipped with Ross Fineline model 5000 narrow beam echo sounders (see Table 2). Phase checks were taken at the beginning and ending of each day's work and at night by ET department personnel. The

initial was checked frequently by the operator for the correct paper alignment. All data was scanned to compare analog values to corresponding digital values and to insert peaks and deeps where they occurred between marks.

TABLE 2

Sounding Equipment

Vessel	Instrument	Model	Analog	Digitizer	Inverter	Transceiver
FA-3 (2023)	Ross Fineline	5000	1047	1054	1046	1047
FA-5 (2025)	Ross Fineline	5000	1036	1046	1053	1054

Velocity of sound was calculated from Nansen cast, MarTek cast and bar check data. Three Nansen casts and two MarTek casts were taken (see Table 3). The MarTek unit used was S/N 395, calibrated by the Northwest Regional Calibration Center in September 1979 and March 1980.

The salinometer used for Nansen casts was an Industrial Instruments RS-7B28298, calibrated by the Northwest Regional Calibration Center in April 1980.

Bar checks were taken by the launches twice daily, weather permitting.

TABLE 3

Date	Position		Type	
7 Oct 80	19°46'24"N	154°53'36"W	Nansen	
16 Oct 80	20°08'00"N	154°49'00"W	Nansen	
19 Nov 80	19°45'30"N	155°02'48"W	MarTek	Outside Hilo Harbor
19 Nov 80	19°44'28"N	155°05'45"W	MarTek	Inside Hilo Harbor
20 Nov 80	19°46'00"N	154°55'00"W	Nansen	

Settlement and squat figures measured in January 1980 were used for this project. They were determined by using a Zeiss level ashore and shooting to a leveling rod held over the launches' transducers. The settlement and squat correctors were less than one tenth of a fathom for all vessel speeds used during this survey and thus, no corrections were applied.

See the Corrections to Echo Soundings Report, OPR-T126-FA-80, for more details, data and computations.

E. HYDROGRAPHIC SHEETS

This survey was constructed on one 21" by 54" sheet with a skew of 90° and scale of 1:10,000. There are no developments. The field sheets were prepared

aboard the NOAA Ship FAIRWEATHER using the PDP 8/e computer (S/N 09524) and a Complot plotter (S/N 6166-22). The plotting parameters for this sheet are listed in Appendix A.

There were no irregularities in projection or scale.

All field records will be sent to the NOAA Pacific Marine Center in Seattle, Washington for verification and smooth plotting.

F. CONTROL STATIONS

There are six stations on this sheet which were monumented and described by FAIRWEATHER personnel. All stations were established by conventional survey methods and all meet third order Class I specifications (see Horizontal Control Report, OPR-T126-FA-80). Additionally, one existing station and two aids to navigation were checked and used for horizontal control (see Table 4).

No unconventional survey methods were used. There were no known photogrammetric problems and there were no anomalies in adjustment or in closure and ties.

TABLE 4

Control Station Listing

Station Number	Name	Comments
214	Paukaa Pt Lt, 1975	Checked by azimuth
	Onomea, 1980	(Not used for control)
220	Pepeekeo Stack, 1980	Intersection
228	Pepeekeo, 1980	Resection
213	Pepeekeo Pt Lt, 1949	Checked by azimuth (Not used on Surve
224	Loea, 1980	Traverse
223	Haipo, 1980	Traverse
222	Waiehu, 1980	Traverse (Not used on Survey)

G. HYDROGRAPHIC POSITION CONTROL

Hydrographic positioning was controlled by both the range-range and range-azimuth methods utilizing the Motorola Mini-Ranger III system. Bottom sample positioning was done by range-range and range-visual methods (see Appendix G for electronic component serial numbers for sounding vessels).

Mini-Rangers were calibrated on baselines in the Hilo Harbor area. They were checked at the beginning and end of each day's work by visual sextant fixes or dynamic checks performed by running a range line and using pre-set sextant angles. See the Electronic Control Report, OPR-T126-FA-80, for more details. ✓

During this survey, there were no unusual calibration methods, unusual atmospheric conditions, poor geometric configurations, or systematic errors in the data. Erratic rates were noted at times on Julian Days 305 and 306 in a region east of longitude 155°05'00"W, particularly south of latitude 19°47'00"N. The majority of the bad rates were from the unit on station Leleiwi, S/N 211, M/R Unit 701, which was located three miles east of this area. These days were especially calm with no chop and only infrequent ground swells, and the problem was believed to be caused by a skip zone. As the launch passed through this area, the signal strength and rates were monitored carefully and all bad rates denoted for "time and course" corrections to be applied later. It should be noted that the coxswain had some difficulty steering a straight line when this problem arose, since the steering needle would frequently jump from 20-50 meters off the line.

See Evaluation Report Section 4

H. SHORELINE

Shoreline for this survey was taken from T-13261, 1:10,000, from the southern limits north to latitude 19°48'45"N. North of this latitude, the shoreline was taken from a copy of TP-00069, a 1:20,000 scale manuscript enlarged to 1:10,000. Shoreline details were field edited on both sheets and corrections transferred to the final field sheet in red ink. These corrections consist of additional rocks and ledges in the surf zone as well as changes to area (see Field Edit Reports, OPR-T126-FA-80, for sheets TP-00069 and T-13261).

See Evaluation Report Section

There were no discrepancies between photogrammetric and hydrographic positions. There were no control stations seaward of the shoreline. ✓

I. CROSSLINES

A total of 10.6 nautical miles of crosslines were run, comprising 11.9% of the main scheme hydrography and 11.5% of the total hydrography run. Agreement between crossline and main scheme soundings was within one fathom with exceptions noted only in areas of irregular or steeply sloping bottom (see Table 5). ✓

TABLE 5

Crossline Discrepancies

Position	Main Scheme Depth	Crossline Depth
19°50'58" 155°04'55"	14	17
19°50'43" 155°04'55"	15	12

Position	Main Scheme Depth	Crossline Depth
19°50'18"N 155°04'55"W	21	19
19°49'43"N 155°04'54"W	24	26
19°49'34"N 155°04'54"W	26	28
19°46'31"N 155°04'10"W	28	24
19°46'08"N 155°03'42"W	21	24
19°46'48"N 155°03'42"W	33	29

J. JUNCTIONS

See Evaluation Report Section 5

This survey junctions to the south with prior survey H-9613 (RA 5-2-76). Soundings from the two surveys agree to within one fathom with the exception of the following soundings:

Position	Prior Survey (H-9613)	Current Survey (H-9920)
19°46'09"N 155°03'52"W	26	29
19°46'09"N 155°05'15"W	13	15
19°46'11"N 155°03'29"W	21	23-31
19°46'09"N 155°03'17"W	19	22
19°46'08"N 155°02'49"W	25	27

The north and east boundaries of this survey overlap with contemporary survey H-9921 (FA 20-6-80). Junction soundings agree within one fathom of surrounding soundings, with the exception of a 27 fathom sounding from survey H-9921 which plots near a 30 fathom sounding on this survey at 19°47'02"N, 155°04'12"W. This is an area of steeply sloping bottom.

This survey junctions in the southeastern corner with contemporary survey H-9911 (FA 10-3-80). Overlapping soundings agree. One 41 fathom sounding from survey H-9911 was added to the final field sheet of this survey at 19°46'50"N, 155°02'55"W, to better define the 40 fathom contour in this area.

K. COMPARISON WITH PRIOR SURVEYS

Other than H-9613, discussed above, the only prior survey which covers this area is H-2461 (8-9 Jan 1900, 1:40,000). The sounding lines in this survey are so sparsely spaced that there are only six lines running through the area of the current survey. Comparisons were made between individual soundings and there are large discrepancies which are specific to general areas.

East of longitude 155°04', there were two sounding lines which overlap with H-9920. All soundings on these lines agreed within two fathoms. One short line at approximate longitude 155°04'W, south of 19°47'N, had four soundings which were 10-15 fathoms less than the current survey. A line between 19°46'N and 19°48'N, at approximate longitude 155°04'40"W, had six soundings which were 8-15 fathoms shallower than the current survey. Five soundings on a line at 155°04'50"W, south of 19°46'40"N, are 4-8 fathoms less than the current survey. Soundings north of this latitude on this line are within two fathoms of the current survey. All of the prior survey soundings north of 19°48'N that overlap with this sheet agree within two fathoms, with the exception of the following soundings:

Position	Prior Survey (H-2461)	Current Survey (H-9920)
19°50'11"N 155°04'47"W	29 3/4	26-28
19°50'55"N 155°04'46"W	21 3/4	23-26
19°51'05"N 155°04'47"W	21 3/4	23-27

There are no presurvey review items in this area. There are no non-NOS surveys in this area.

L. COMPARISON WITH CHART

The only chart which covers this area is NOS chart 19320 (12th edition, June 17, 1978, 1:250,000). Every sounding on the chart is shallower than the depths measured in this survey, with one exception. A depth of 36 fathoms on the chart at 19°47'45"N, 155°04'02"W is in an area where depths from the current survey are within one fathom. The following table indicates recommendations concerning charted depths.

Position	Chart 19320	Current Survey (H-9920)	Recommendations
19°49'40"N 155°04'58"W	14	20-22	Revise charted depth
19°49'00"N 155°05'00"W	26	30-32	"
19°47'50"N 155°05'05"W	15	19-20	"
19°47'25"N 155°05'07"W	13	17-18	"
19°47'15"N 155°04'50"W	19	20-23	"
19°46'28"N 155°05'02"W	18	21-23	"
19°46'45"N 155°04'15"W	24	29-30	"
19°46'25"N 155°03'45"W	20	24-27	"
19°46'45"N 155°03'28"W	21	26-28	"

With this scale chart, the foul area along the coast is little more than a general indication of where rocks and ledges are found. It is of little value to compare these foul areas charted at 1:250,000 with the recent survey in which the shoreline was detailed at a scale of 1:10,000 and 1:20,000. Charted shoreline details should be revised according to the current survey.

There are no PA, ED or PD notes on the chart and no uncharted hazards were located. The proposed new chart coverage of the area should be adequate. Maximum sounding line spacing on this survey was 200 meters as per project instructions (NOS Hydrographic Manual sec. 4.3.4.1. Line Spacing in Harbors and Restricted Areas). There were no developments or hydrographic soundings of special note on this survey.

M. ADEQUACY OF THE SURVEY

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

N. AIDS TO NAVIGATION

There are two aids to navigation that lie within this survey: Pepeekeo Point Light and Paukaa Point Light. Both lights are accurately located on chart 19320 and listed correctly in the latest edition of the Light List (U.S. Coast Guard Volume III, 1980).

Both lights are readily visible at night. However, during daylight hours, Paukaa Point Light is difficult to recognize due to numerous white structures on the hill behind it. Pepeekeo Point Light is obscured by surrounding vegetation and is of no value as a navigational aid during daylight hours.

O. STATISTICS

Vessel	Positions	Nautical Miles	Square Miles	Bottom Samples
2023	963 10	137.2	7.2	-
2025	21	-	-	21

Oceanographic stations for sound velocity determinations were not within the boundaries of this survey. The positions are listed in Table 3, section D, of this report.

P. MISCELLANEOUS

This survey was routine; all features detected are evident on the final field sheet.

Q. RECOMMENDATIONS

None.

R. AUTOMATED DATA PROCESSING

Number	Description	Version
RK 111	R/R Real Time Plot	01-30-76
FA 181	On Line R/Az Logger	02-23-80
RK 201	Grid, Signal, and Lattice Plot	04-18-75
RK 211	R/R Non-Real Time Plot	01-30-76
RK 212	Visual Station Load and Plot	04-01-74
RK 214	R/V Non-Real Time Plot	10-07-80
RK 216	R/Az Non-Real Time Plot	02-05-78
RK 300	Utility Package	02-01-76
RK 330	Data Reformat and Check	05-04-76
PM 360	Electronic Corrector Abstract	02-02-76
AM 500	Predicted Tide Generator	11-10-72
RK 530	Layer Corrections for Velocity	05-10-76
RK 561	Geodetic Calibration	02-19-75
AM 602	Elinore	05-21-75

S. REFERRAL TO REPORTS

The following reports pertain to this survey:

OPR-T126-FA-80, Horizontal Control Report
OPR-T126-FA-80, Electronic Control Report

OPR-T126-FA-80, Field Edit Reports for TP-00069 and TP-13261
OPR-T126-FA-80, Corrections to Echo Soundings Report
OPR-T126-FA-80, Geographic Names Report
OPR-T126-FA-80, Coast Pilot Report
OPR-T126-FA-80, Tide Station Reports, Hilo Gage

✓

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

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).

(11-72) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

H-9920

Name on Survey	A ON CHART NO. 1932/19324	B ON PREVIOUS SURVEY NO. H-2461/H-9613	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS Road & Sugar Co.	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	T-Sheets	
ALIA POINT		X	X	X	X					1
ALIA STREAM									TP-00069	2
HANAWI STREAM									T-13261	3
HAWAII (island)	X	X	X	X	X					4
HEEKA POINT			X	X	X				T-13261	5
HOKEO POINT			X	X	X				T-13261	6
KAAPOKO STREAM									T-13261	7
KAIEIE STREAM									T-13261	8
KALAOA STREAM									T-13261	9
HAWAII (TITLE)				X	X				TP-00069	10
KAPUE STREAM			X	X	X				T-13316	11
	X		X	X	X				TP-00069	12
			X	X	X				TP-00069	13
KAWAINUI STREAM			X	X	X				TP-00069	14
KEKIWI POINT									T-13261	15
KOILI POINT			X	X	X				T-13261	16
KUKUI POINT			X	X	X				T-13261	17
LAE O PUNI (point)			X	X	X				TP-00069	18
LOEA POINT		X	X	X	X				TP-00069	19
MAKEA STREAM									TP-00069	20
MAUMAU POINT			X	X	X				T-13316	21
MOKIHANA BAY		X	X	X	X				T-13216	22
PEPEEKEO MILL (locality)									TP-00069	23
ONOMEA BAY	X		X	X	X				TP-00069	24
PAHOEHOE STREAM			X	X	X				T-13316	25

NOAA FORM 76-155 SUPERSEDES C&GS 197

(11-72) NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

H-9920

Name on Survey	A ON CHART NO. 19320	B ON PREVIOUS SURVEY NO. 19324	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS Road & Sugar Co.	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	I Sheet	
PAUKAA POINT	X									1
PAPAIKOU								T-13261		2
PAUKAA	X									3
PEPEEKEO POINT	X		X	X	X					4
WAIAAMA STREAM								TP-00069		5
WAIMAAUOU STREAM								TP-00069		6
WAIPAHI POINT			X	X	X			T-13261		7
										8
										9
										10
										11
										12
										13
										14
										15
										16
										17
					Approved:					18
										19
					Charles L. Harrington					20
					Chief Geographer - N/CG245					21
					18 MAY 1983					22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

Velocity Table 2 - Vessel 2023
OPR-T126-FA-80
Northeast Coast of Hawaii Island

001 000012 1 0002 0002 001 202300 000000
002 000015 1 0001
003 000018 0 0000
004 000035 0 0001
005 000065 0 0002
006 000075 0 0003
007 000080 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 002200 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 005850 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

No depths on H-9920 greater then 52 Fathoms.

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

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

```
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
```

No depths on H-9920 greater then 52 Fathoms.

OPR-T126-FA-80 FA10-4-80

TC/TI TAPES

```
001 190600 0 0003 0004 277 202500 000000
002 235959 0 0003 0004 322 202500 000000
```

FA 5

```
001 213231 0 0003 0002 275 202300 000000
002 235959 0 0003 0002 320 202300 000000
```

FA 3

10-4-80
R/R

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2223 SHEET : H-9920

TIME	DAY	PATTERN 1	PATTERN 2
232245	335	-00022	-00017
000102	336	-00002	-00017
000009	337	-00002	-00017
000006	338	-00002	-00017
003758	339	-00022	-00017
004242	312	-00022	-00017
191438	312	-00002	-00017
183221	317	-00017	-00007

R/R DP's

231011	307	-00002	-00017
002409	308	-00002	-00017

R/AZ

224300	312	-00002	
001000	311	-00002	
184200		-00002	
220315	318	-00007	
004840	320	-00007	
010000	999	+00000	

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2225 SHEET : H-9922

TIME	DAY	PATTERN 1	PATTERN 2
215100	304	-00019	-00016
185246	306	-00008	-00021
000000	307	-00008	-00021

✓

HAWAII ISLAND SIGNAL LISTING

001

002

003 KALOLI 2 1949, RM 5 1980 FAIRWEATHER 1980

004 100 3 19 37 29359 154 56 57468 250 0007 330040

005

006 KAYBIST RM 1 1980 FAIRWEATHER 1980

007 101 5 19 56 50839 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 01518 139 0000 000000

038

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 POINT LIGHT, 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 POINT LIGHT, 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 55538 155 05 35558 250 0015 000000
083
084 LOEA, 1980 FAIRWEATHER 1980
085 224 4 19 51 45245 155 05 27270 250 0008 000000
086
~~087 HONOHINA 1877 QUAD 191551 QSN 1069~~
~~088 225 0 19 54 58197 155 09 34978 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 NUPE (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~~

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

NOAA FORM 75-44 (11-72)

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
2025	OPR-T126-FA-80	80	FA 10-A-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.
6000	304 30 OCT 80	19°46'28"	155°03'14"	25.5	small shipek sampler				Co, Sh		CO/J
6001	"	194707	155 03 12	35.4	"			br	fne S, brk sh		"
6002	"	194746	155 03 54	35.9	"				med S, brk Sh		"
6004	"	194753	155 05 06	19.4	"				brk Sh, brk Co		"
6006	305 31 OCT 80	194707	155 04 35	24.9	small clamshell sampler				Sh, brk Co		"
6007	"	194631	155 05 14	14.6	"				Co		"
6008	306 1 NOV 80	194635	155 04 25	29.7	small shipek sampler			brn	M, fne S, brk Sh		"
6009	"	194633	155 03 45	30.6	"				med S, brk Co		"
6010	"	194711	155 05 08	11.6	"				hrd		"
6011	"	194751	155 05 16	13.6	"			brn	fne S	hrd beneath thin S coating	"
6012	"	194831	155 05 12	18.3	"			brn	fne S	" " " " "	"
6013	"	194910	155 05 13	18.1	"				crs S, brk Sh, brk Co		"
6014	"	194950	155 05 05	10.6	"				hrd		"
6015	"	195028	155 04 57	16.7	"			brn	* spc M		"
6016	"	195106	155 04 57	10.9	"				hrd		"
6017	"	195112	155 04 33	33.9	"			brn	M, med S		"
6018	"	195032	155 04 38	34.0	"				med S, brk Sh		"

Use more than one line per sample if necessary.

☆ U.S.GPO:1978-766-092/1190 Region No. 6

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NOAA FORM 75-44
(11-72)

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

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

VESSEL	PROJ. NO.	YEAR		CHECKED BY	DATE CHECKED
2025	ORR-T126FA-80	80	FA 10-A-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.
6019	306 1 NOV 80	194953	155045	32.9	6 ma 6 hipak Sampler	//		brn	vfM, med S		CDJ
6020	"	194914	155054	33.8	"			brn	med S, brk Sh		"
6021	"	194838	155059	34.2	"			brn	M		"
6022	307 2 NOV 80	194756	155043	31.0	"				med S, brk Sh		"

Use more than one line per sample if necessary.

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

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

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

NONFLOATING AIDS

FOR CHARTS

ORIGINATING ACTIVITY
- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div. A.M.C. Norfolk, Va.

STATE: Hawaii

LOCALITY: Hawaii - North Coast

DATE: Aug 1979

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

OPR PROJECT NO.:

JOB NUMBER: CM-7712

SURVEY NUMBER: TP-00069

DATUM: 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	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
	Hawaii Island	-		-				
LIGHT	(Pepeekeo Point Light, 1949)	19 -51	01.041 32.6	155-05	07.509 218.5	T76SAASY-385 Jan. 13, 1977	Triang. Rec 11-2-80	19320
	NC - CHT'D POS.	-		-				
		-		-				
		-		-				
		-		-				
		-		-				
	Field Insped from seaward by Ensign A.F. Frimble Recovery by Ensign P.E. Pegelato							
	listing checked by: FTM Aug 10, 1979	-		-				
	Dropped points scaled by: Date: " " checked by: Date: New positions plotted by: Date: " " checked by: Date:	-		-		Triangulation positions plotted by: Date: checked by:		

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

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

LANDMARKS FOR CHARTS

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)

☒ TO BE CHARTED ☐ TO BE REVISED ☐ TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div AMC Norfolk, VA

STATE: Hawaii

LOCALITY: Hawaii - North Coast

DATE: Aug 1979

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

OPR PROJECT NO.

JOB NUMBER: CM-7712

SURVEY NUMBER: TP-00069

DATUM: 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	FIELD	CHARTS AFFECTED
R TR	(Pepeekeo Radio Station KIPA mast, 1978) Ht: 385 (429)	19-51	02.813 / 86.5	155 05	09.345 / 272.0		F-3-6-L (Jan 17 1978	19320
	(Show as a △, but label) (Field pos.)						~~F-3-6-L~~ Triang Rec 11-3-80	
STACK	(PEPEEKEO STACK, 1980) AJP	19-50	47.192 / 1451.1	155 05	19.362 / 563.4		F-3-6-L 11-18-80	19320
TANKS	TANKS, Pepeekeo Mill Site AJP	19-50		155 05			V-V15 October 7, 1980 76GSMSY 229	19320
~~BRIDGE~~	~~Bridge, Wailea Bay~~	~~19-53~~		155 07			V-V15 October 8, 1980 76 GSAASY 233	19320
~~BRIDGE~~	~~Bridge, Hakalau Bay~~	~~19-54~~		155 07			V-V15 October 8, 1980 ~~76 GSAASY 234~~	~~19320~~
	SEE L-1040(83)							
	Listing checked by: Frm Aug 10, 1979							
	Field inspected from seaward by Ensign A.F. Trimble Field positions determined by Ensign P.E. Pegnato							

NOAA FORM 76-40 (8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS

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

(See reverse for responsible personnel)

☐ TO BE CHARTED
☒ TO BE REVISED
☐ TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): NOAA SHIP RAINIER MMS21 P.M.C. SEATTLE, WASH

STATE: HAWAII

LOCALITY: ISLAND OF HAWAII HILO HARBOR

DATE: 7-12-76

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
419	PH-6703	TP-13316	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	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
STACK	PAPAIKOU STACK This T6-NO was generated for H-9613(1976) off sheet limits	19 46	53,945	155 05	31,442	TNHY-4411P	F-3-6-L SEPT 75	19040
			1658.8		915.2	FEB 21, 1975	V-VIS MAY 1976	
	NO CORR - CHT DPOS.							

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS [redacted] FOR CHARTS

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)

☒ TO BE CHARTED
☐ TO BE REVISED
☐ TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): NOAA SHIP RAINIER MMS21 P.M.C. SEATTLE, WASH.

STATE: HAWAII

LOCALITY: ISLAND OF HAWAII HILO HARBOR

DATE: 7-12-76

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
419	PH-6703	TP-13316	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	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	PAUKAA POINT LIGHT, 1975 This 76-40 was generated for H-9613(1976) NC	19 45	54.93 1689.0	155 05	33.04 962.0	TNHV-4410P FEB 21, 1975	V-VIS MAY 1976	19040 19324

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

ON HILO TIDE GAGE
ABSTRACT OF TIME OF HYDROGRAPHY
AND ~~Ver~~ 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. FA10-4-80 Registry No. H-9920

Field Sheet is (Complete)/Incomplete

J.D.	Time (Z)		J.D.	Time (Z)
279	1740	-	279	1855
279	2205	-	279	2255
305	232245	-	306	012717
306	215330	-	307	012155
307	193448	-	308	003431
308	224850	-	309	005020
309	233327	-	310	011130
310	190353	-	311	011312
311	184200	-	311	212125
312	191438	-	312	234539
318	220315	-	318	230005
320	004840	-	320	005946

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

G. ABSTRACT OF POSITIONS

Vessel: 2023 (FA-3) Mini-Ranger Console/RT 702

JD	Pos Nos	Control	Stations		Transponders		Remarks
305/306	2000-2106	R/R	211	218	701	703	Main scheme
306/307	2107-2259	R/R	211	218	701	703	Main scheme
307/308	2260-2432	R/R	211	218	701	703	Main scheme
308/309	2433-2525	R/R	211	218	701	703	Main scheme/Crossline
309/310	2526-2571	R/R	211	218	701	703	Main scheme/Crossline
310	2572-2685	R/R	211	218	701	703	Main scheme/Crossline
310/311	2686-2760	R/Az	211		701		Main scheme
311	2761-2835	R/Az	211		701		Main scheme
312	2836-2898	R/R	211	218	701	703	Main scheme/Crossline
317	2983-2988	R/R	218	212	703	704	Main scheme
318	3076-3118	R/Az	224		704		Main scheme
320	3134-3141	R/Az	224		704		Crossline

Vessel: 2025 (FA-5) Mini-Ranger Console/RT 701

JD	Pos Nos	Control	Stations		Transponders		Remarks
304	6000-6002	R/R	210	212	702	704	Bottom Samples
304/305	6004-6007	R/V	210		704		Bottom Samples
305/306	6008-6022	R/R	211	218	701	703	Bottom Samples

Rejected Positions:

2184-2194, 2455, 2496-2498, 2532, 2536-2538, 2547, 2551, 2578, 2639-2640, 2647-2648, 2771, 2829, 2862-2863, 2868-2873, 3078, 6003, 6005

A. Hydrographic Sheet Projection Parameters: H-9920 (FA 10-4-80)

```
FEST=40000
CLAT=2147662.6
CMER=154/55/00
GRID=30
PLSCL=10000
PLAT=19/45/30
PLON=155/02/40
VESNO=2020
YR=80
ANDIST=0.0
```

J. APPROVAL SHEET

The commanding officer examined the hydrographic records on a daily basis. Captain A.J. Patrick was the commanding officer during the field work on this survey, but was relieved by Commander Walter F. Forster prior to submission of this report. This survey is complete and adequate to supersede prior source data for charting.

Submitted by:

A. F. Trimble
Ensign, NOAA

Approved by:

Walter F. Forster
Commander, NOAA

NOAA FORM 77-27 (5-77) | U. S. DEPARTMENT OF COMMERCE NOAA | HYDROGRAPHIC SURVEY NUMBER H-9920

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	3
DESCRIPTIVE REPORT	1	SMOOTH OVERLAYS: POS. ARC, EXCESS, Tide	3

DESCRIPTION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/ SOURCE DOCUMENTS
ENVELOPES						
CAHIERS			1 - Raw P/O Fathg.			
VOLUMES						
BOXES			1 - Smooth P/O Soundings Vol.			

T-SHEET PRINTS (List) Class I manuscripts TP-00069, T-13261, T-13316

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		931	931
POSITIONS CHECKED		1	
POSITIONS REVISED		33	
SOUNDINGS REVISED		0	
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED			

	TIME – HOURS PRE-VERIFICATION	TIME – HOURS (VER)/(EVAL)	TIME – HOURS
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	3	14/01	15
VERIFICATION OF CONTROL		45/01	46
VERIFICATION OF POSITIONS		55/04	59
VERIFICATION OF SOUNDINGS		119/10	129
COMPILATION OF SMOOTH SHEET		10/02	12
APPLICATION OF TOPOGRAPHY		NA/NA	NA
APPLICATION OF PHOTOBATHYMETRY		14/02	16
JUNCTIONS		NA/02	02
COMPARISON WITH PRIOR SURVEYS & CHARTS		08/56	64
VERIFIER'S REPORT		/04	04
OTHER (Familiarization)			
TOTALS	3	265/82	347

Pre-Verification by J. S. Green	Beginning Date 5/15/81	Ending Date 5/15/81
Verification by R. Mihailov Evaluated by B. A. Olmstead	Beginning Date 9/25/81 2/14/83	Ending Date 8/10/82 3/10/83
Verification Check by S. H. Otsubo, J. S. Green	Time (Hours) 42	Date 3/21/83
Marine Center Inspection by Hydrographic Inspection Team	Time (Hours) 4	Date 3/31/83
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-9920 FIELD NO: FA-10-4-80

Hawaii, Hawaii Island, ~~Paukaa Point to Pepeekeo Point~~ Loea Point to Paukaa Point

SURVEYED: October 30 - November 15, 1980

SCALE: 1:10,000 PROJECT NO: OPR-T126-RA, FA-80

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

Chief of Party.....CDR W. F. Forster

Surveyed By.....LT T. A. Baxter
LTJG C. P. Hancock
ENS A. F. Trimble

Automated Plot By.....PMC Xynetics Plotter

Verified By.....R. N. Mihailov

Evaluated By.....B. A. Olmstead

1. INTRODUCTION

H-9920 (FA-10-4-80) is a basic survey conducted under the current National Ocean Service methods of planning, executing and processing a hydrographic survey as defined in the Hydrographic Manual, 4th Edition. The PMC OPORDER and the Data Requirements Letter for 1979 further define field procedures. Project Instructions OPR-T126-RA,FA-80, Hawaii, Hawaiian Islands, dated August 4, 1980 were generated to supplement the Hydrographic Manual. Four supplements to instructions were appended for the 1980 field work; Change 1 dated August 8, 1980; Change 2 dated August 15, 1980; Change 3 dated September 9, 1980; and Change 4 dated November 28, 1980.

H-9920 (FA-10-4-80) is an inshore survey situated along the northeastern coast of the island of Hawaii just north of Hilo Bay. The area of survey operations encompasses more than 9 miles of shoreline from Paukaa Point to Pepeekeo Point and extends off the mean high water line from one-half mile to three miles offshore. The most prominent geographic features are Paukaa Point, Onomea Bay and Pepeekeo Point. Alongshore characteristics are composed primarily of isolated rocks, submerged coral reefs and rocky ledges fringing much of the shoreline. Generally, depths of water range from the three fathom depth curve to fifty-two fathoms. Bottom characteristics are composed primarily of broken shells, coral, sand and mud.

One permanent gage (secondary), Hilo, Hawaii was operating during the 1980 field work. The tidal data generated by this gage was employed to zone the

survey for office reduction of sounding data. Field tide reduction of soundings was based on predictions from Honolulu, Hawaii with time and range ratios.

Sounding differences of .1 - .3 fathoms between the final field sheet and smooth sheet are attributed to the application of approved tidal zoning and rescanning of fathograms during verification.

The projection parameters, signal list and velocity tables were amended during the verification process. All corrected data is listed in the smooth printouts to accompany the final PMC plot.

2. CONTROL AND SHORELINE

Ten Third Order, Class I triangulation stations were used to control the entire hydrographic survey. Six of these stations are located off the sheet limits (KEOKEA 2, 1951; LELEIWI USGS, 1912; ALALA HGS, 1877; HILO HARBOR COMMISSIONERS TANK, 1951; HILO SUGAR CO STACK, 1949; and COCOANUT POINT LIGHT, 1976). Motorola Mini-Ranger III configured in both a range-range and range-azimuth mode was employed in determining positional data during launch operations. Corrections to positional data were determined by calibrations run on baselines in the Hilo Harbor area. Confirmation of these correctors was accomplished by daily systems checks utilizing three methods: (1) visual sextant fixes, (2) theodolite cuts and (3) dynamic checks. All remaining information affecting the positioning and station control of this survey is listed in Parts F and G of the ship's Descriptive Report, the Horizontal Control Report and the Electronic Control Report for OPR-T126-FA-80.

The smooth sheet was plotted using NGS data base listings for existing stations and field geodetic positions for newly established control. Subsequently, preliminary adjusted positions were received confirming the field geodetic positions. Refer to letter OA/CPM133, Computers Addendum to Horizontal Control Report, dated January 11, 1982, for additional information.

The mean high water line and other photogrammetrically determined features were applied from Class I unreviewed manuscripts.

	Dates of Photography	Dates of Field Edit
TP-00069	December 1976, January 1977	October 1980
T-13261	February 1975	October 1980
T-13316	February 1975	May 1976

The following items were transferred from the final field sheet without positional information to substantiate these positions. These features fall inside the foul limit line but do portray additional field edit work which is more graphically representative of the inshore area.

		Latitude	Longitude
a.	Ledge	19°47'01"N	155°05'21"W
b.	Ledge	19°47'09"N	155°05'19"W
c.	Ledge	19°47'15"N	155°05'24"W
d.	Ledge	19°47'30"N	155°05'32"W

e.	Ledge	19°47'34"N	155°05'33"W
f.	Ledge	19°47'41"N	155°05'32"W
g.	Ledge	19°47'54"N	155°05'33"W
h.	Ledge	19°48'10"N	155°05'20"W
i.	Ledge	19°48'13"N	155°05'19"W
j.	Ledge	19°48'24"N	155°05'23"W
k.	Rock awash	19°48'49"N	155°05'31"W
l.	Ledge	19°49'38"N	155°05'21"W
m.	Ledge	19°49'57"N	155°05'15"W
n.	Ledge(s), rock awash	19°50'03"N	155°05'12"W
o.	Ledge	19°51'27"N	155°05'25"W
p.	Ledge	19°51'31"N	155°05'25"W

3. HYDROGRAPHY

Depths at crossings are in good agreement

The bottom configuration was adequately developed. Generally, all standard depth curves are complete and adequately developed. The zero fathom, one fathom, two fathom, and parts of the three fathom depth curve could not be well delineated due to the foul nature of the inshore area (surf zone, rocks and submerged ledges). The determination of least depths was satisfactory with the exception of the following:

		Latitude	Longitude
a.	7.8 fathom sounding	19°46'27"N	155°05'21"W
b.	7.4 fathom sounding	19°48'11"N	155°05'13"W
c.	4.2 fathom sounding	19°48'08"N	155°05'15"W
d.	7.1 fathom sounding	19°48'24"N	155°05'17"W
e.	0.8 fathom sounding	19°48'43"N	155°05'37"W
f.	9.7 fathom sounding	19°50'30"N	155°04'57"W
g.	8.9 fathom sounding	19°50'27"N	155°04'59"W
h.	5.2 fathom sounding	19°51'08"N	155°05'01"W
i.	5.8 fathom sounding	19°51'23"N	155°05'03"W

4. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual of July 4, 1976, with the following exceptions:

a. The capability to digitize line data into the hydro file is not available at PMC at present. Therefore, the following categories are not in digital format:

see addendum

(1) Registered shoreline manuscript source data
(2) Ledges, reefs, foul or submerged ledge limit lines and other line data originating from the hydrographic record
(3) All depth curves
(4) Bottom sample descriptions
(5) Annotations, descriptions and geographic names

b. Much field edit information plotted in red on the final field sheet was not compiled on the Class I manuscript. These features were transferred to the smooth sheet without supporting positional data.

c. Several days of hydrographic operations were run through a null zone which produced erroneous range readings from station LELEIWI USGS, 1912. Although the descriptive report documented this problem, it isolated the occurrence to days 305/306. However, days 307, 308 and 309 were also affected by this anomaly. Erroneous range readings were corrected for by computing ranges based on time and course between two valid positions.

d. Horizontal control procedures for establishing Third Order control were questionable. See section 2 and letter OA/CPM133, dated January 11, 1982.

e. The ship addressed only the two fixed aids to navigation that fell within the sheet limits. In addition, Cocoanut Point Light, 1976 and Hilo Harbor Breakwater Light, 1980 were used for control but not spoken to in the ship's descriptive report. See section 7, Aids to Navigation for additional information.

5. JUNCTIONS

H-9920 (FA-10-4-80) is bordered by three contemporary surveys:

a. H-9613 (RA-5-2-76) - The common area of hydrography with this adjoining sheet lies along latitude 19°46'06"N to latitude 19°46'12"N, longitude 155°02'45"W to longitude 155°05'24"W. Approximately one inch of survey soundings from the older work overlaps the present work. Adequate agreement was made with all standard depth curves. The junctional note is inked accordingly. Depth curves within the common area on H-9613 (1976) were left in pencil during verification. Adjustments to these penciled depth curves should conform to the present survey.

b. H-9921 (FA-20-6-80) - This survey joins in that area off Loea Point at latitude 19°51'42"N, from longitude 155°04'39"W to longitude 155°05'27"W and encompasses all the offshore hydrography from latitude 19°46'51"N to latitude 19°51'42"N, which includes portions of the 30-fathom, 40-fathom, and 50-fathom depth curves. Adequate agreement was made with all standard depth curves and the junctional note is inked accordingly.

c. H-9911 (FA-10-3-80) - The common area of hydrography with this junctional sheet lies in the extreme southeast limits at latitude 19°46'06"N to latitude 19°46'51"N, longitude 155°03'00"W. Depths of water range from 23-40 fathoms. An adequate junction was effected and the junctional note is inked accordingly.

6. COMPARISON WITH PRIOR SURVEYS

H-2461 (1900) 1:40,000

Depths since the prior hydrographic survey reveal that this area along the northeast coast of the island of Hawaii has generally shoaled by 1-3 fathoms. However, one area of note, latitude 19°46'06"N to latitude 19°48'00"N, longitude 155°04'00"W to longitude 155°05'00"W reveals that soundings are

deeper up to 10 fathoms, since 1900. One exception, a 35-3/4 fathom sounding at latitude 19°47'20"N, longitude 155°04'10"W is in good agreement with the present survey. This significant difference is attributed to either erroneous lines of positioning or a misreading of the leadline depths. Other factors contributing to these differences are quite likely due to the superior positioning and sounding techniques employed during the present survey. The shoreline has remained relatively unchanged.

There were no pre-survey review items identified for investigation within the survey limits.

The present survey, H-9920 (FA-10-4-80) is adequate to supersede the prior survey within the common area.

7. COMPARISON WITH CHART

a. Hydrography - A comparison was made with Chart 19320, 12th Edition, June 17, 1978. The charted information originates with the previously discussed prior survey and unknown source(s). There are no additional items for discussion.

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

b. Controlling Depths - There are no controlling depths within the limits of this survey.

c. Aids to Navigation - There are no floating aids to navigation. Two fixed aids to navigation fall within the sheet limits (Pepeekeo Point Light, 1949 and Paukaa Point Light, 1975). In addition, Cocoanut Point Light, 1976 and Hilo Harbor Breakwater Light, 1980 are fixed aids used to control the present work. These structures were compared to the charted positions and adequately serve the purpose intended.

8. COMPLIANCE WITH INSTRUCTIONS

H-9920 (FA-10-4-80) adequately complies with the project instructions except as noted in Section 4, Condition of Survey.

9. ADDITIONAL FIELD WORK

H-9920 (FA-10-4-80) is a good basic survey. No additional field work is required.

Respectfully submitted,

Bruce A. Olmstead

Bruce A. Olmstead
Evaluator

This survey has been verified and evaluated. I have examined the survey and it meets Charting and Geodetic Services survey standards and requirements for use in nautical charting except as noted in the Evaluation Report. The 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

January 11, 1982 OA/CPM133/RBM

TO: OA/C18x2 - National Geodetic Survey

FROM: OA/CPM133 - R. B. Melby

SUBJECT: Computers Addendum to Horizontal Control Report, OPR-T126-FA-80, Island of Hawaii, Hawaii

This project was the result of one season's field work undertaken during the fall of 1980 by personnel of the NOAA Ship FAIRWEATHER to support hydrographic surveys.

The field computed data was forwarded to the Pacific Marine Center, Seattle, Washington. The field data was then entered and processed through telephone data terminal by personnel of the Pacific Photo Party, and transmitted to the National Geodetic Survey headquarters in Rockville, Maryland.

Third-order horizontal control methods were employed by the field party.

The ADJNET computer program was run as two separate jobs, as the North traverse and the South traverse didn't share a common station. While the adjustment was complete, several situations should be reviewed prior to the final office review and adjustment.

Station KEOKEA 2 1951, a published station, appears to have problems in obtaining field azimuth checks of less than 10 seconds. This station may require recomputing and readjusting. Station KAYDIST, KAYDIST RM1, and KAYDIST RM2, produced computer rejected pointings during the ADJNET program. As the distances involved are about 50 meters or less, this probably caused the problem, as the small triangle closure was adequate. This distance between KAYDIST and KAYDIST RM2 was measured with a non-standardized steel tape. The other distances KAYDIST-KAYDIST RM1 and KAYDIST RM2-KAYDIST RM1 were measured electronically with a Hewlett-Packard HP 3808A instrument. The position of KAYDIST and KAYDIST RM1 should be considered as publishable positions. KAYDIST RM2 need not be published.

Some field procedures should be reviewed with the NOAA Ship FAIRWEATHER's personnel to correct apparent discrepancies, and questionable field procedures. The traverses were not closed. Only a point tie was made with the closing old station. That is, the traverse was runned, and all stations were occupied except the closing old station. The last new station was occupied. Horizontal angle and EDM1 distance with a non-reciprocal vertical angle was observed to the closing old station. The old closing station was not occupied with horizontal and vertical angles back to the last new station in the traverse. The South traverse didn't have a check angle at the primary station KALOLI 2 1949.

The triangulation progress sketch was incomplete. Five monumented, occupied ground stations have been omitted as well as four intersection stations. A graphic scale had also been left off the sketch.

Several of the electronic measured distances did not have reciprocal, vertical angle observations to determine the elevations as required. The lines were reduced using non-reciprocal vertical angles which constitutes a no-check elevation.

Several of the field recovery note descriptions are somewhat incomplete or inconsistent due to the following conditions.

Horizontal distances were not measured to some reference marks. Only slope distances were measured without sufficient field data to reduce the slope distances to horizontal distances.

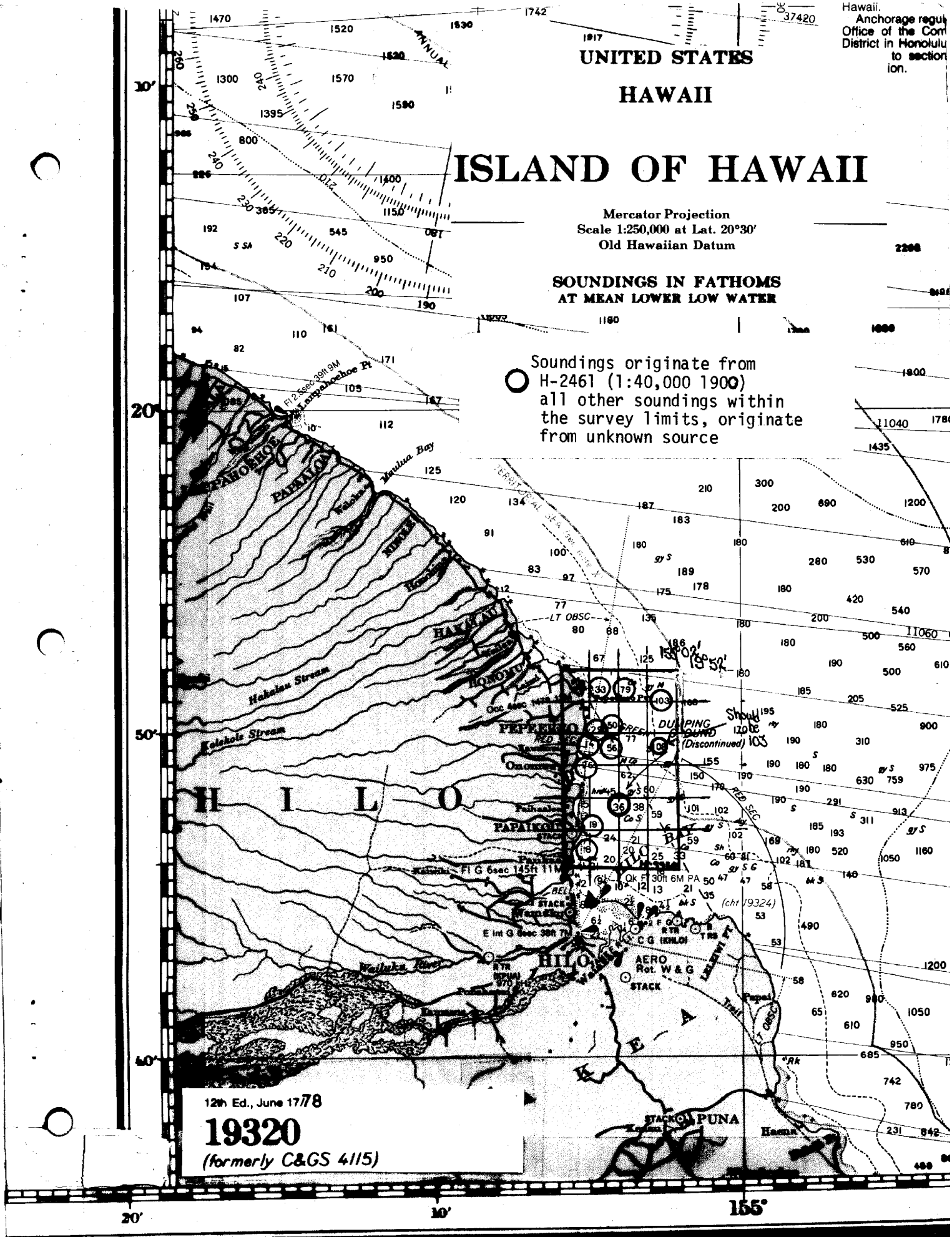
The structure of the main body of some descriptions are jumbled grammatically to a point that virtual rewrite was required to have any degree of continuity of expression. The type of marks such as NOS disk, USCGS disk was not entered in all cases.

Summary: Except for the above listed discrepancies, the field data was accepted by the telephone data terminal, transmitted and processed on the NGS master computer in Rockville, Maryland. A unit of the Pacific Photo Party completed the horizontal vertical angle observations at station LELEIWI USGS 1912 in 1981. This permitted a satisfactory closure on the North traverse. Due to the lack of field observed check angles at KALOLI 2 1949, the South traverse is considered only slightly better than third-order no-check positions on the new station involved in the traverse.

Respectfully submitted,

R.B. Melby

R. B. Melby
Chief, PMC Photo Party
CPM133


UNITED STATES
HAWAII
ISLAND OF HAWAII
Mercator Projection
Scale 1:250,000 at Lat. 20°30'
Old Hawaiian Datum
SOUNDINGS IN FATHOMS
AT MEAN LOWER LOW WATER
Soundings originate from H-2461 (1:40,000 1900) all other soundings within the survey limits, originate from unknown source
H I L O
HILO
PUNA
KEAA
Hawaii.
Anchorage regu
Office of the Com
District in Honolulu
to section
ion.
12th Ed., June 1978
19320
(formerly C&GS 4115)
20'
10'
50'
40'
155°

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): 161-7760 Hilo, HI

Period: October 5 - November 15, 1980

HYDROGRAPHIC SHEET: H-9920

OPR: T-126

Locality: Northeast Coast of Hawaii

Plane of reference (mean lower low water): 3.54 ft.

Height of Mean High Water above Plane of Reference is 1.99 ft.

REMARKS: Zone Direct.

for Donald Carrier
Chief, Datums and Information Branch

ATTACHMENT TO DESCRIPTIVE REPORT FOR SURVEY H-9920

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.

Neil C Clinton 4/1/83
Chief, Nautical Chart Branch (Date)

CLEARANCE: SIGNATURE AND DATE:

N/MOP2:KWJeffers K. W. Jeffers 4/1/83

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.

Charles K Townsend 4/1/83
Director, Pacific Marine Center (Date)

ADDENDUM TO EVALUATION REPORT FOR H-9920

The Evaluation Report for this survey is supplemented by the following statement:

The digital records for this survey have been updated to include categories of information required to comply with N/CG2 Hydrographic Survey Guideline No. 23, Completion of Digital Hydrographic Surveys, September 7, 1983. 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.

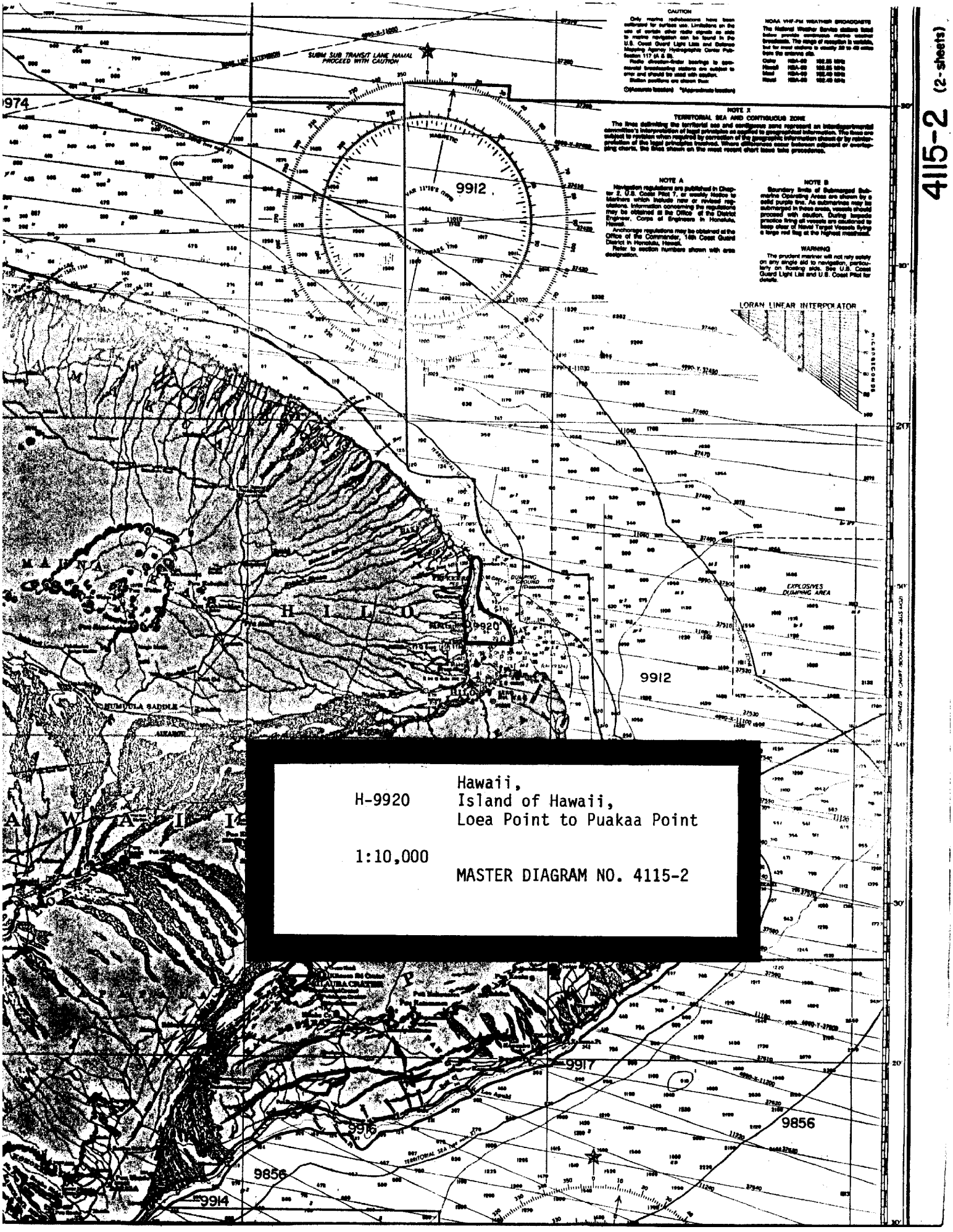
Respectfully submitted,

James S. Green
Supervisory Cartographer
October 17 1983

APPROVED:

11/2/83

Ned C. Austin
Chief, Nautical Chart Branch


4115-2 (2-sheets)
H-9920
Hawaii,
Island of Hawaii,
Loea Point to Puakaa Point
1:10,000
MASTER DIAGRAM NO. 4115-2
9912
9920
9917
9916
9914
9856
LORAN LINEAR INTERPOLATOR
EXPLOSIVES DUMPING AREA
DUMPING GROUND
CAUTION
NOTE A
NOTE B
WARNING
NOTE X
TERRITORIAL SEA AND CONTIGUOUS ZONE

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9920

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	1/28/84	Charles James	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. #16
540	2/17/84	J. Baily	~~Full~~ Part ~~Before~~ After ~~Verification Review~~ Inspection Signed Via
			Drawing No. 17 Exam. for critical corrs. No corr.
19010	9/24/84	B Fernandez	Full Part[redacted]e After Verification Review Inspection Signed Via
			Drawing No. 15
540	5-1-90	Roy Diamond	Full ~~Part Before~~ After ~~Verification Review~~ Inspection Signed Via
			Drawing No. 18
19004	10-30-90	R. A. Lillis	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 36
19007	11-11-91	K.R. Foster	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 15 Exam-N/C
			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