

9917

19004

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. RA-20-6-80
Office No..... H-9917

LOCALITY

State Hawaii
General Locality SE Coast of Hawaii
Locality Kehena to Ka Lae Apuki

19 80

CHIEF OF PARTY
CAPT W.L. Mobley

LIBRARY & ARCHIVES

DATE August 3, 1982

1766

Area 5
CHT

250,000 193207
600,000 19004
675,000 19010
1,165,000 19007
3,121,170 5404
4,860,700 5304C

TO SIGN OFF SEE
RECORD OF APPLICATION TO CHARTS "

HYDROGRAPHIC TITLE SHEET

H-9917

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

FIELD NO.

RA-20-6-80

State Hawaii

General locality Island of Hawaii SE Coast of Hawaii

Locality ~~Ka Lae Apuki to Waipuku Point~~ Kihena to Ka Lae Apuki

Scale 1:20,000 Date of survey Oct. 22 - Nov. 3, 1980

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

Vessel NOAA Ship RAINIER and launches 2126, 2123

Chief of party Captain W. L. Mobley

Surveyed by LT A. Anderson, ENS R. Fleischman, ENS F. Ohlinger

Soundings taken by echo sounder, hand lead, pole Ross Fathometer

Graphic record scaled by Ship's Personnel

Graphic record checked by Ship's Personnel

Verification
~~Plotted~~ by R. D. Mueller Automated plot by PMC Xynetics Plotter

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

Soundings in fathoms ^{and tenths} feet at MLW MLLW

REMARKS: This survey is complete to supersede prior surveys.

Time Meridian 0° (GMT)

ANNOIS/SURF 2/28/86 - AAA

A. PROJECT

This survey was conducted in accordance with Project Instructions OPR-T126-RA-80, Hawaii, Hawaiian Islands, dated August 4, 1980; Change No. 1: Supplement to Instructions, dated August 8, 1980; Change No. 2: Supplement to Instructions, dated August 15, 1980; Change No. 3: Amendment to Instructions, dated September 9, 1980; and Change No. 4: ~~Amendment to Instructions, dated November 28, 1980.~~ ✓

B. AREA SURVEYED

The area surveyed by H-9917 ⁽¹⁹⁸⁰⁾ ~~(RA 20-6-80)~~ is bounded by a line extending offshore from 19°18.0'N, 155°05.5'W, thence, following the shoreline to the north and east, to a line extending offshore from 19°23.8'N, 154°55.8'W. ✓

The sounding lines were taken inshore as far as possible without sacrificing the safety of equipment and personnel. The offshore limit of the sheet was determined by the quality of the fathometer trace in deep water and, in the majority of the cases, includes the 150 fathom curve. ✓

The survey was conducted from October 22, 1980 (J.D. 296) to November 3, 1980 (J.D. 308) and is in fathoms ^{and fathoms} at a scale of 1:20,000. ✓

C. SOUNDING VESSELS

Soundings were obtained by the RAINIER launches RA-3 (2123), hull 1007 and RA-6 (2126), hull 1013. Bottom samples were collected by the ship RAINIER (2120). ✓

On October 22, 1980 (J.D. 296), RA-6 (2126) experienced teletype problems and recorded several sounding lines by hand. No unusual equipment configurations were employed, nor were other problems encountered. ✓

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS

SOUNDING EQUIPMENT

Echo soundings obtained during OPR-T126-RA-80 were taken by survey launches (RA-3 and RA-6) using the Ross Fineline fathometer system, which includes the following components: Ross Model 400 transceiver, Ross Model 5000 analog recorder, Ross Model 6000 digitizer and a 100 KHz transducer. ✓

Table I summarizes the serial numbers of the components used in each vessel. ✓

TABLE I

Echo Sounder Component Serial Numbers

<u>Component</u>	<u>RA-3 (2123)</u>	<u>RA-6 (2126)</u>
Transceiver	1041	1042
Analog Recorder	1070	1042, 1071
Digitizer	1080	

 ✓

CORRECTIONS TO ECHO SOUNDINGS

The following corrections to echo soundings are discussed: sound velocity corrections, draft corrections, settlement and squat corrections, and instrument corrections. Sea and swell corrections were not applied due to the insignificance of the seas versus the depth of water encountered in this project.

Sound Velocity Corrections

Sound velocity corrections for echo soundings were derived from data obtained from one MarTek TDC and one Nansen cast performed in the survey area during this project. The details of these casts are presented in Table II.

TABLE II

Nansen and MarTek Cast Data

<u>Cast Type</u>	<u>Date</u>	<u>Location</u>	<u>Velocity Table No.</u>
Nansen	Sep 20, 1980	Lat 19°14'48" * Lon 154°53'36"	1 & 2
MarTek	Nov 4, 1980	Lat 19°09'42" * Lon 155°22'42"	Not Used

* Both casts fall off the sheet limits of #9917.

The samples collected from the Nansen casts were analyzed for salinity using standard laboratory procedures (see H.O. 607). The salinometer used for these analyses was an Industrial Instruments Model RS-7B, S/N 28298, which was last calibrated in April 1980 by Northwest Regional Calibration Center, Bellevue, Washington. The MarTek S/N 758 was also calibrated there in February 1980. The Nansen cast was used to compute the sound velocity correction for all surveys in this project. It was compared to the MarTek cast to check its accuracy and the stability of the water column. Two separate tables were made: a Deep Water Table for the ship, and a Shallow Water Table for the launches. A copy of the velocity corrector tape listing for the launches is provided in the separates following the text. For more detailed information and raw data records concerning the determination of sound velocity corrections, refer to the Corrections to Echo Soundings Report for this project (OPR-T126-RA-80).

A comparison of the data collected from NOAA Ship FAIRWEATHER (2120) on November 20, 1980, at latitude 19°46'00"N, longitude 154°55'00"W, was made. The FAIRWEATHER was working on the Island of Hawaii north of Cape Kumukahi. This comparison indicates a stable water column throughout the area at the time of hydrography.

Launch Draft Corrections

Due to rough water conditions encountered during OPR-T126-RA-80, bar checks were not feasible. Historically, 0.3 fathoms has been used as the launch TRA correction. There have been no changes in the launches that would cause a change in draft.

All field sheets were plotted using a launch TRA correction of 0.3 fathoms.

Launch Settlement and Squat Corrections

Settlement and squat characteristics of survey launches RA-3, RA-5 and RA-6 were measured prior to OPR-T126-RA-80 in Lake Washington, Seattle, Washington, on April 11, 1980 (J.D. 102). ✓

The corrections obtained from these measurements are included in this report for reference only. The largest potential error from settlement and squat during this project is 0.06 fathom. The launches collected most of the data while traveling slowly because of the weather. The settlement and squat corrections were not put on TC/TI tapes or applied to soundings on the field plotting sheets. These corrections are not considered necessary for this project in accordance with PMC OORDER 3-03.06x1, page 3-31, "Settlement and squat errors are commonly ignored when operating in areas of irregular bottom at various speeds, as this error is visually insignificant if the sounding unit is fathoms." ✓

Sounding Instrument Corrections

During survey operations, the "blanking" was normally set at the minimum of the scale that the fathometer is set, i.e., if the fathometer is on 50-100 fathoms, the blanking was set at 50 fathoms. Analog depths were substituted for missed digital soundings during on-line or end of day field record scanning. ✓

The initial trace on the analog recorders was continuously monitored and adjusted to prevent errors due to a drifting initial. ✓

To prevent belt length error or stylus/paper misalignment on the analog recorders, RAINIER personnel performed "phase calibrations" of the fathometers each day in accordance with the calibration procedures contained in the PMC OORDER. ✓

An alteration to the Ross system was implemented during this project that increased significantly the sounding limits of the system. By essentially halving the pulse repetition rate and increasing the pulse length, the effective depth was extended to 200 fathoms in reasonable weather. This included both the analog and digital performance. ✓

See
Verification
Report
Sec 4

E. HYDROGRAPHIC SHEETS

All hydrographic sheets were prepared using the PDP 8/e Complot system onboard the RAINIER and are based on a modified transverse mercator projection. A list of parameters used to define the projection is attached in the separates following the text. ✓

All data and accompanying field reports will be transferred to the Pacific Marine Center, Seattle, Washington, for verification. ✓

Soundings on the smooth field sheet have been corrected for predicted tide, launch draft, and sound velocity errors. One field sheet was used to cover the entire area. ✓

F. CONTROL STATIONS

Horizontal control during this project was provided by the recovery of twenty-one existing stations and the establishment of twenty-three new stations. This survey was controlled using ~~eleven~~ ^{nine} of those stations. A copy of the Master Station List is included in the attachments. The stations used each day are listed in the raw records and check marked on the Master Station List. ✓

The new stations were established using Third Order Class I methods, and were monumented and described. All work was performed on the Old Hawaiian Datum. The new stations located in this area were part of a traverse run from Cape Kumukahi to Kaena Point. ✓

The details concerning the location and recovery of each station, including the field records and processing computations, are located in the Horizontal Control Report for this project. ✓

See
Verification
Report
Sec 4

G. HYDROGRAPHIC POSITION CONTROL

Electronic range-azimuth methods were used exclusively for hydrographic position control. A Motorola Mini-Ranger III system was employed. ✓

Description of Mini-Ranger Shore Stations

There were four shore stations established and ~~two~~ ^{three} stations were recovered for use as electronic control stations. Data on the use of the stations is as follows: ✓

RA 20-6-80 (H-9917)

<u>Station No.</u>	<u>Name</u>	<u>M/R Code</u>	<u>Transponder No.</u>	<u>Dates</u>
106	Kupapau	A	001	296, 302, 308
107	Lae Apuki	B	775	297, 302
129	Kamoa	B	775	302
130	Wahaula	A	001	308
131	Para	D	777	303
138	Waipuku	E	824281	303
105	HAKUMA	B	775	308

The Mini-Ranger transponders were positioned over Third Order Class I geodetic control stations. They were two to four feet above the stations. Power for the shore stations was provided by two 12-volt auto batteries in series to provide 24 volts DC. ✓

Mini-Ranger Shore Station Performance

There were no transponder failures during this survey. Mini-Ranger operation during collection of data was good. ✓ ✓

Mini-Ranger Mobile Station Performance

There were two vessels involved in the hydrographic operations. They are as follows: ✓

<u>Vessel</u>	<u>Console</u>	<u>R/T Units</u>
RA-3 (2123)	720	720
RA-6 (2126)	711	727

Signal strengths were generally well above the cutoff values. In the areas where signal strength did drop and rates became erratic, work was halted until readjustment of the Mini-Ranger or its transfer to another station eliminated the problem.

Description of the Baseline Calibration

Two Mini-Ranger baseline calibrations were performed during OPR-T126-RA-80. Both took place at Hilo Municipal Airport. The first was on J.D. 248 and the second on J.D. 329.

The initial calibration determined initial correctors and the low signal strength cutoff values for each Mini-Ranger console, R/T unit and transponder combination. The ending correctors from the second calibration were meaned with the initial correctors to determine the final correctors used to plot the smooth field sheet. This smooth field sheet was mistakenly plotted with the Mini-Ranger correctors having the wrong signs. The sheet was not replotted because the resulting error is insignificant at the scale of the survey. All field data contains accurate correctors.

The details of these calibrations and the raw data and graphs are included in the Electronic Control Report for this project.

Description of Daily Calibrations

Visual sextant fixes were used to system check Mini-Ranger accuracy. Signals for these fixes were positioned over Third Order Class I stations. This check was done twice a day, morning and evening, weather permitting, and were performed in accordance with the PMC OORDER, Appendix M.

H. SHORELINE

On the survey sheet H-9917, shoreline detail was obtained from Class III manuscripts TP-00375 and TP-00376. These manuscripts were field edited during the course of the survey and include all areas covered by survey H-9917. Changes and corrections noted during field edit were transferred to the smooth field sheet.

I. CROSSLINES

Crosslines for H-9917 totaled 17.1 linear nautical miles or 26.2% of the total main scheme mileage. All crossline soundings were plotted in red ink on the smooth sheets.

Despite the high gradient bottom, agreement was good. Discrepancies in agreement that did occur can be attributed to the steep contours, rough weather, and non-coincidence of compared sounding pairs. A total of 37 sounding pairs were compared. Non-coincident sounding pairs were interpreted. The results are as follows:

✓ See
Verification
Report
Sec 2

✓ ✓

✓ ✓

<u>Δ Depth</u>	<u>%</u>	<u>Number of Comparisons</u>
0	35	13
1	14	5
2	8	3
3	8	3
4	10	4
5	10	4
6	5	2
7	5	2
10	3	1

J. JUNCTIONS

This survey junctions with the following contemporary surveys:

1) Survey H-9918 (⁽¹⁹⁸⁰⁾~~RA 20-7-80~~) to the north and east. Three soundings were common to both surveys, two of which differ by one fathom and the third differs by 6 fathoms in 100 fathoms of water. Agreement is good. ✓

2) Survey H-9856 (⁽¹⁹⁷⁹⁻⁸⁰⁾~~RA 20-2-80~~) to the south and east in deep water. These (H-9917) soundings are consistently shoaler, which may be attributed to differences in transducer beam width (60°+ for the ship RAINIER, 7-1/2° for the launches) over a high gradient bottom. As tabulated below, after compensating for beam width discrepancies, no discrepancy is greater than 9.2%. The data forwarded to Pacific Marine Center is uncompensated in this way, and for reasons of accuracy, it is recommended that launch soundings be given precedence in areas common to both surveys. In the following table, ship soundings are compensated by a factor of $1/\cos(\theta - \phi)$ where ϕ is the bottom slope, approximately 27°, and θ is 3.75°, one-half the launch transducer beam width. Concur

<u>Depth (H-9856)</u> <u>(fathoms)</u>	<u>Depth (H-9917)</u> <u>(fathoms)</u>	<u>Δ d</u> <u>(%)</u>	<u>Depth (H-9856)</u> <u>Compensated (fathoms)</u>	<u>Δ d</u> <u>Compensated (%)</u>
115	115	0	126.6	9.2
144	165	12.7	157.3	4.7
145	165	12.1	158.4	4.0
155	180	13.9	169.3	5.9
148	176	15.9	161.7	8.1

3) RAINIER survey H-9916 (RA 20-5-80) on the south and west. Soundings were compared by directly overlaying smooth field sheets. Agreement was excellent. ✓

K. COMPARISON WITH PRIOR SURVEY

The only prior survey in this area was H-8991, 1968 (1:30,000), and there were no soundings common to both. *Does not fall in common area.*

L. COMPARISON WITH THE CHART

The present survey was compared with chart 19320, 12th edition, June 17, 1978. No soundings were common to both. The difference in scale between the chart and this survey makes even a general comparison difficult and misleading. The chart also appears to be based on a very small amount of accurate sounding

See
Verify
Report
Sec 4
Sec 6

See
Verify
Report
Sec 6
Sec 7

information. The rock awash charted at approximately $19^{\circ}20'N$ and $155^{\circ}00'W$ does not exist and should be removed from the chart. Similarly, the rocks awash charted along the shoreline appear to have been located for cartographic clarity rather than to provide accurate information to a coastal navigator. *CONCUR*

M. ADEQUACY OF SURVEY

This survey is complete and adequate to supersede any prior survey in the common area. ✓ ✓

N. AIDS TO NAVIGATION

No aids to navigation were found in this area. ✓ ✓

O. STATISTICS

This survey contains 966 positions in 83.3 linear nautical miles covering 5.1 square nautical miles. ✓

<u>Vessel</u>	<u>Positions</u>	<u>LN</u>	✓
2123	328	24.8	✓
2126	630	57.5	
2120	8	Bottom samples only	

Two tide gages were installed; one at Pohoiki Breakwater and one at Honuapo.

P. MISCELLANEOUS

The zero fathom curve was not developed due to hazardous conditions inshore and minimal tidal fluctuations. ✓ ✓

A request, dated December 27, 1978, from the Corps of Engineers for a detailed survey of the inshore waters of Kaimu Beach is included in the separates. This request could not be fulfilled due to high surf and the treacherous nature of the shoreline. However, it is requested that a copy of this verified smooth sheet be forwarded to the Deputy Division Engineer, Pacific Ocean Division, Corps of Engineers, Building 230, Fort Shafter, Hawaii 96858. *Conversation with Jim Green IMC verified forwarding of these requested copies. 2/11/85*

It is requested that a copy of the verified smooth sheet be forwarded to Dr. Harold Loomis in accordance with section 10.8 of the project instructions. ✓ ✓

The rough weather and steep bottom contours in this area combined to produce fathogram traces that were very difficult to interpret. Every effort was made to produce soundings for plotting that are as accurate as possible. However, crossline comparisons for this survey are still less accurate than could be expected in an area with a smooth bottom. ✓ ✓

Q. RECOMMENDATIONS

Survey H-9917 is complete and adequate to supersede all previous hydrography in this area. There are no special recommendations for additional field work or unusual processing. ✓ *See Verification Report Sec 7*

R. AUTOMATED DATA PROCESSING

Data acquisition and processing were accomplished per instructions in the Hydrographic Manual (4th edition), Manual Automated Hydrographic Surveys, and the PMC OORDER. ~~and 1980 Data Requirements Letter.~~ ✓ ✓

Soundings and positions were taken by a Hydroplot system using range-azimuth program FA 181. There are daily master tapes and corresponding corrector tapes which include the TRA for the vessel, baseline correctors for the M/R Consoles and R/T Units, and all depth corrections. Velocity tapes were generated from Nansen Cast Data. The following is a list of all computer programs and version dates used for data acquisition or processing. ✓ ✓

<u>PDP 8/e Programs</u>	<u>Version Dates</u>
FA 181 Range-Azimuth Logger	2/23/78
RK 201 Grid, Signal & Lattice Plot	4/18/75
RK 212 Visual Station Table Load	4/01/74
RK 216 Range-Azimuth Non-Real Time Plot	2/05/76
RK 300 Utility Computations	2/05/76
RK 330 Reformat and Data Check	5/04/76
PM 360 Electronic Corrector Abstract	2/02/76
AM 500 Predicted Tide Generator	11/10/72
RK 530 Layer Corrections for Velocity	5/10/76
RK 561 Geodetic H/R Calibration	2/19/75
AM 602 Elinore-Line Oriented Editor	5/20/75
AM 603 Tape Consolidator	10/10/72
RK 606 Tape Duplicator	8/22/74

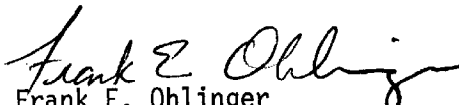
The HP 97 and HP 9815 calculators were used to compute geographic positions of electronic control stations and visual signals for calibration. ✓

S. REFERRAL TO REPORTS

The following reports contain information related to this survey: ✓

Horizontal Control Report, OPR-T126-RA-80
 Electronic Control Report, OPR-T126-RA-80
 Field Edit Reports, OPR-T126-RA-80
 Corrections to Echo Soundings Report, OPR-T126-RA-80
 Coast Pilot Report, OPR-T126-RA-80 ✓

Respectfully submitted,


 Frank E. Ohlinger
 Ensign, NOAA

APPROVAL SHEET
DESCRIPTIVE REPORT TO ACCOMPANY
HYDROGRAPHIC SURVEY
H-9917
RA-20-6-80

In producing this sheet, standard procedures were observed in accordance with the Hydrographic Manual, PMC OORDER, and the Instruction Manual for Automated Hydrographic Surveys. The data was examined daily during the execution of the survey.

The boatsheet and accompanying records have been examined and are complete and adequate for charting purposes and are approved.

Wayne L. Mobley

Wayne L. Mobley
Captain NOAA

MASTER STATION LIST
 OPR-T126-RA-80
 HAWAIIAN ISLANDS, HAWAII

FINAL VERSION

~~101 1 19 16 55404 155 07 27806 250 0000 329649~~
~~/KAENA PT. RM 3 RED RAYDIST STATION RA-79~~

~~102 1 19 31 09221 154 43 47412 250 0000 329649~~
~~/FIX 1966-1980 GREEN RAYDIST STATION RA-80~~

~~103 1 19 27 12889 154 51 03305 250 0000 000000~~
~~/LAKA 1980 RA-80~~

104 1 19 24 06000 154 55 18553 250 0000 000000 ✓
 /KEE 1980 RA-80

105 1 19 20 56109 154 58 54856 250 0000 000000 ✓
 /HAKUMA 1914 G-16241

106 1 19 19 54935 155 01 10910 250 0000 000000 ✓
 /KUPAPAU 1914 G-16241

107 1 19 18 09600 155 05 22586 250 0000 000000 ✓
 /LAEAPUKI 1914 G-16241

108 3 19 16 55404 155 07 27806 250 0000 000000 ✓ *off sheet*
 /KAENA PT 1977 RM 3 M/R RA-79

~~109 1 18 54 56570 155 41 04290 250 0000 329649~~
~~/KA LAE 2 1948-1949 GREEN RAYDIST PG.27 G-09279~~

~~110 1 19 07 36455 155 30 48106 250 0000 000000~~
~~/LUU 1930 PG.67 G-446~~

~~111 1 19 09 10376 155 30 49687 250 0000 000000~~
~~/PUNALUU 1949 G-09279~~

~~112 1 19 08 52349 155 28 07649 250 0000 000000~~
~~/KAMEHAME NEW HTS 1949 G-09279~~

~~113 1 19 12 24452 155 26 00452 250 0000 000000~~
~~/PUU ULAULA HTS 1914 G-09279~~

~~114 1 19 08 26595 155 29 21880 250 0000 000000~~
~~/PUN 1930 PG.67 G-446~~

~~115 1 19 08 53389 155 27 44321 250 0000 000000~~
~~/ALFA 1980 RA-80~~

~~116 1 19 09 19447 155 26 56863 250 0000 000000~~
~~/BRAVO 1980 RA-80~~

~~117 1 19 10 14477 155 25 57639 250 0000 000000~~
~~/CHARLIE 198~~ RA-80

~~118 1 19 10 28051 155 21 55840 250 0000 000000~~
~~/DELTA 1980~~ RA-80

~~119 1 19 14 47650 155 19 06795 250 0000 000000~~
~~/ECHO 1980~~ RA-80

~~120 1 19 15 32967 155 11 41090 250 0000 000000~~
~~/FOXTROT 1980~~ RA-80

~~121 1 19 17 40026 155 18 57509 250 0000 000000~~
~~/HALINA AZI 1980~~ RA-80

~~122 1 19 17 51107 155 18 36324 250 0000 000000~~
~~/HILINA RESET 1975 1980~~ RA-80

~~123 1 19 19 05904 155 09 51023 250 0000 000000~~
~~/FINNEGAN 1980~~ RA-80

~~124 1 19 16 43355 155 15 44461 250 0000 000000~~
~~/PUU KAPUKAPU 1914~~ G-16241

~~125 1 19 10 14231 155 25 57295 254 0000 000000~~
~~/CHARLIE 1980 EGG.~~ RA-80

~~126 1 19 16 34120 155 08 01502 250 0000 000000~~
~~/GOLF 1980~~ RA-80

~~127 1 19 15 35165 155 11 40018 254 0000 000000~~
~~/FOXTROT EGG. 1980~~ RA-80

~~128 1 19 17 06042 155 07 10580 254 0000 000000~~
~~/KAENA AID 1980~~ RA-80

~~129 1 19 19 00739 155 03 42583 250 0000 000000~~ ✓
~~/KAMO A 1980~~ RA-80

~~130 1 19 19 37783 155 01 52960 250 0000 000000~~ ✓
~~/WAHAULA 1980~~ RA-80

~~131 1 19 21 01936 154 58 45999 250 0000 000000~~ ✓
~~/PANA 1980~~ RA-80

~~132 1 19 22 31420 154 57 12839 250 0000 000000~~
~~/MOANA HAUAE USGS 1978~~ G-16241

~~133 1 19 25 06205 154 53 32829 250 0000 000000~~
~~/KAULUPO 1980~~ RA-80

~~134 1 19 26 21328 154 52 02887 250 0000 000000~~
~~/MAC 1980~~ RA-80

~~135 1 19 27 49995 154 50 20735 250 0000 000000~~
~~/HULA 1980~~ RA-80

~~136 1 19 28 29295 154 49 45134 250 0000 000000~~
~~/HAL 1980~~ RA-80

~~137 1 19 22 49224 154 56 43746 250 0000 000000~~
~~/KIKA 1980~~ RA-80

138 1 19 23 21490 154 56 09086 250 0000 000000 ✓
/WAIPUKU 1980 RA-80

~~139 1 19 25 43275 154 52 53989 250 0000 000000~~
~~/OPIHI 1980~~ RA-80

~~140 1 19 30 01441 154 50 31043 250 0000 000000~~
~~/KAPONO HGS 1896~~ G-16241

~~141 1 19 27 37530 154 50 43442 250 0000 000000~~
~~/POHOIKI BAY BREAKWATER LIGHT 2 1980~~ RA-80

~~200 1 19 31 09621 154 48 49076 139 0000 000000~~
~~/CAPE KUMAKAHI LIGHTHOUSE 1949~~ RA-80

~~201 1 18 55 24119 155 40 24017 139 0000 000000~~
~~/DESOLATION 1979~~ RA-79

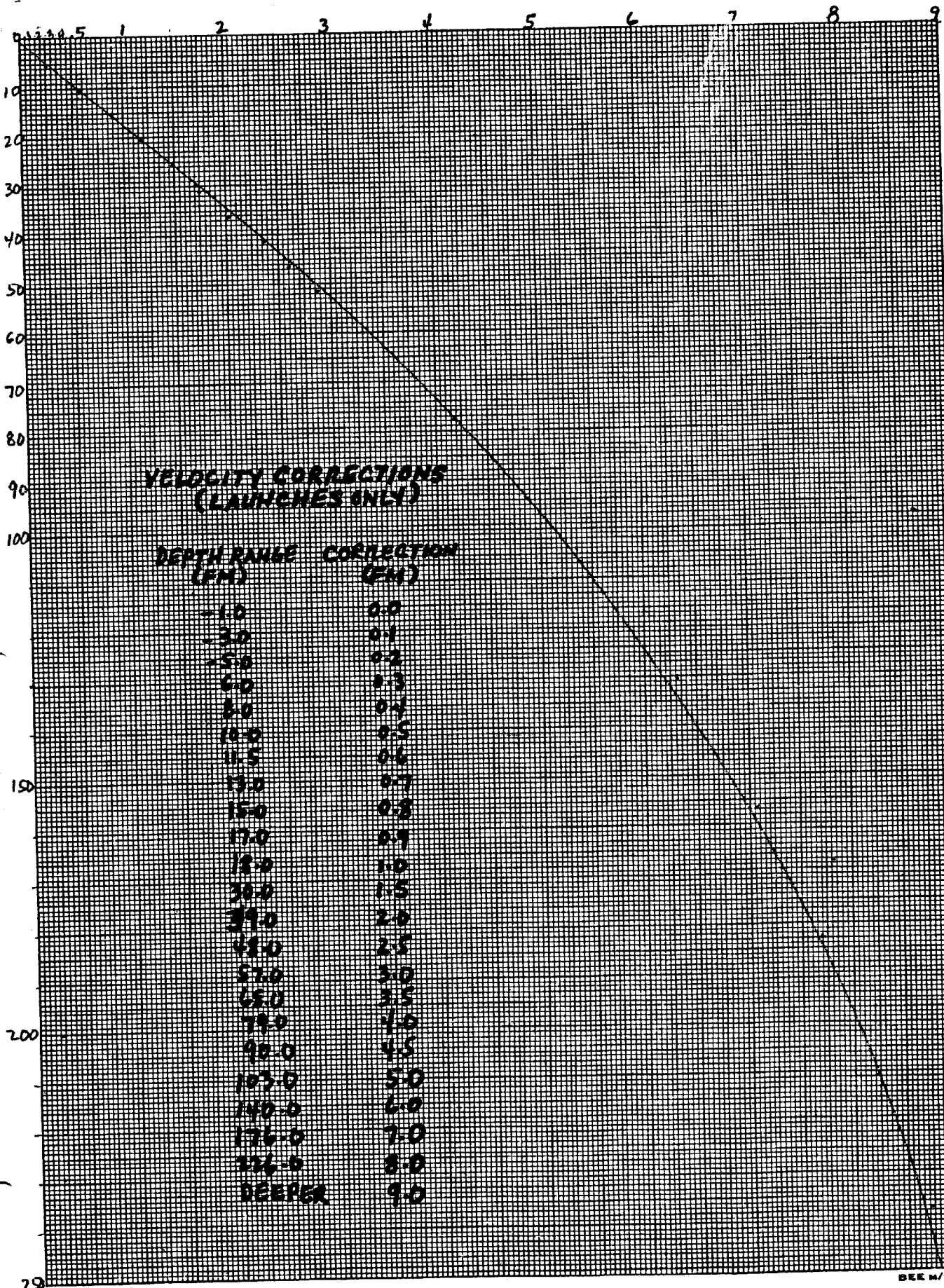
~~202 1 18 54 54432 155 41 04553 139 0000 000000~~
~~/KA LAE LIGHT 1948~~ G-16108

~~203 1 19 27 37932 154 50 42526 139 0000 000000~~
~~/NOS BENCHMARK 161 8062 E 1979~~ RA-80

VELOCITY CORRECTOR LISTING
OPR-T126-RA-80

LAUNCHES ONLY
TABLE NO. 2

000010	0	0000	0002	001	000000	000000
000030	0	0001				
000050	0	0002				
000060	0	0003				
000080	0	0004				
000100	0	0005				
000115	0	0006				
000130	0	0007				
000150	0	0008				
000170	0	0009				
000180	0	0010				
000300	0	0015				
000390	0	0020				
000480	0	0025				
000570	0	0030				
000680	0	0035				
000790	0	0040				
000900	0	0045				
001030	0	0050				
001400	0	0060				
001760	0	0070				
002260	0	0080				
999999	0	0085				



**VELOCITY CORRECTIONS
(LAUNCHES ONLY)**

**DEPTH RANGE CORRECTION
(FPM) (FPM)**

-10	0.0
10	0.1
20	0.2
30	0.3
40	0.4
50	0.5
60	0.6
70	0.7
80	0.8
90	0.9
100	1.0
110	1.1
120	1.2
130	1.3
140	1.4
150	1.5
160	1.6
170	1.7
180	1.8
190	1.9
200	2.0
210	2.1
220	2.2
230	2.3
240	2.4
250	2.5
260	2.6
270	2.7
280	2.8
290	2.9
300	3.0
310	3.1
320	3.2
330	3.3
340	3.4
350	3.5
360	3.6
370	3.7
380	3.8
390	3.9
400	4.0
410	4.1
420	4.2
430	4.3
440	4.4
450	4.5
460	4.6
470	4.7
480	4.8
490	4.9
500	5.0
510	5.1
520	5.2
530	5.3
540	5.4
550	5.5
560	5.6
570	5.7
580	5.8
590	5.9
600	6.0
610	6.1
620	6.2
630	6.3
640	6.4
650	6.5
660	6.6
670	6.7
680	6.8
690	6.9
700	7.0
710	7.1
720	7.2
730	7.3
740	7.4
750	7.5
760	7.6
770	7.7
780	7.8
790	7.9
800	8.0
810	8.1
820	8.2
830	8.3
840	8.4
850	8.5
860	8.6
870	8.7
880	8.8
890	8.9
900	9.0

✓
FIELD TIDE NOTE
OPR-T126-RA-80

Field tide reduction of soundings for OPR-T126-RA-80 was based on predicted tides from Honolulu, Hawaii, corrected to Honuapo, Hawaii. These predicted tides were interpolated by PDP 8/e computer utilizing AM 500. Due to the small range of tide at Honuapo (mean range 1.7 feet, diurnal range 2.5 feet), tide correctors were applied to soundings only on the smooth copies of field sheets. All times of predicted tides are GMT.

Metercraft bubbler tide gages were installed at two locations in the project area. Their location and time of operation are as follows:

<u>SITE</u>	<u>LOCATION</u>	<u>PERIOD</u>
Honuapo (161-8578) Used for final field sheet	19 ⁰ 05.3'N 155 ⁰ 33.2'W	6 Sep - 25 Nov
Pohoiki (161-8062) Used for smooth sheet.	19 ⁰ 27.6'N 154 ⁰ 50.6'W	6 Sep - 25 Nov

Honuapo

A 0-10 feet scale Metercraft gage (S/N 7601-7536-31) was installed and began operation 7 September. The staff was installed and leveled on 7 September also. The time meridian was 000⁰ for this gage. The gage performed well through the project except that the clock/paper drive stopped at 0300 Z November 21; it was restarted 1927 Z November 21, resulting in a two-thirds of a day loss of data. The gage ran out of nitrogen on November 24 about 0900 Z and was leveled on November 21. The gage was removed November 25. There were no unusual tides during the period of operation of this gage. Zero on the marigram equals 16.31 feet on the tide staff.

Pohoiki

A 0-10 feet scale Metercraft gage (S/N 7601-7536-29) was installed and began operation 6 September. The staff was installed on 6 September and the leveling done on 5-6 September. The time meridian was 000⁰ for this gage. There were several minor problems during September. The pen was marking intermittently between September 8, 1600 Z and September 10, 2307 Z. Some scattered hourly heights were recovered during this period. On September 25, beginning about 0400 Z, there is a strange pressure build-up which released at 0610 Z. Comparison of staff and gage difference before and after this period are consistent, suggesting a one-time problem. The hourly heights 04-06 Z were interpolated. Finally, the paper slipped off its sprockets September 28 at 1100 Z and was not fixed until October 1 0200 Z, a loss of 2½ days of data. The remainder of the time the gage performed well. It was leveled November 19 and removed November 25. There were no unusual tides during the period of operation of this gage. Zero on the marigram equals 3.51 feet on the tide staff.

Levels

In addition to Honuapo and Pohoiki gages, the Hilo control station (161-7760) was leveled September 5 and November 25.

All levels between marks were within acceptable limits. The levels for both tide stations indicate no significant staff movements. The following tables show bench mark elevations above staff zero for installation and removal.

<u>Honuapo (161-8578)</u>		<u>BM Elevations (ft)</u>	
<u>BM#</u>	<u>9/6/80</u>	<u>11/21/80</u>	<u>Difference</u>
3	24.160	24.170	+ 0.010
D	21.873	21.877	+ 0.004
E	21.273	21.286	+ 0.013
F	24.957	24.980	+ 0.023
G	22.018	22.034	+ 0.016

<u>Pohoiki (161-8062)</u>		<u>BM Elevations (ft)</u>	
<u>BM#</u>	<u>9/6/80</u>	<u>11/19/80</u>	<u>Difference</u>
A	10.522	10.525	+ 0.003
B	13.038	13.041	+ 0.003
C	12.139	12.136	+ 0.003
D	14.265	14.268	+ 0.003
E	13.570	13.570	+ 0.000

Recommended Zoning

The differences in times and heights of tides for the various tide stations were small, and correctors obtained from predicted tides at Honolulu, adjusted for Honuapo, were judged adequate for the 1:5,000 and 1:20,000 smooth field sheets. However, for maximum accuracy tide correctors could be applied as follows:

<u>Sheet</u>	<u>Tide Station</u>	
HH (RA-5-4-80)	Honuapo	H-9913
JJ (RA-20-4-80)	Honuapo	H-9914
KK (RA-20-5-80)	Honuapo	H-9916
LL (RA-20-6-80)	Pohoiki	H-9917
MM (RA-20-7-80)	Pohoiki	H-9918

The correctors are not considered necessary for the 1:40,000 and 1:80,000 offshore sheets as the depths on these sheets are all sufficient to make the tide corrector insignificant.

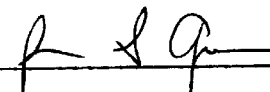
Miscellaneous

A comparison of actual and predicted tide heights at Honuapo was performed. There was reasonable agreement between them.

APPROVAL SHEET
FOR
SURVEY H-9917

- A. This hydrographic survey has been verified, evaluated and inspected. It meets the requirements of the Hydrographic Manual except as noted in the Verification/Evaluation Report. The automated data file has been updated to reflect the data presented on the smoothsheet.

Date: 6/21/82

Signed: 
Title: Chief, Verification Branch

- B. The verified smooth sheet has been inspected, is complete, and meets the requirements of the Hydrographic Manual. Exceptions are listed in the Verification/Evaluation Report.

Date: 7/2/82

Signed: 
Title: Chief, Marine Surveys Division

REGISTRY NO. H-99.7

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

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

CARDS CORRECTED

DATE _____ TIME REQUIRED _____ INITIALS _____

REMARKS:

U.S. DEPARTMENT OF COMMERCE
October 8, 1981 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): 161-8062 Pohoiki, HI

Period: October 10 - November 3, 1980

HYDROGRAPHIC SHEET: H-9917

OPR: T-126

Locality: Southeast Coast of Hawaii

Plane of reference (mean lower low water): 0.8 ft.

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

REMARKS: Zone Direct.

Donald Carri
for Chief, Datums and Information Branch

GEOGRAPHIC NAMES

Name on Survey

A ON CHART NO. 10320
12th Ed. 1878
B ON PREVIOUS SURVEY
NO.
C ON U.S. QUADRANGLE
MAPS
D FROM LOCAL
INFORMATION
E ON LOCAL MAPS
F P.O. GUIDE OR MAP
G RAND McNALLY
ATLAS
H U.S. LIGHT LIST
I Sheets
K 00375
00376

Name on Survey	A	B	C	D	E	F	G	H	I	J
HAKUMA POINT	X								X	1
HAWAII									X	2
KAIMU	X								X	3
KAIMU BEACH									X	4
KA LAE APUKI	X								X	5
KALAEHIAMOE									X	6
KALAPANA	X								X	7
KAMOKUNA	X								X	8
KAPAAHU	X								X	9
KEHENA	X								X	10
KII	X								X	11
KUPAPAU PT.	X								X	12
PEA	X								X	13
PUNAHANA									X	14
WAIPIKU PT.	X								X	15
WILIPEA									X	16
KAMOAMOA									X	17
									X	18
									X	19
									X	20
									X	21
									X	22
									X	23
									X	24
									X	25

Approved:

Chas. E. Harrington
Chief Geographer - N/C42x5

3 MAY 1983

HYDROGRAPHIC SURVEY STATISTICS

H-9917

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT	
SMOOTH SHEET		1	BOAT SHEETS & PRELIMINARY OVERLAYS		11	
DESCRIPTIVE REPORT		2	SMOOTH OVERLAYS: POSZARC, EXCESS		8	
DESCRIP-TION	DEPTH RECORDS	HORIZ. CONT. RECORDS	PRINTOUTS	TAPE ROLLS	PUNCHED CARDS	ABSTRACTS/SOURCE DOCUMENTS
ENVELOPES			1-smooth Plo			
CAHIERS	X		1-raw Plo Bathograms			
VOLUMES	S					
BOXES						

T-SHEET PRINTS (List) T-00375, T-00376 Class I Unreviewed Manuscripts TP-00378 TP-00379

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	PRE-VERIFICATION	VERIFICATION	TOTALS
POSITIONS ON SHEET			877
POSITIONS CHECKED		877	
POSITIONS REVISED		52	
SOUNDINGS REVISED		382	
SOUNDINGS ERRONEOUSLY SPACED		0	
SIGNALS (CONTROL) ERRONEOUSLY PLOTTED		0	
	TIME - HOURS		
CRITIQUE OF FIELD DATA PACKAGE (PRE-VERIFICATION)	3	*(VER)/(EVAL)	
VERIFICATION OF CONTROL		02/00	
VERIFICATION OF POSITIONS		24/00	
VERIFICATION OF SOUNDINGS		39/00	
COMPILATION OF SMOOTH SHEET		34/00	
APPLICATION OF TOPOGRAPHY		10/00	
APPLICATION OF PHOTOBATHYMETRY			
JUNCTIONS		03/01	
COMPARISON WITH PRIOR SURVEYS & CHARTS		00/02	
VERIFIER'S REPORT		01/22	
OTHER		00/48	
TOTALS	3	113/73	189
Pre-Verification by James S. Green	Beginning Date 5/28/81	Ending Date 5/28/81	
Verification by Robert D. Mueller	Beginning Date 9/28/81	Ending Date 3/17/82	
Verification Check by James L. Stringham, James S. Green	Time (Hours) 28	Date 6/9/82	
Marine Center Inspection by	Time (Hours)	Date	
Quality Control Inspection by Lisa Quaker	Time (Hours) 40	Date 15 OCT 82	
Requirements Evaluation by	Time (Hours)	Date	

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

B. Myers 4/13/83 2 hrs

PACIFIC MARINE CENTER
VERIFICATION/EVALUATION REPORT

REGISTRY NO. H-9917

FIELD NO. RA-20-6-80

SE Coast of Hawaii, Keheha to Ka Lae Apuki
Hawaii, Island of Hawaii, Ka Lae Apuki to Waipuku Point

SURVEYED: October 22, 1980 to November 3, 1980

SCALE: 1:20,000

PROJECT NO: OPR-T126-RA-80

SOUNDINGS: Ross Fineline 5000

Faha Sounder

CONTROL:

Motorola Mini-Ranger III
Range-Azimuth

Chief of Party.....CAPT W. L. Mobley

Surveyed by.....LT A. Anderson
ENS R. Fleischman
ENS F. Ohlinger

Automated plot by.....PMC Xynetics Plotter

Verified by.....R. D. Mueller

Evaluated by.....B. A. Olmstead

1. INTRODUCTION

NOTE: This survey has been processed utilizing a procedure developed to work in conjunction with the Verification Branch realignment, which established an evaluation process. The survey data was first verified and a smooth sheet compiled by a verifier. Then, an evaluator reviewed the work of the verifier, made the necessary comparisons with prior surveys and charts and wrote the Verification/Evaluation Report.

⁽¹⁹⁸⁰⁾
H-9917 (~~RA-20-6-80~~) is a basic survey conducted under the current National Ocean Survey methods of planning, executing and processing a hydrographic survey as defined in the Hydrographic Manual, 4th Edition. The FMC OORDER and the Data Requirements Letter for 1980 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.~~

(1980)
 H-9917 (RA 20-6-80) is an inshore survey situated along the south-eastern coast of the Island of Hawaii. The area of hydrography encompasses the five fathom depth curve as ^{an} inshore limit and generally reaches depths to 190 fathoms off the coastline. Sounding data extends one-half mile offshore and parallels the mean high water line. Specifically, from Ka Lae Apuki to Waipuku Point; latitude 19°17'42"N, longitude 155°05'25"W on the west and latitude 19°23'18"N, longitude 154°55'37"W on the east. There is approximately 15 miles of shoreline. The alongshore characteristics are composed primarily of breakers (heavy surf) and submerged ledges. Navigation inside the five fathom curve is extremely dangerous. There are no all-weather harbors or anchorages. However, a request was made by the Corps of Engineers to survey the inshore waters of Kaimu Beach. This beach is composed of black sand. Although steep in nature, Kaimu Beach may be used as a small boat landing during calm weather. Unfortunately, the sea state and weather conditions precluded hydrographic operations inside the three fathom curve during this survey.

Two tide gages, Honuapo and Pohoiki were installed and operating during the survey. Field tide reduction of soundings was based on predicted ~~tides~~ tides from Honolulu, Hawaii, corrected to Honuapo, Hawaii. Pohoiki was used for office reduction of sounding data. Sounding differences between the final field sheet and the smooth sheet are attributed to the application of approved tidal zoning and sounding selection during processing at the Marine Center.

Depths of water range from 1.5 fathoms to 225 fathoms. Bottom characteristics are composed primarily of black sand.

The Projection Parameters, Signal List and Electronic Corrector Abstract were amended during the verification process. All corrected data is listed in the smooth printouts to accompany the final FMC plot.

2. CONTROL AND SHORELINE

Stations located to Third Order, Class I standards were used to control the hydrographic survey. The Motorola Mini-Ranger III was employed exclusively in the range-azimuth mode. The second ranging option on the R/T unit (receiver/transmitter) was utilized to capture a redundant set of data points. A Wild T-2 theodolite was employed for azimuth control. Daily calibrations were performed by means of visual sextant fixes. Specific information and procedures are adequately described in Parts F and G of the ship's descriptive report and the Horizontal Control Report.

Station heights were not entered into the ship's Master Station or ASC II Signal Tape listing. Although this discrepancy does not by itself exceed the positional accuracy standards for hydrographic survey data, the accuracy of the survey would be improved by consideration of the station elevations.

The Mean High Water Line and other photogrammetrically determined features were applied from Class I unreviewed manuscripts.

<u>Dates of Photography</u>	<u>Dates of Field Edit</u>
TP-00375 December 1976, March 1977	October 1980
TP-00376 December 1976, March 1977	October 1980
TP-00377 December 1976, March 1977	October 1980 off sheet
TP-00378 December 1976, March 1977	October 1980 off sheet

Discrepancies between the Class I shoreline manuscript and the hydrography are as follows:

a. The final field sheet depicts eight rocks awash and one ledge in red that are not plotted on the Class I ^{MAP} These items were transferred in black to the smooth sheet. There is no supporting positional/elevation information in the hydrographic records. The geographic positions of these features are as follows:

- (1) Latitude 19°18'56.9"N, Longitude 155°04'12.2"W
- (2) Latitude 19°18'57.1"N, Longitude 155°03'52.7"W
- (3) Latitude 19°18'59.0"N, Longitude 155°03'48.0"W
- (4) Latitude 19°19'13.3"N, Longitude 155°03'25.9"W
- (5) Latitude 19°19'19.3"N, Longitude 155°02'43.6"W
- (6) Latitude 19°19'25.6"N, Longitude 155°02'32.6"W
- (7) Latitude 19°19'30.3"N, Longitude 155°02'20.7"W
- (8) Latitude 19°21'51.7"N, Longitude 154°58'18.3"W
- (9) Latitude 19°21'15"N, Longitude 154°58'39"W

b. The dashed line symbology depicting breakers on the Class I is further defined by the final boatsheet as submerged ledge and/or foul with breakers and rocks. Several notes in the hydrographic records substantiate the existence of additional rock data in the surf zone. However, positions could not be taken to fix these features. The informational notes from the final ^{boatsheet} were added to supplement the photogrammetric information. The following items were incorporated into the dashed foul line symbology as depicted on the Class I manuscript and smooth sheet:

- (1) Ledge Latitude 19°22'00"N, Longitude 154°57'45"W
- (2) Ledges Latitude 19°20'11"N, Longitude 155°00'53"W
- (3) Ledges Latitude 19°19'00"N, Longitude 155°03'45"W
- (4) Foul with
Rocks Latitude 19°21'33"N to Latitude 19°21'48"N
Longitude 154°58'22"W to Longitude 154°58'24"W

3. HYDROGRAPHY

An accurate percentage of comparison between mainscheme hydrography versus crossline data is difficult due to the steep bottom profile. However, soundings at crossings are in good agreement.

The bottom configuration and determination of least depths are adequate with the exception of:

a. 8.7 fathom sounding (Latitude 19°21'12"N, Longitude 154°58'24"W) *Plotted intermediate sounding*

b. Kaimu Beach (Latitude 19°21'54"N, Longitude 154°58'00"W) - ✓
This area could not be surveyed inside the 3-fathom depth curve due to sea conditions and weather.

The 0-fathom, 1-fathom, 2-fathom and 3-fathom depth curves could not be ✓
adequately developed. Hazardous surf conditions and the rugged coast-
line precluded the development of these areas. Generally, the 5-fathom
depth curve was delineated. Additionally, the 200-fathom depth curve
was not complete. (See Section 5, Junctions, for further discussion.)
Development of the remaining standard curves, 10-fathoms seaward to
100-fathoms was satisfactory.

4. CONDITION OF SURVEY

The smooth sheet and accompanying overlays, hydrographic records and reports are adequate and conform to the requirements as stated in the Hydrographic Manual, PMC OORDER and the Data Requirements Letter with the exception of:

a. The ship's descriptive report listed H-8991 (AR-30-1-68) as a *Since this survey, does not fall within*
prior survey. This sheet does not fall within the common area of the *the common area, it*
present work. Additionally, H-8991, a contemporary survey, was de- *can not be either*
fined for junctional purposes and not as prior information. *junctional or a prior.*

are b. The junction with H-9856 (~~RA-80-2-79~~) is poor, *because there* *Generally,*
very few soundings between this offshore survey and the present inshore work overlap. A much better junction between these two contemporary surveys would have occurred if hydrography had been accomplished to 200 fathoms (see item C) on the inshore sheet. See Hydrographic Manual, Section 4.3.2., Junctions and Overlaps.

c. An alteration to the Ross system was implemented during field operations which effectively increased the ability of the fathometer to sound in depths over 200 fathoms. However, the evaluator could not find any documentation authorizing this procedure. See Hydrographic Manual, Section A.6.3.2., Ross Depth-Sounding System.

This action is considered acceptable under the conditions encountered.

d. A thirty meter positional error exists between the final field sheet and the smooth sheet. This error originates with a bad projection plot on the final field sheet. The longitudinal projection lines were drawn inaccurately by a magnitude of 25-30 meters. Additionally, the ship mistakenly plotted the data with the Mini-Ranger correctors having the wrong signs. Other factors inherent in plotting the final field sheet may possibly have affected the graphic representation.

*Done
2/16/62/kl*

5. JUNCTIONS

H-9917 (~~RA-20-6-80~~) *(1980)* is bordered on the west, east and south by three ✓
contemporary surveys.

- a. H-9916 (~~RA-20-5-80~~) (1980)
 H-9918 (~~RA-20-7-80~~) (1980)

These contemporary inshore surveys junction the western and eastern limits of the present survey; latitude 19°23'30"N, longitude 154°55'45"W on the east, latitude 19°17'45"N, longitude 155°05'25"W on the west. Depths of water range from 5-198 fathoms. Good agreement was made in the adjoining areas. The junctional notes are inked accordingly.

- b. H-9856 (~~FA-80-2-78~~) (1979-80)

This offshore survey joins the entire boundary of the present survey; latitude 19°17'40"N to latitude 19°23'12"N, longitude 154°55'50"W to longitude 155°05'20"W. Generally, depths of water range from 150-200 fathoms. Few soundings from this offshore sheet overlap with the present inshore sheet. (See Section 4, Condition of Survey, Item b.) However, good agreement was made in the adjoining areas where supporting data was available. The junctional note is inked accordingly.

6. COMPARISON WITH PRIOR SURVEYS

H-4655^a (1927) 1:250,000

The comparison with this reconnaissance survey accomplished in 1927 reveals little information about how the area has changed. Basically, no significant changes appear to have occurred in the last 53 years, although severe seismic activity in recent years has caused shoreline subsidence around Kaimu Beach. There are no soundings from this prior work which fall within the present survey limits.

There were no numbered or dashed pre-survey review items for investigation.

H-9917 (⁽¹⁹⁸⁰⁾~~RA-20-6-80~~) is adequate to supersede the prior survey within the common area.

7. COMPARISON WITH CHART

a. Hydrography - A chart comparison was made with Chart 19320, 12th Edition, June 17, 1978. The charted information originates with an unknown source(s). As discussed in Section 6, Comparison with Prior Surveys, no soundings fall within the survey area. However, several rocks awash, sunken rocks and one pier merit further discussion.

The following features originating from an unknown source(s) are all displaced seaward of their true geographic position. The evaluator recommends charting according to the present survey.

- | | | |
|----|------------------|--|
| a. | Rock Awash | (Latitude 19°18'10"N, Longitude 155°05'18"W) |
| b. | Rock Awash | (Latitude 19°19'54"N, Longitude 155°01'06"W) |
| c. | Rock Awash | (Latitude 19°20'03"N, Longitude 155°01'03"W) |
| d. | Rock Awash | (Latitude 19°20'30"N, Longitude 154°59'54"W) |
| e. | Sunken Rocks (3) | (Latitude 19°20'50"N, Longitude 154°58'50"W) |
| f. | Sunken Rock | (Latitude 19°22'30"N, Longitude 154°56'54"W) |

The pier type feature, ^{charted} at latitude 19°20'25"N, longitude 155°00'06"W was not addressed by the present survey. This structure is located behind the dashed foul line and presents no danger to navigation. Furthermore, the item was not compiled on the Class III shoreline manuscript. The evaluator recommends charting according to the present survey unless the chart compiler has additional information. *concur*

The sunken rock at latitude 19°19'57"N, longitude 154°59'54"W was not searched for during this survey. However, depths of water in this area precludes the existence of such a feature. The evaluator feels this item is displaced offshore and concurs with the ship's recommendation that this feature be superseded by data from the present survey. *concur*

With consideration of the above statements, 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 were no fixed or floating aids within the limits of this survey. ✓

8. COMPLIANCE WITH INSTRUCTIONS

(1980)

H-9917 (~~RA-20-6-80~~) adequately complies with the project instructions except as noted in Section 4, Condition of Survey. ✓

9. ADDITIONAL FIELD WORK

(1980)

H-9917 (~~RA-20-6-80~~) is a good basic survey. Additional field work is not required. ✓

Submitted by

Bruce A. Olmstead

Bruce A. Olmstead
Evaluator

Examined and Approved

J. S. Green

James S. Green
Chief, Verification Branch



U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SURVEY
Pacific Marine Center
1801 Fairview Avenue East
Seattle, Washington 98102

July 6, 1982

TO: C3 - C. William Hayes

FROM: CPM - *Charles K. Townsend*
Charles K. Townsend

SUBJECT: Administrative Approval, H-9917, *Kehena to Ka Lae Apukii*
~~Island of Hawaii, Hawaii~~
SE Coast of

The smooth sheet and reports of this survey have been examined and the survey is adequate for charting and to supersede common areas of prior surveys.





UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

N/CG242:LQ

April 16, 1985

TO: Roy K. Matsushige *RKM*
Chief, Hydrographic Surveys Branch

THRU: Chief, Standards Section *jm*

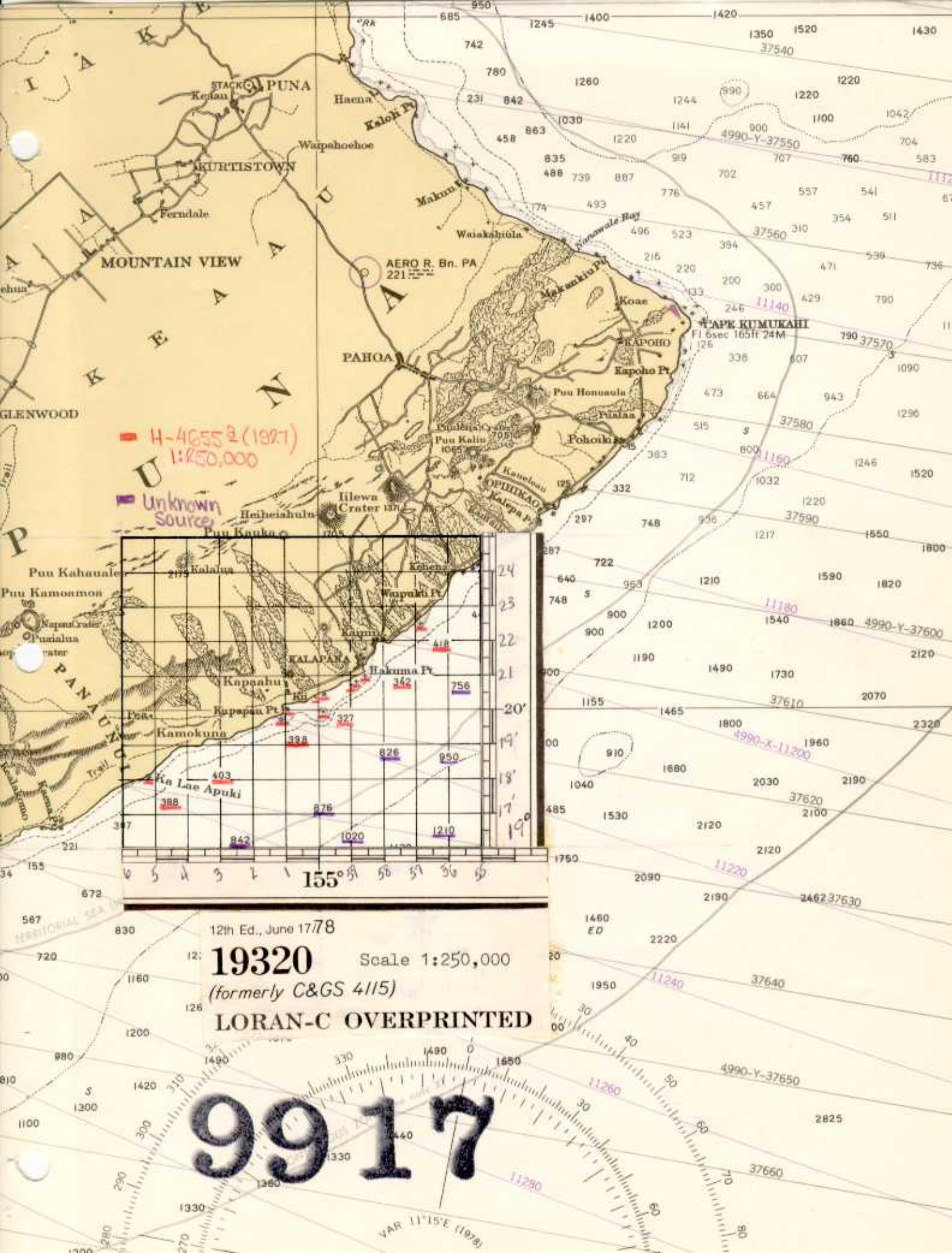
FROM: Lisa Quinlan *Lisa Quinlan*
Quality Evaluator

SUBJECT: Quality Control Report for Survey H-9917 (1980), Hawaii, SE Coast of
Hawaii, Kehena to Ka Lae Apuki

A quality control inspection of survey H-9917 (1980) was accomplished to monitor the survey for adequacy with respect to data acquisition, delineation of the bottom, determination of least depths, navigational hazards, junctions, sounding line crossings, smooth plotting, shoreline transfer, decisions made and actions taken by the verifier, and the cartographic presentation of data. Revisions and additions to the smooth sheet, plus helpful comments made to the verifier, are identified on a $\frac{1}{2}$ -scale copy of the survey to be furnished the verifier. In general, the survey was found to conform to National Ocean Service standards and requirements except as stated in the Evaluation Report.

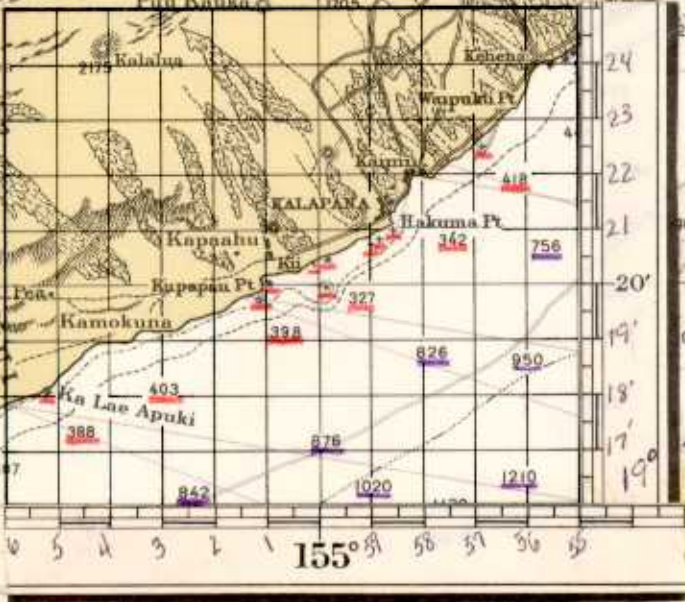
cc:
N/CG241





H-4655 2 (1927)
1:250,000

Unknown Source



12th Ed., June 1778

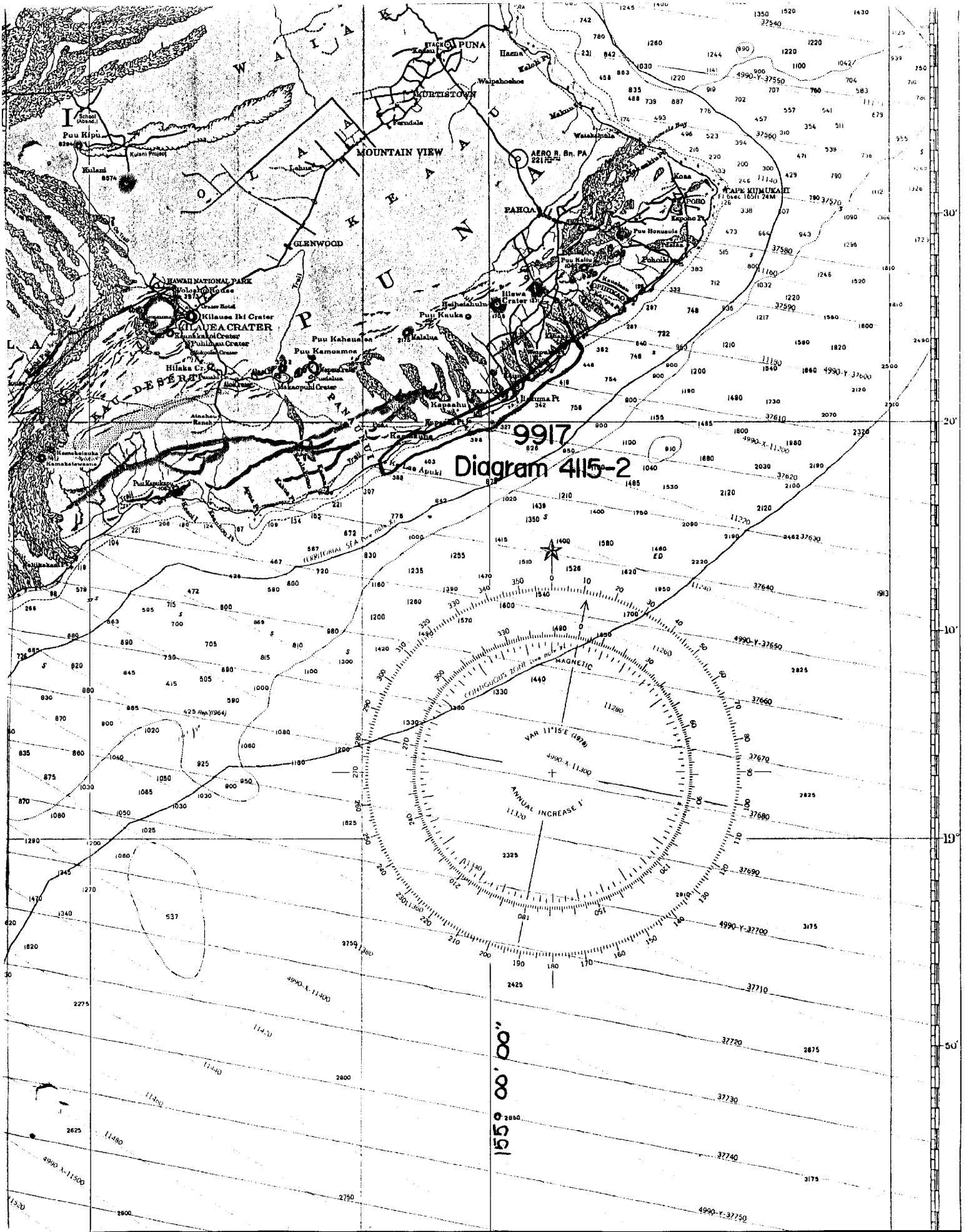
19320 Scale 1:250,000

(formerly C&GS 4115)

LORAN-C OVERPRINTED

99 17

VAR 11°15'E (1978)



9917
Diagram 4115-2

155° 00' 00"

2850

2750

2650

2550

2450

2350

2250

2150

2050

1950

1850

1750

1650

1550

1450

1350

1250

1150

1050

950

850

750

650

550

450

350

250

150

50

0

50

100

150

200

250

300

350

400

450

500

550

600

650

700

750

800

850

900

950

1000

1050

1100

1150

1200

1250

1300

1350

1400

1450

1500

1550

1600

1650

1700

1750

1800

1850

1900

1950

2000

2050

2100

2150

2200

2250

2300

2350

2400

2450

2500

2550

2600

2650

2700

2750

2800

2850

2900

2950

3000

3050

3100

3150

3200

3250

3300

3350

3400

3450

3500

3550

3600

3650

3700

3750

3800

3850

3900

3950

4000

4050

4100

4150

4200

4250

4300

4350

4400

4450

4500

4550

4600

4650

4700

4750

4800

4850

4900

4950

5000

5050

5100

5150

5200

5250

5300

5350

5400

5450

5500

5550

5600

5650

5700

5750

5800

5850

5900

5950

6000

6050

6100

6150

6200

6250

6300

6350

6400

6450

6500

6550

6600

6650

6700

6750

6800

6850

6900

6950

7000

7050

7100

7150

7200

7250

7300

7350

7400

7450

7500

7550

7600

7650

7700

7750

7800

7850

7900

7950

8000

8050

8100

8150

8200

8250

8300

8350

8400

8450

8500

8550

8600

8650

8700

8750

8800

8850

8900

8950

9000

9050

9100

9150

9200

9250

9300

9350

9400

9450

9500

9550

9600

9650

9700

9750

9800

9850

9900

9950

10000

10050

10100

10150

10200

10250

10300

10350

10400

10450

10500

10550

10600

10650

10700

10750

10800

10850

10900

10950

11000

11050

11100

11150

11200

11250

11300

11350

11400

11450

11500

11550

11600

11650

11700

11750

11800

11850

11900

11950

12000

12050

12100

12150

12200

12250

12300

12350

12400

12450

12500

12550

12600

12650

12700

12750

12800

12850

12900

12950

13000

13050

13100

13150

13200

13250

13300

13350

13400

13450

13500

13550

13600

13650

13700

13750



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF CHARTING AND GEODETIC SERVICES
ROCKVILLE, MARYLAND 20852

N/CG24x1:DEW

FEB 20 1986

TO: N/MOA - Wesley V. Hull
N/MOP - Robert L. Sandquist
FROM: N/CG2 - *J. Austin Yeager*
J. Austin Yeager

SUBJECT: Reports of Compliance for Hydrographic Surveys

I have decided that a special "Report of Compliance" is no longer required for those remaining hydrographic surveys processed under the Verification/Quality Control system in place prior to October 1982. You will no longer receive these reports. Statements made in the Verifier's Reports, modified as necessary by the Quality Control Reports, will suffice with regard to compliance with project instructions.

After their examination of the Descriptive Reports for Automated Wreck and Obstruction Information System (AWOIS) file revisions, Operations Section (N/CG241) personnel will insert a copy of this memorandum into each Descriptive Report to provide appropriate authority for the missing compliance report. In accordance with past practice, we will forward a copy of the Quality Control Report to you for your information.

cc:
N/CG22 - Nortrup



RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9917

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	4/14/86	R. S. House	Full Part Before After Verification Review Inspection Signed Via Drawing No. 16
19007	4/14/86	R. S. House	Full Part Before After Verification Review Inspection Signed Via Drawing No. 14
19004	4/14/86	R.S. House	Full Part Before After Verification Review Inspection Signed Via Drawing No. 35
19010	4/14/86	R. S. House	Full Part Before After Verification Review Inspection Signed Via Drawing No. 16
540	4/14/86	R.S. House	Full Part Before After Verification Review Inspection Signed Via Drawing No. 18
19320	4/6/89	B. Adams	Full Part Before After Verification Review Inspection Signed Via Drawing No. 16
540	5-1-90	J. P. Diamond	Full Part Before After Verification Review Inspection Signed Via Drawing No. 18
19004	9/6/90	Francis	Full Part Before After Verification Review Inspection Signed Via Drawing No. No Sdgs. and correctors applied.
19010	9/7/90	Blair B. Dominguez	Full Part Before After Verification Review Inspection Signed Via Drawing No. ^{Examined} No Sdgs and corrections applied
19007	9/24/90	Blair B. Dominguez	Full Part Before After Verification Review Inspection Signed Via Drawing No. ^{Examined} No Sdgs and corrections applied
530	9/25/90	Blair B. Dominguez	^{Examined} No Sdgs and corrections applied
19007	8-2-93	Elliott	Fully applied thru ¹⁹⁰¹⁰ 19320 ¹⁷ DAG to ^{No corr.} (19007-19010)

Appl to 540 4-1-86