H10059

NOAA FORM 76-35A

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

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. FA-10-09-82

Registry No. H-10059

LOCALITY

State Hawaii

General Locality East Coast of Oahu

Sublocality Kualoa Point to Mahie Point

19 82

CHIEF OF PARTY
CDR W.F. Forster

LIBRARY & ARCHIVES

DATE August 8, 1984

DIAGRAM 4116-2

Charts

19359
19357
19340
19007
19004
19010
540

NOAA FORM 77-28 (11-72)

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

HYDROGRAPHIC TITLE SHEET

REGISTER NO. H-10059

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

FIELD NO. FA-10-9-82

State: Hawaii

General locality: East Coast of Oahu

Locality: Kualoa Point to Mahie Point

Scale: 1:10,000 Date of survey: October 13 - November 28, 1982

Instructions dated: July 30, 1982 Project No.: OPR-T126

Vessel: 2023, 2024, 2025, 2027

Chief of party: Cdr. W. F. Forster

Surveyed by: Ens. F. Migaiolo, Lt.(jg) G. Tuell, Ens. A. Francis, Ens. P. Steele

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

Graphic record scaled by: Ship's personnel

Graphic record checked by: Ship's personnel

Verified ~~Protracted~~ by: L. T. Deodato Automated plot by: PMC Xynetics Plotter

Evaluated ~~Plotted~~ by: G. E. Kay

Soundings in fathoms feet at MLW MLLW

REMARKS: Annotations in black were made during evaluation.

STANDARDS CK'D
8-10-84 C. Lay

AWOIS check SJV 9/14/84
SURF check SJV 9/17/84

SJV 4-22-97

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

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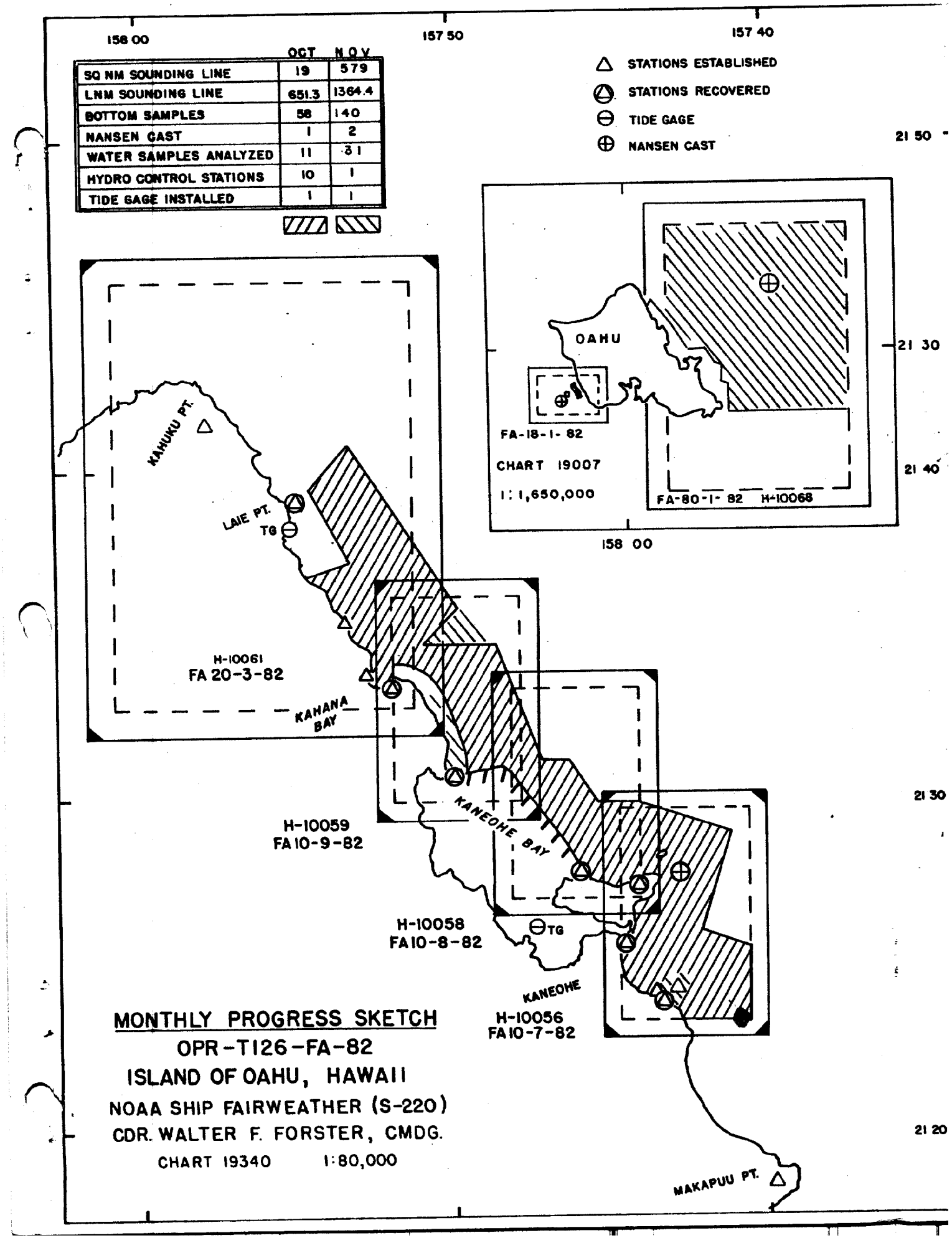


	OCT	NOV
SQ NM SOUNDING LINE	19	579
LNM SOUNDING LINE	651.3	1364.4
BOTTOM SAMPLES	58	140
NANSEN CAST	1	2
WATER SAMPLES ANALYZED	11	31
HYDRO CONTROL STATIONS	10	1
TIDE GAGE INSTALLED	1	1

A. Project

This hydrographic survey was conducted in accordance with Project Instructions OPR-T126-FA-82, Hawaiian Islands, dated 30 July 1982; Change No. 1: Supplement to Instructions, dated 7 September 1982; Change No. 2: Supplement to Instructions, dated ~~30 July~~ 17 November 1982; and Change No. 3: Supplement to Instructions, dated ~~2 February~~ 20 January 1983. The PMC OPORDER, the Hydrographic Manual, Fourth Edition, and the Data Requirements Letter, updated 8 April 1982, are applicable to this survey.

B. Area Surveyed

The area covered by this survey lies on the northeast coast of the Island of Oahu, Hawaii, and ranges from the entrance to Kaneohe Bay to Mahie Point. Junction on the southwest is with survey H-9594, performed by the RAINIER in 1976. This survey is bounded to the southeast by H-10058, the northeast by H-10061, and junctions with H-10068 at the 110 fathom curve to the northwest. Hydrography was run between JD 286 and JD 332. Hydrography was not conducted continuously during this period due to variable weather, which caused the survey effort to be shifted to other areas.

C. Sounding Equipment

Hydrographic data acquisition was conducted with Jensen survey launches, FA-3 (2023), FA-4 (2024), and FA-5 (2025). An inflatable skiff (2027) was equipped with a Mini-Ranger console, RT unit and Raytheon DE-~~198~~ 719 portable fathometer in order to collect shallow water inshore hydrography. Launch 2025 was utilized for acquiring all bottom samples in the survey area. FAIRWEATHER (2020) was used to obtain all Nansen cast data on this survey.

No unusual sounding vessel configurations were employed nor were any unusual problems encountered.

D. Sounding Equipment and Corrections to Echo Soundings

All survey launches were equipped with Ross Fineline 5000 narrow beam echo sounders. See Table I, Sounding Equipment. Belt tension and phase checks were performed every morning, when paper was changed, and periodically during operations.

A solid hull, inflatable Avon skiff (2027) was used for close inshore areas and around reefs. This vessel (2027) was equipped with a Raytheon DE-~~198~~ 719 fathometer. All data acquired by vessel 2027 was read from the analog trace and logged by hand in sounding volumes. A digitizer was not used in this vessel.

Table I

Sounding Equipment

Vessel	Instrument	Model	Analog	Digitizer	Inverter	Transceiver
FA-3 (2023)	Ross Fineline	5000	1097	1054	1046	1047
FA-4 (2024)	Ross Fineline	5000	1054	1046	1054	1046
On JD 300 changed to:			1047	1046	1054	1046
FA-5 (2025)	Ross Fineline	5000	1036	1036	1052	1054
Avon (2027)	Raytheon	DE-~~790~~ 712	6261	--	--	--

The fathometer initial was checked frequently during the day for correct paper alignment. All data was scanned at least twice to compare analog values to corresponding digitized values and to insert peaks and deeps between soundings. The effects of excessive wave and swell were corrected at this time in accordance with Section 4.9.8.2 of the Hydrographic Manual. Depths on this survey range between 0.3 and 120 fathoms.

All malfunctions and equipment casualties were corrected in a timely manner resulting in no loss of data due to sounding equipment failure or malfunction. On JD 300 the Ross 5000 fathometer (s/n 1054) aboard vessel 2024 failed to record properly during the morning phase calibration. This unit was taken out of launch 2024 and replaced with a different Ross 5000 fathometer (s/n 1047) which remained in 2024 through the end of the project.

Velocity of sound was calculated from two Nansen casts, nos. 002 and 004. A third Nansen cast, no. 003, was conducted on the west side of Oahu Island, well outside the survey limits, during a special project for the Navy. Nansen cast no. 003 does not apply to this survey. Due to very close agreement between cast no. 002 and no. 004, velocity corrector values from cast no. 002 are to be applied to all sounding data acquired by survey launches. A deep water cast, no. 004, was taken to support ship hydrography to a depth of 3500 meters. Velocity corrector values from cast no. 004 should be applied to all soundings acquired by the FAIRWEATHER. See Table II, Nansen Casts, for dates and location of velocity casts. Reversing thermometers and Beckman salinometers, s/n 59435 and s/n 1063 were calibrated in March 1982 by Northwest Regional Calibration Center, Seattle, Washington.

Table II

Nansen Casts

Number	Date	Depth	Latitude	Longitude
002	JD 291	500 m	21°31'59"N	157°42'52"W
004	JD 332	3500 m	21°50'24"N	157°28'30"W

FAIRWEATHER hydrographic survey launches 2023, 2024 and 2025 were individually tested for settlement and squat on 10 and 23 March 1982 at Shilshole Bay Marina in Seattle, Washington. After installation of side scan sonar equipment in 2024, both 2023 and 2024 were retested on 30 July 1982 in Womans Bay, Kodiak, Alaska. Vessel 2023 was retested to resolve a difference between the 10 March 1982 settlement and squat curve and historical data for that launch. The 10 March 1982 curve was confirmed and used for all settlement and squat corrector computations for the 1982 field season. Survey launch 2026 was acquired by FAIRWEATHER in September 1982 and tested on 9 October 1982 in Kaneohe Bay, Oahu, Hawaii.

Settlement and squat tests were conducted in accordance with Section 4.9.4.2 of the Hydrographic Manual. The survey launches were tested at speeds from idle to 2700 RPM, in 200 RPM increments. A Zeiss Ni 2 level was used to read a stadia rod held over the transducer when launch speed was attained. A tide staff was read simultaneously with the stadia rod to correct for tidal influences. The test results were used to plot a settlement and squat curve (RPM vs. Settlement and Squat Correctors) for each launch.

The settlement and squat curves show that all launches exceeded the 0.2 foot allowable settlement and squat at those speeds listed in Table III, Restricted RPM - Settlement and Squat. The restricted RPM's listed in Table III were not used during the project, eliminating the need for applying any settlement and squat correctors to the data.

Table III

Restricted RPM - Settlement and Squat

Launch	Restricted RPM
FA-3 (2023)	2250 - 2700
FA-4 (2024)	2450 - 2700
FA-5 (2025)	2300 - 2700

For further details see the Corrections to Echo Soundings Report, OPR-T126-FA-82, Oahu, Hawaii.

E. Hydrographic Sheets

All field sheets were plotted aboard FAIRWEATHER using two PDP8/E computers, s/n 09524 and 01021, and one Complot plotter, s/n 5557-5. All hydrographic data will be forwarded to Pacific Marine Center for verification and final plotting.

Table IV, Sheet Specifics, details the two composite field sheets plotted from this survey.

Table IV

Sheet Specifics

Sheet	Size (inches)	Skew	Scale
10-9N-82	21 x 48	313°	1:10,000
10-9S-82	21 x 35	313°	1:10,000

Survey H-10059 was originally planned as a single field sheet survey. When actual copies of prior and junctional surveys were received, the limits of FA-10-9N-82 were not adequate to junction with H-9594. An additional sheet, FA-10-9S-82, was constructed to fill this void and complete this survey.

F. Control Stations

Horizontal control operations on this survey were conducted by FAIRWEATHER personnel. Four stations were recovered and three new stations established for hydrographic position control purposes. See Table V, Control Stations, for an explanation of how each station was used.

A satisfactory check angle could not be obtained at Pako 1932 using the published position. A new position for Pako was established using triangulation techniques from two existing stations: Pahu 1910 and Mokolii Island 2 1976. For further details see Section F, Techniques, Horizontal Control Report, OPR-T126-FA-82, Oahu, Hawaii. No other problems or anomalies in ties and closures were encountered on this survey, nor were any unconventional survey methods used.

The Old Hawaiian Datum was used throughout this project. All positions met or exceeded Third Order Class I standards.

Table IV

Control Stations

Hydrographic Signal Number	Station Name
300	Mokapu 1872 1962 - Recovered as described; used as electronic control station.
310	Pako 1932 - Recovered as described; new position established by triangulation from Pahu 1910 and Mokolii Island 2 1976; used as electronic control station.
400	Mokolii Island 2 1976 - Recovered as described; used as electronic control station.
401	Kaneohe Bay Entrance Range Front Light, (USCG Light List No. 3742.10) - Located; used as launch calibration point and theodolite initial.
402	Kaneohe Bay Entrance Range Rear Light, (USCG Light List No. 3742.20) - Located; used as launch calibration point.
450	Bozo 1982 Monumented; established by traverse: Pako 1910-Bozo-Castle 1932; used as electronic position control station.
500	State Survey 5-1 1969 - Recovered as described; used as electronic control station.

G. Hydrographic Position Control

Hydrographic positioning was accomplished using Motorola Mini-Ranger III in range-range and range-azimuth configurations.

Baseline calibrations and systems checks were conducted in accordance with Appendix M and S of the PMC OPORDER. Details of the baseline calibrations in support of this survey are contained in the Electronic Control Report, OPR-T126-FA-82. Systems checks were conducted using calibration pole, theodolite intersection, multi-rate comparison and the baseline crossing techniques.

Attempts to conduct systems checks on the working grounds were unsuccessful due to the rough seas and lack of suitable stationary calibration points. Baseline crossings were conducted in the survey area on calm days, confirming the BLC corrector values and providing general conformation of the Signal List positions for those stations so tested. All critical, and the remainder of non-critical systems checks, were conducted in the sheltered waters of Kaneohe and Kahana Bays. Kaneohe Bay Range Front Light was geodetically located and designated for use in calibration pole system checks. In order to conduct system checks, transponders were regularly moved from stations in the survey area that were not visible to the calibration pole

to stations Pako or Mokolii in Kaneohe Bay, or station Elna in Kahana Bay. Critical and non-critical systems checks were performed regularly for all console/transponder combinations used during hydrographic operations for this survey in compliance with Appendix S of the PMC OPORDER. Table VI, Electronic Control Equipment, summarizes the console and transponder combinations used during this survey.

Table VI

Electronic Control Equipment

Console	Transponder Codes: 5	6	7	8	9	A	B	C
701	X		X					
702	X					X		X
703	X							
B0323	X	X	X				X	X

NOTE: A Very Large Tropical Depression came through the area. (Hurricane Iwa)

During this survey, there were no unusual calibration methods. There were no unusual atmospheric conditions, nor were poor geometric configurations used. There were no systematic errors in the data. The Mini-Ranger electronics performed well during this survey although on JD 287 to JD 289 an unusual jump in system check correctors occurred against code 7 (located at Mokapu, station 300) by console 701 and B0323. Transponder code 7 was removed from Mokapu on JD 290, tested at Mokolii with satisfactory results and was returned to Mokapu the same day. From JD 290 to the end of the survey on JD 322, systems checks using code 7 from Mokapu and consoles 701 and B0323 were in agreement with BLC corrector values.

The three failed systems checks from these console/transponder combinations have been attributed to operator error. Based upon existing field records there is the possibility that console/transponder warm-up procedures were not followed and that signal path interference may have occurred at the calibration pole. These three failed systems checks do not constitute a loss of electronic positioning system reliability during this survey since BLC data sets prior to and after launch hydrography were in excellent agreement. For further details see the Electronic Control Report, OPR-T126-FA-82, Island of Oahu.

H. Shoreline 157°53'00"W 1/10/89 SHO

Shoreline for this survey came from three sources. Shoreline west of 157°~~15'30"~~W came from a 1:10,000 scale enlargement of U.S.G.S. topographical map N2130, 1975, Kahana, Hawaii, and is noted and shown in brown on the final field sheet. Shoreline extending southeast to 21°31'46"N came from a digitized 1:10,000 paper base copy of TP-00718. The remainder of shoreline was taken from survey H-9594. Shoreline from TP-00718 and H-9594 is noted and shown in black on the final field sheet. No field edit was performed in conjunction with this survey. Shoreline verification was done concurrent with hydrography using the shoreline documents and large scale charts as a guide. In most cases it was not possible to work in waters shoaler than 1 to 2 fathoms due to surf and wind conditions, limiting conventional hydrographic location of features.

Visual inspection from land and sea by FAIRWEATHER personnel indicates that shoreline from the previously mentioned sources is adequate for charting purposes. The general trend of the shoreline is in good agreement with charts 19359 and 19357. Shoreline comparison with prior surveys is addressed in Section K, Comparison with Prior Surveys, of this report.

No control was located seaward of the shoreline.

I. Crosslines

A total of 26.1 nautical miles of crosslines were run on this survey. This figure comprised 17.5% of the 149 nautical miles of mainscheme hydrography. Overall agreement between mainscheme and crossline hydrography was excellent when sounding coincidence and the steep nature of the bottom contours are considered. Criterion used for comparison was in accordance with Section 1.1.2 of the Hydrographic Manual.

J. Junctions

This survey junctions with ~~one prior and three~~ four contemporary surveys. Comparisons of junctions between all ~~four~~ surveys meet the requirements of Section 1.1.2 of the Hydrographic Manual. Survey H-9594, North Kaneohe Bay, junctions in an area of gently sloping sand and coral bottom. Contour agreement meets the requirements of Section 4.5.7.3 of the Hydrographic Manual.

A copy of prior junctional survey H-9594 was not received until extensive hydrography had been conducted on H-10059. Junctional comparison revealed a failure to junction in the area northeast of Mokolii Island. A second sheet was prepared to complete the junctions between H-9594 at that time.

Surveys H-10058, H-10061, and H-10068 were conducted concurrently with H-10059 by the FAIRWEATHER. Frequent junctional comparisons between surveys resulted in excellent sounding and contour agreement. A minimum overlap of one sounding line was maintained on all junctions.

The area located at 21°31'30"N, 157°48'55"W constitutes a failure to junction as defined by Section 1.4.4 of the Hydrographic Manual. Two mainscheme lines lack one sounding interval to complete an adequate junction between the two boat sheets in the indicated area. This error was not found until after leaving the working grounds, limiting correction of the situation. Fortunately, hydrography from junctional survey H-9594 overlaps this area producing sounding coverage in accordance with Section 4.5.6 of the Hydrographic Manual. This error does not compromise the adequacy of the survey.

Due to the steep and rugged nature of the bottom over the entire project area, junctions with contemporary surveys could not be located on consistent bottom.

K. Comparison with Prior Surveys *see Evaluation Report Section 6*

Three prior surveys fall within the limits of hydrography of H-10059.

Comparison with H-3252, a 1:20,000 scale survey from 1910 meets the criteria of 1.1.2 of the Hydrographic Manual. Hydrography on H-3252 does not extend inside the one fathom curve, and the shoreline is in general agreement.

Comparison with H-5289, a 1:10,000 scale survey from 1933, was made in the small area of overlap seaward of Mokolii Island. Agreement of contours is good, with minor sounding discrepancies which are attributed to the presence of isolated coral heads known to exist in this area.

Comparison with H-5321, a 1:5000 scale survey from 1933, shows good overall agreement. Contour agreement is excellent with occasional minor sounding discrepancies attributable to the irregular and steeply sloping bottom. The precautionary note "Dangerous under most favorable conditions" found inside the reef line on H-5321 is still accurate.

Considerable disagreement exists in the local geographic names between H-10059 and H-5321. Consult the Geographic Names Report, OPR-T126-FA-82, for the most current local names used in this area. See Approved Geographic Names list in this report.

The three entrances into shallow water lagoons shown on H-5321, between Mahie Point and Kaoio Point, were seen by FAIRWEATHER personnel, but could not be surveyed due to high surf conditions during the project. refer to Evaluation Report section 9

Shoreline comparison between H-10059 and prior surveys H-3252, H-5289, and H-5321 agree in accordance with Section 4.5.8 of the Hydrographic Manual. A boat hoist shown at Kaaawa Point (Mokaua Pt. on H-5321) was not found by FAIRWEATHER personnel. A small hotel with a rock retaining wall is now located on the present site. The rock retaining wall is depicted on the Class I manuscript.

In accordance with Section 6.5.3 of the Project Instructions, comparison was made with the previously listed prior surveys to determine the extent or status of Title 33 dumping grounds located in the survey limits. All depth comparisons met Section 1.1.2 of the Hydrographic Manual. No evidence of dumping activity could be detected by sounding or contour comparison. For further discussion of dumping grounds see Section L, Comparison with Chart, of this report.

PSR items 50458 and 50459, pipes above datum, were not located during conventional hydrography or visual search by skiff. The very shallow nature of the waters, the coral bottom and ambient surf conditions in the vicinity greatly limited investigation of these items. Side scan sonar or conventional bottom sweeps were not possible due to numerous coral heads in the area.

The local custom in this area is to mark shoals and coral reefs by driving sections of iron pipe vertically into the bottom leaving 2 to 3 feet of pipe exposed above the surface. Inspection of chart 19359 shows numerous examples of this in Kaneohe Bay and the surrounding waters. Neither verification nor disproval was possible during this survey. This survey recommends that these items remain as charted and that further attempts be made to locate these items during calmer weather and surf conditions. Concur

L. Comparison with Chart

Charts 19359 and 19357 were used to provide full comparison coverage of this survey. Criteria used for comparison is outlined in Section 1.1.2 of the Hydrographic Manual. No dangers to navigation were found on this survey.

Comparison of H-10059 with chart 19359, 7th Edition, 5 August 1978 at a scale of 1:15,000 reveals overall excellent agreement. ~~Chart 19357, 7th Edition~~

~~5 August 1978 at a scale of 1:15,000 reveals overall excellent agreement~~.
Chart 19357, 16th Edition, 5 December 1981 at a scale of 1:80,000 agrees well with this survey, considering scale differences. Table VII, Discrepancies Between Chart 19357 and H-10059, tabulates discrepancies and makes recommendations for resolution.

Table VII
see Evaluation Report Section 7.
Discrepancies Between Chart 19357 and H-10059

Position	Depths On Chart 19357	Depths On H-10059	Comments	Pat#
21°34'04"N, 157°51'24"W	1 3/4 fm	$2\frac{3}{-}$ fm	Charted depth should be revised.	4258/1
21°33'51"N, 157°49'45"W	21 fm	20 fm	Charted depth should be revised.	4199/2
21°32'54"N, 157°49'56"W	3 1/2 fm	4 fm	Charted depth should be revised.	2507/1
21°33'01"N, 157°49'39"W	6 fm	$6\frac{7}{-}$ fm	Charted depth should be revised.	2504/4
21°32'11"N, 157°49'32"W	3 3/4 fm	$4\frac{7}{-}$ fm	Charted depth should be revised.	2384/2
21°32'18"N, 157°48'42"W	41 fm	35 fm	Charted depth should be revised.	2352/3

Rocks and Charted Near Shore Features

Charted features were either verified from hydrographic survey launches or an inflatable skiff. Charted features were found to be in agreement, with the following exceptions. Detail items such as pipes, coral reefs, and coral heads could not be located due to the high turbidity of the water and high surf. ✓

The submerged coral warning located on chart 19357 at 21°32'36"N, 157°50'09"W should be removed from future charts. No isolated features were found during hydrographic operations, and the fact that coral outcropping exists along the entire shoreline of this survey justifies the removal of this isolated precautionary note. do not concur, add more notes

The pipe located at 21°31'15"N, 157°50'06"W was not seen during hydrographic operations, and should remain charted until a more detailed investigation is possible. concur, BR #50459 AWOIS reference Evaluation Report section 4, 9.

In several instances, coincidental soundings fell on charted rocks (no depth) in the 1 to 3 fathom range on chart 19357. Position location and depth for coincidental sounding are found in Table VIII, Sounding Coincident with Charted Rocks. ✓

Table VIII
See Evaluation Report Section 7a.
Sounding Coincident with Charted Rocks

Position	Depth on H-10059	Pos#	Chart 19357
21°32'08"N, 157°49'51"W	$1\frac{3}{-}$ fm	4639	rock (no depth)
21°32'27"N, 157°49'59"W	$2\frac{4}{-}$ fm	4653/1	rock (no depth)
21°33'30"N, 157°50'41"W	$2\frac{1}{-}$ fm	4702/1	rock (no depth)
21°33'47"N, 157°51'03"W	$1\frac{9}{-}$ fm	4723	rock (no depth)
21°33'56"N, 157°51'13"W	$0\frac{9}{-}$ fm	4725	rock (no depth)

No indication of rocks or coral heads exists on the fathograms or raw data at or near these positions. Paragraph 4, Change Number 1: Supplement to Instructions, dated July 30, 1982, references the generalization of positions for rocks and foul areas on the chart in this area. Reference to prior surveys listed in Section K, Comparison with Prior Surveys, shows no conflict with the position of rocks and foul areas. The conflict between the chart and this survey lies in scale differences and the symbology used by the cartographer.

Charted Buoy and Navigational Aids

Positions for fixed and floating aids to navigation were determined during the course of this survey. A list of positions determined within the survey limits is contained in Section N, Aids to Navigation.

Dumping Grounds

In accordance with Section 6.5.3 of the Project Instructions, that portion of the 10 nm by 4 nm dumping ground shown on chart 19357 coincident with H-10059 was investigated for removal.

The 50 meter line spacing required in the referenced Project Instructions was amended based upon the regularity of initial survey lines run at 100 and 200 meter intervals, and local knowledge cited in the following section. A copy of radio message FA125/CPM1 authorizing this change is included at the end of this section of the report.

The history for the Title 33 dumping grounds was obtained from Mr. David Kern, a marine engineer with the U.S. Army Corps of Engineers. This dump site is officially classified as discontinued and has not been used since the late 1960's. The dump site was used to dispose of dredge spoils from Kaneohe Bay. A limited amount of military hardware was dumped by the Navy at the end of World War II.

Detailed records on the dump site are incomplete, but they do indicate that most dumping was conducted beyond the 100 fathom depth curve. No known hazards exist due to dumping, and the local presumption is that most material has been carried to deeper water by bottom transport mechanisms.

No indication of shoaling or dangers to navigation due to dumping were found

on H-10059 or during comparison with charts and prior surveys. The nature of bottom samples in the dump site area were not significantly different from samples taken outside the dumping grounds. This dumping ground should be removed from future editions of chart 19357.

M. Adequacy

This survey is accurate and fully adequate to superceed all prior surveys. There are three areas which warrant further investigations.

Due to hazardous surf conditions, the shallow water inshore range-azimuth hydrography on FA-10-9S-82 could only be run safely using an inflatable skiff during periods of unusually calm seas. Calm weather did not last long enough to fully meet the line spacing requirements stated in Section 4.3.1 of the Hydrographic Manual and Section 6.5.1 of the Project Instructions for that portion of the survey area seaward of, and to the north of, Mokolii Island. (Hydrography in this area is considered adequate for charting purposes.) = Please refer to Smooth Sheet and Evaluation Report Sections 6, 7, 9.

Further investigation is also recommended at three entrances to areas behind the reef limits located at 21°31'15"N, 157°50'42"W; 21°32'25"N, 157°50'20"W; and 21°33'51"N, 157°51'31"W. Comparison with prior survey H-5321 revealed that all three areas were surveyed in 1933. Small craft were observed entering the northernmost of the three passes. Concur see Evaluation Report Section 9

Further investigation is not warranted for the three following sounding discrepancies: 1) 20 fathom located at 21°34'05"N, 157°51'19"W; 2) 1.9 fathom located at 21°33'46"N, 157°50'54"W; 3) 1.4 fathom located at 21°33'08"N, 157°50'25"W. These sounding discrepancies in shoal waters can be attributed to isolated coral heads known to exist in this area. These soundings do not present a potential hazard to navigation and do not warrant further investigation to be in compliance with Section 1.4.3 of the Hydrographic Manual. Post 4811/3 4816/2 4180 See eval rept. Sec 7.

Heavy surf, swell, wind, and inexperienced coxswains prevented launches from staying within ten meters of the pre-determined sounding lines on certain days. For this reason limited amounts of hydrographic data were rejected and re-run in order to strictly comply with Section 4.3.4 of the Hydrographic Manual. This occurred in the areas bounded by: 21°34'40"N, 157°49'15"W to 21°33'15"N, 157°50'32"W, and 21°33'40"N, 157°51'00"W to 21°34'40"N, 157°49'50"W. Position numbers for rejected data are abstracted in separate following text G., Abstract of Positions.

Due to the skewed sounding line orientation used to meet the requirement of Section 4.3.5 of the Hydrographic Manual, some errors were made in attempting to re-run individual sounding lines. Grid scaling errors, improper use of the "F" function on program RK 112 and use of the wrong launch heading resulted in sounding lines at uneven intervals and odd headings. Though unsightly, this erratic appearing data was retained to aid in contouring and to meet the line spacing requirements previously mentioned.

In accordance with Section 6.5.3 of the Project Instructions, that portion of the 10 nm by 4 nm dumping ground shown on chart 19357 coincident with H-10059 was investigated for removal. For further information see Section L, Comparison with Chart.

N. Aids to Navigation

Fixed and floating aids to navigation were compared against the U.S. Coast Guard Light List, 1982 Edition, NOS chart 19359 and DIPFIL position listing. Table IX, Geodetically Positioned Fixed Aids to Navigation, lists all published fixed aids. Published and field check positions are shown, as well as recommendations for charting. Table X, Hydrographically Positioned Floating Aids to Navigation, lists all published floating aids. Published and field check positions with recommendations for charting are also included. ✓

All floating aids fell within the limits of the boat sheet and were hydrographically positioned after Hurricane Iwa struck the Hawaiian Islands on 23 November 1982. Kaneohe Bay channel buoy 3 (LL No. 3742) was observed to be missing by FAIRWEATHER on 26 November 1982, having been reportedly removed by the Coast Guard. This fact was passed to the U.S. Coast Guard by radio message dated 29 November 1982, paragraphy 4, a copy of which is attached to this section. No entry in the local Notice to Mariners appeared in December 1982 or January 1983 editions mentioning the replacement of buoy 3.

Kaneohe Bay Channel Buoy 4 was hydrographically positioned and is documented in the Light List, but is not depicted on chart 19359. Buoy 4 should be placed on future additions of chart 19359. ✓

The three fixed range markers were located geodetically and fell outside the limits of hydrography, but are contained within the survey limits. Further information on the positioning of fixed aids, landmarks, and navigational ranges is located in the Horizontal Control Report for this project. ✓

The only landmark for charts is shown on Form 76-40, Landmarks for Charts, appended to separate J following the text of this report. The published DIPFIL position was field verified and is adequate for charting. No bridges or overhead cables were located in this survey. ✓

O. Statistics

Vessels	2023	2024	2025	2027	Totals
Positions	~~552~~ 494	~~851~~ 735	36 ✓	21 18	~~1656~~ 1183
Nautical Miles	66.3	92.3	Ø	16.5	175.1
Square Miles	6.1	8.4	Ø	1.5	16.0
Bottom Samples	Ø	Ø	33	Ø	33
Current Stations					0
Velocity Casts					2
Magnetic Stations					0
Tide Stations					0

Table IX

Geodetically Positioned Fixed Aids to Navigation, please refer to 76-40's in back of this report.

Light List #	Light List Name	DIPFIL Position	Field Position	Recommendation
*3742.10	Kaneohe Bay Entrance Range Front Light	21°29'55.8"N 157°50'08.1"W	21°29'55.842"N 157°50'08.093"W	Use published position ✓
3742.20	Kaneohe Bay Entrance Range Rear Light	21°29'44.6"N 157°50'21.1"W	21°29'44.563"N 157°50'21.122"W	Use published position ✓
*3742.30	Kualoa Point Range Front Light	21°29'55.8"N 157°50'08.1"W	21°29'55.842"N 157°50'08.093"W	Use published position ✓
3742.40	Kualoa Point Range Rear Light	21°30'02.7"N 157°50'09.5"W	21°30'02.714"N 157°50'09.529"W	Use published position ✓

* Common fixed aid for both ranges.

Table X

Hydrographically Positioned Floating Aids to Navigation

Light List #	Light List Name	DIPFIL Position	Field Position*	Recommendation
3742	Kaneohe Bay Entrance Buoy K Mo(A)W	21°31'18"N 157°48'24"W	21°31'18.42"N 157°48'24.09"W	*Use published position
3742	Kaneohe Bay Channel Buoy 2	21°31'04"N 157°48'50"W	21°31'04.28"N 157°48'49.65"W	*Use published position
3742	Kaneohe Bay Channel Buoy 3	21°30'46.51"N 157°49'07.19"W	21°30'46.37"N 157°49'07.50"W	*Use published position
3742	Kaneohe Bay Channel Buoy 4	21°30'30.42"N 157°49'29.78"W	21°30'30.3"N 157°49'30.7"W	#*Use published position

* Hydro positions taken on November 24 and 26 just after Hurricane Iwa. Recommend Coast Guard check buoy positions.

Removed after Hurricane Iwa by Coast Guard.

* Please Refer to Evaluation Report section 7.C. for final positions

P. Miscellaneous

Tidal currents, alongshore currents, undertow, and hazardous surf are common local knowledge and were observed during hydrographic operations. A memo detailing current conditions in the project area was forwarded to N/OMS through N/MOP as required by Section 8.2 of the Project Instructions. A copy of the memo follows the text of this section.

Due to very hazardous surf conditions inshore, it was not possible to survey to the zero fathom curve. Many detail items, such as pipes, coral reefs, and coral heads could not be located due to the turbidity of the water and high surf. Local residents were unable to provide adequate information about the present condition of these features. Navigation inside the reef line and close along the shoreline is not recommended.

Q. Recommendations

This survey should be used in conjunction with other contemporary surveys to update the existing 1:15,000 scale chart (19359) and the 1:80,000 scale chart (19357) of the area, and produce new scale charts as required. Full compliance with the Hydrographic Manual was not possible in those areas where it was hazardous to work in shoal waters due to surf and wind conditions. Lack of hydrographic coverage for these hazardous areas does not compromise the overall adequacy of this survey, and should not delay verification and compilation of this data.

Controlled photographs were not provided for this survey. Photographs should be provided if at all possible for the remainder of Oahu Island to aid the hydrographer.

R. Automated Data Processing

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

Number	Program Name	Version Date
RK 201	Grid, Signal and Lattice Plot	04/18/75
RK 211	Non-Real Time Plot	01/30/76
RK 212	Visual Station Load and Plot	04/01/74
RK 300	Utility Package	10/21/82
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	Velocity Correctors	05/10/76
RK 561	Geodetic Calibration	02/19/75
AM 602	Elinore	05/21/75

List of Separates Following Text

A. Hydrographic Sheet Projection Parameter Printouts

B. Field Tide Note and Abstracts of Times of Hydrography

C. Geographic Names List

D. Abstracts of Corrections to Echo Soundings
Velocity Corrector Tape Printout
TC/TI Tape Printouts

E. Abstracts of Corrections to Electronic Position Control
Shore Station and Vessel Equipment

F. List of Stations

G. Abstracts of Positions

H. Bottom Sample Log Sheets

I. Landmarks for Charts

J. Approval Sheet

FA 10-9N-82

FLST=86840
OLAT=2286000
OMED=157/50/00
GRID=30
PLSOL=10000
PLAT=21/34/20.4
PLON=157/52/39.6
VLSNO=2020
YR=82
ANDIST=0.0

FA 10-9S-82

FLST=86840
OLAT=2286000
OMED=157/50/00
GRID=30
PLSOL=10000
PLAT=21/32/12
PLON=157/51/54
VLSNO=2023
YR=82
ANDIST=0.0

Field Tide Note

OPR-T126-FA-82

Island of Oahu, Hawaiian Islands

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

Honolulu Standard Gauge (161-2340)

The permanent tide station at Honolulu, Oahu (161-2340) was the primary controlling gauge for project OPR-T126-FA-82, Island of Oahu. Levels were run by FAIRWEATHER personnel at the beginning and end of the project. Opening levels run on 7 October 1982 (JD 280) to four existing benchmarks were closed to 4.3 mm over the entire run of .49 km. Closing levels, run on 23 November 1982 (JD 327) to the same four benchmarks were closed to 5.0 mm over the entire run of .50 km. No changes in elevation were observed during hydrographic operations. Tide marigrams from station 161-2340 (Honolulu) will be transmitted by the local tide observer in charge of this station.

Mokuoloe Island Subordinate Gauge (161-2480)

The permanent tide station located on Mokuoloe Island (161-2480) was used for controlling the entire survey area along the northeast coast of Oahu. Opening and closing levels were run by FAIRWEATHER personnel to three existing benchmarks at the beginning and end of the project. Opening levels run on 8 October 1982 (JD 281) were closed to 2.1 mm over a run of .49 km. Closing levels, run on 24 November 1982 (JD 328) were closed to 2.0 mm over a run of .50 km. No changes in elevation were observed during hydrographic operations. Tide marigrams will be transmitted by the local tide observer in charge of this station.

Laiemaloo Subordinate Gauge (161-2702)

Tide station Laiemaloo (161-2702) was used to control survey operations run between Kaoio Point and longitude 158°00.0'W along the northeast coast of Oahu. A 1-10 foot scale Metercraft bubbler tide gauge (#7601-7536-34) was installed on 25 October 1982 (JD 298). Two gauge problems developed (see Tide Gauge Problems section) which were field corrected. The gauge then functioned properly until removal on 22 November 1982 (JD 326). Opening and closing levels were run by FAIRWEATHER personnel to five existing benchmarks. Opening levels, run on 26 October 1982 (JD 299) closed to 7 mm over a run of 3.0 km. Closing levels, run on 22 November 1982 (JD 326) closed to 4 mm over the 3.0 km run. An apparent shift in the tide gauge orifice of 4 mm downward was discovered after the running of the closing levels. The orifice movement is a result of the heavy surf conditions in this area. The apparent orifice movement of 4 mm downward is not significant enough that correctors be applied to tide data from this station.

Waimanalo Subordinate Gauge (161-2396)

Tide station Waimanalo (161-2396) was used to control survey operations from the southern limit of hydrography northward to Makapu Point on the northeast coast of Oahu. Investigation of the historical tide station site proved that all the historical benchmarks had been destroyed by recent construction and renovations. A new tide station site, and five new benchmarks were established on the University of Hawaii pier located approximately one mile south of the historical site. Five benchmarks stamped 2376A - 2376E consecutively, were set in the northern cement curb along the length of the pier, running shoreward from the tide gauge location. State survey mark U-11, located at the western limit of the pier, was included in the leveling runs, opening levels, run on 12 October 1982 (JD 285) to all six marks, closed to 1.3 mm over a run of .65 km. Closing levels, run on 24 November 1982 (JD 328) to the same marks, closed to 1.8 mm over a .65 km run. No changes in elevation were seen during hydrographic operations. A 1-10 foot scale Metercraft bubbler gauge (#7601-7536-31) was installed on 11 October 1982 (JD 284) and ran well until removed on 29 November 1982 (JD 333).

Gauge Problems

Laiemaloo Tide Gauge (161-2702)

On 27 October 1982 (JD 300) tide gauge #7601-7536-34 located at tide station Laiemaloo (161-2702) began to malfunction. An interrupted pen trace, caused by corroded pen pivots on the recording mechanism of the gauge, was randomly seen between Julian dates 300 to 312. All periods of lost tidal trace were recoverable by interpolation of the marigram and no hydrography was lost as a result of this malfunction.

Table 1, Periods of Interrupted Tidal Trace, is a listing by Julian dates of periods in which no tidal trace was recorded on the marigram.

On 06 November 1982 (JD 310), gauge #7601-7536-34 located at station Laiemaloo (161-2702) was found to be jammed. No tidal record was gathered between 0100, 4 November 1982 (JD 308) to 0200, 6 November 1982 (JD 310). No hydrography, controlled by this gauge, was run during this period.

Table 1

Times of Lost Tidal Record

Laiemaloo Tide Station (161-2702)

Julian Day	Times (+10)
300	1928-1936
300	1939-2155
301	0945-0950
301	1533-1600
301	1945-2250
301	2315-2340
302	0650-0725
302	0825-0905
302/303	2110-0135
303	0720-1345
303/304	2025-0120
304	0225-0305

Table 1 continued

Julian Day	Times (+10)
304	0631-0708
304	0840-0850
304	0930-1450
304/305	2345-0000
305	1017-1235
307	1058-1735
307	2117-2143
307	2215-2232
312	2020-2035

Miscellaneous

All tidal records were based on a +10 time meridan corresponding to Universal Coordinated Time (UCT).

On 23 November 1982 (JD 327) Hurricane Iwa struck the islands of Oahu, Kauai, and Niihau. A tidal surge of 3-5 feet was predicted for the area on and around these islands. Although the gauge located at station Laiemaloo (161-2702) was removed prior to the hurricane and station Wiamanalo (161-2376) showed no sign of tidal surge, a close inspection of data from both permanent gauge sites should be made on this date to see if either location experienced a tidal surge.

Because the tidal records from the permanent gauge sites will not be transmitted until a later date by the local tide observers, a comparison between adjacent tide gauges could not be made, and should be performed at a later date when all tidal records are available. A recommendation for zoning and time correctors could not be made for the same reasons.

For station Laiemaloo gauge, zero was equivalent to 0.880 feet (0.268 meters) on the adjacent staff. Gauge zero for station Wiamanalo was equivalent to 1.420 feet (-0.433 meters) on the adjacent tide staff. Gauge to staff comparisons for both permenent sites should be taken from historical data because records from both sites were unavailable for determination.

The gauge at station Laiemaloo (161-2702) was only under operation for a period of 28 days. Its removal was necessitated by the approach of Hurricane Iwa.

Times of hydrography abstracts are appended to this field note.

Submitted by:

Arthur E. Francis

Arthur E. Francis
Ensign, NOAA

Approved by:

Walter F. Forster

Walter F. Forster
Commander, NOAA
Commanding Officer

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

ABSTRACT OF TIME OF HYDROGRAPHY AND/OR FIELD EDIT

Date 2 DEC. 82

Project No. OPR-T126-FA-82 Vessel 2023

Date of Survey 13 OCT. 82 - 28 NOV. 82

Field Sheet No. FA 10-9-82 Registry No. H-10069

Field Sheet is Complete/Incomplete

J.D.	Time (Z)		J.D.	Time (Z)
286	174156	-	286	225546
287	195303	-	287	233330
288	172820	-	288	231308
332	000255	-	332	000732

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

✓ REF

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

ABSTRACT OF TIME OF HYDROGRAPHY AND/OR FIELD EDIT

Date 2 DEC. 82

Project No. OPR-T126-FA-82

Vessel 2027 (AVON)

Date of Survey 13 OCT. 82 - 28 NOV. 82

Field Sheet No. FA 10-9-82

Registry No. H-10059

Field Sheet is Complete/~~Incomplete~~

J.D.	Time (Z)		J.D.	Time (Z)
322	233900	-	323	010600
323	191500	-	324	022200

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

/ REF

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

ABSTRACT OF TIME OF HYDROGRAPHY AND/OR FIELD EDIT

Date 2 DEC. 82

Project No. OPR-T126-FA-82

Vessel 2025

Date of Survey 13 OCT. 82 - 28 NOV. 82

Field Sheet No. FA 10-9-82

Registry No. H-10059

Field Sheet is Complete/~~Incomplete~~

J.D.	Time (Z)		J.D.	Time (Z)
299	210657	-	300	012802
300	200253	-	301	012023
329	203010	-	329	203641

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

/ REF

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

ABSTRACT OF TIME OF HYDROGRAPHY AND/OR FIELD EDIT

Date 2 DEC. 82

Project No. OPR-T126-FA-82 Vessel 2024

Date of Survey 13 OCT. 82 - 28 Nov 82

Field Sheet No. FA 10-9-82 Registry No. H-10059

Field Sheet is Complete/~~Incomplete~~

J.D.	Time (Z)		J.D.	Time (Z)
289	191936	-	290	003137
290	182443	-	291	012649
294	201528	-	294	226628
299	201717	-	300	011026
321	202032	-	322	010052
322	191220	-	323	001618
323	195012	-	323	211234

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

✓ REF

NOAA FORM 76-155
(11-72)

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

GEOGRAPHIC NAMES

SURVEY NUMBER

H-10059

HAWAII, EAST COAST OF OAHU,
KUALOA POINT TO ~~MAHIE~~ POINT
Name on Survey

	A ON CHART NO. 19358, 19359	B ON PREVIOUS SURVEY NO. 5288, 3252, 5331, 5889	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	TR-00718	
HAWAII (Title)	X									1
KAAAWA									X	2
KAAAWA POINT			X		X				X	3
KAOIO POINT	X	X	X		X				X	4
KUALOA POINT	X								X	5
KULOA POINT									X	6
MOKOLII ISLAND (CHINAMANS HAT)	X								X	7
OAHU	X		X		X			X		8
MAHIE POINT (title)										9
										10
										11
										12
										13
										14
										15
										16
										17
										18
										19
										20
										21
										22
										23
										24
										25

Approved:

Charles E. Harrington
Chief Geographer - N/CG2x5

20 DEC. 1983

NOAA FORM 76-155 SUPERSEDES C&GS 197

VELOCITY TABLE II
OPR-T126-FA-82
OAHU IS., HAWAII
(USED FOR SHIPBOARD FINAL FIELD SHEET PLOT)

```
000012 0 0000 0002 001 000000 000000
000029 0 0001
000049 0 0002
000065 0 0003
000085 0 0004
000104 0 0005
000122 0 0006
000141 0 0007
000159 0 0008
000178 0 0009
000197 0 0010
000216 0 0012
000280 0 0014
000320 0 0016
000360 0 0018
000390 0 0020
000430 0 0022
000468 0 0024
000513 0 0026
000545 0 0028
000595 0 0030
000740 0 0035
000837 0 0040
000971 0 0045
001200 0 0050
001340 0 0055
001560 0 0060
001840 0 0065
002320 0 0070
999999 0 0075
```

VELOCITY TABLE II
OPR-T126-FA-82
OAHU IS., HAWAII
(USE FOR PMC SMOOTH PLOT OF ALL LAUNCH HYDRO)

```
000012 0 0000 0002 001 000000 000000
000029 0 0001
000049 0 0002
000065 0 0003
000085 0 0004
000104 0 0005
000122 0 0006
000141 0 0007
000159 0 0008
000178 0 0009
000197 0 0010
000202 0 0011
000216 0 0012
000248 0 0013
000280 0 0014
000300 0 0015
000320 0 0016
000340 0 0017
000360 0 0018
000375 0 0019
000390 0 0020
000410 0 0021
000430 0 0022
000468 0 0024
000513 0 0026
000545 0 0028
000595 0 0030
000640 0 0032
000690 0 0034
000725 0 0036
000770 0 0038
000837 0 0040
000860 0 0042
000900 0 0044
000950 0 0046
001000 0 0048
001040 0 0050
001090 0 0052
001120 0 0054
001190 0 0056
001250 0 0058
001310 0 0060
001360 0 0062
001410 0 0064
001480 0 0066
001530 0 0068
001560 0 0070
001660 0 0072
001730 0 0074
001820 0 0076
001900 0 0078
002000 0 0080
999999 0 0085
```

TC/TI TAPE LISTING

FA 10-9-82 (H-10059)

```
174156 0 0002 0002 286 202300 000000
231408 0 0000 0000 288 202300 000000

191936 0 0002 0002 289 202400 000000
211300 0 0000 0000 323 202400 000000

210657 0 0000 0000 299 202500 000000
012100 0 0000 0000 301 202500 000000

233900 0 0013 0002 322 202700 000000
022300 0 0000 0000 324 202700 000000
```

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2024 R/R SHEET : FA10-9-82
H-10059

TIME	DAY	PATTERN 1	PATTERN 2
191936	289	-00002	-00002
194742		+00002	-00002
000006	290	+00002	-00002
193443		-00002	-00002
224922		-00002	-00001
000603	291	-00002	-00001
201538	294	-00002	-00002
201717	299	-00002	-00001
231744		-00002	-00002
000015	300	-00002	-00002
214015	321	-00002	-00001
000238	322	-00002	-00001
193816		+00002	-00002
214502		-00002	-00001
223926		-00001	-00001
000013	323	-00001	-00001
195012		+00002	-00001
211300		+00000	+00002

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2023 R/R SHEET : FA10-9-82
H-10059

TIME	DAY	PATTERN 1	PATTERN 2
174156	286	-00005	-00005
195303	287	-00005	-00005
172820	288	-00025	-00025
231408		+00000	+00000

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2027 R/AZ SHEET : FA10-9-82
N-10059

TIME	DAY	PATTERN 1	PATTERN 2
233900	322	+00004	-59300
000000	323	+00004	-59209
191500		+00004	-52291
001900	324	+00004	-12024
022300		+00000	+00000

ELECTRONIC CORRECTOR ABSTRACT

VESSEL : 2025 R/R (B.S.) SHEET : FA10-9-82
H-10059

TIME	DAY	PATTERN 1	PATTERN 2
210657	299	-00001	+00004
001253	300	-00001	+00004
000604	301	-00001	+00004
012100		+00000	+00000

MOTOROLA Mini Ranger III System

H-10059

Shore Stations and Vessel Equipment

Station S/N	Station Name	XPDR Elev. above MSL	Console R/T	XPDR Code	Vessel	Julian Day	Purpose	Position
300	Mokapu	202	701	7	2023	286	R/R	2000-2192
400	Mokolii I	63	701	5	2023	286	R/R	2000-2192
300	Mokapu	202	701	7	2023	287	R/R	2193-2348
400	Mokolii I.	63	701	5	2023	287	R/R	2193-2348
300	Mokapu	202	701	7	2023	288	R/R	2351-2550
400	Mokolii I.	63	701	5	2023	288	R/R	2351-2550
300	Mokapu	202	B0323	5	2024	289	R/R	4000-4004
400	Mokolii I	63	B0323	7	2024	289	R/R	4000-4004
310	PAKO	22	B0323	6	2024	289	R/R	4005-4018
400	Mokolii I	63	B0323	7	2024	289	R/R	4005-4018
300	Mokapu	202	B0323	5	2024	289	R/R	4019-4100
400	Mokolii I	63	B0323	7	2024	289	R/R	4019-4100
300	Mokapu	202	B0323	5	2024	289/290	R/R	4101-4145
400	Mokolii I	63	B0323	7	2024	289/290	R/R	4101-4145
300	Mokapu	202	B0323	7	2024	290	R/R	4146-4214
400	Mokolii I	63	B0323	5	2024	290	R/R	4146-4214
400	Mokolii I	63	B0323	5	2024	290/291	R/R	4215-4271
500	STATE SURVEY 5-1	49	B0323	C	2024	290/291	R/R	4215-4271
300	Mokapu	202	B0323	7	2024	294	R/R	4272-4320
400	Mokolii I	63	B0323	5	2024	294	R/R	4272-4320
300	Mokapu	202	B0323	7	2024	294	R/R	4321-4328
400	Mokolii I	63	B0323	5	2024	294	R/R	4321-4328
400	Mokolii I.	63	B0323	5	2024	294	R/R	4329-4335
500	STATE SURVEY 5-1	49	B0323	C	2024	294	R/R	4329-4335
300	Mokapu	202	B0323	7	2024	299	R/R	4337-4418

MOTOROLA Mini Ranger III System

H-10059

Shore Stations and Vessel Equipment

Station S/N	Station Name	XPDR Elev. above MSL	Console R/T	XPDR Code	Vessel	Julian Day	Purpose	Position
500	STATE SURVEY 5-1	49	B0323	C	2024	299	R/R	4337-4418
300	Mokapu	202	B0323	7	2024	299/300	R/R	4420-4506
400	Mokolii Island	63	B0323	5	2024	299/300	R/R	4420-4506
300	Mokapu	202	702	A	2025	299/300	R/R	6000-6013
400	Mokolii I	63	702	5	2025	299/300	R/R	6000-6013
300	Mokapu	202	702	A	2025	300	R/R	6014-6019
500	State Survey 5-1	49	702	C	2025	300	R/R	6014-6019
300	Mokapu	63	702	A	2025	300/301	R/R	6020-6034
400	Mokolii I	63	702	5	2025	300/301	R/R	6020-6034
400	Mokolii I	63	B0323	5	2024	321	R/R	4507-4525
500	State Survey 5-1	49	B0323	C	2024	321	R/R	4507-4525
400	Mokolii I.	63	B0323	5	2024	321/322	R/R	4526-4585
500	State Survey 5-1	49	B0323	B	2024	321/322	R/R	4526-4585
400	Mokolii I.	63	B0323	5	2024	322	R/R	4586-4592
500	State Survey 5-1	49	B0323	B	2024	322	R/R	4586-4592
310	PAKO	22	B0323	6	2024	322	R/R	4593-4664
400	Mokolii I	63	B0323	5	2024	322	R/R	4593-4664
400	Mokolii I	63	B0323	5	2024	322	R/R	4665-4703
450	BOZO	2	B0323	C	2024	322	R/R	4665-4703
450	BOZO	2	B0323	C	2024	322/323	R/R	4704-4770
500	State Survey 5-1	49	B0323	B	2024	322/323	R/R	4704-4770
400	Mokolii I	63	702	5	2027	322/323	R/Az	9000-9099
450	BOZO	2	B0323	C	2024	323	R/R	4771-4725
500	State Survey 5-1	49	B0323	B	2024	323	R/R	4771-4725
310	PAKO	22	B0323	6	2024	323	R/R	4776-4851

MOTOROLA Mini Ranger III System

H-10059

Shore Stations and Vessel Equipment

Station S/N	Station Name	XPDR Elev. above MSL	Console R/T	XPDR Code	Vessel	Julian Day	Purpose	Position
500	State Survey S-1	49	B0323	B	2024	323	R/R	4776-4851
400	Mokolii I	63	702	5	2027	323/324	R/Az	9050-9217
400	Mokolii I	63	701	5	2025	329	R/Az	6035-6036
400	Mokoli I	63	703	5	2023	332	R/Az	2551-2552

HYDROGRAPHIC CONTROL STATIONS
OPR-TI26-FA-82
OAHU, HAWAII

MOKAPU 1872 NGS QUAD 211573 1021
300 3 21 27 26776 157 44 04665 250 0202 000000

PAKO 1932 NGS QUAD 2111573 1336 (FIELD POSITION; FAIRWEATHER 1982)
310 3 21 27 50345 157 46 03948 250 0022 000000

MOKOLII ISLAND 2 1976 NGS QUAD 211574 1041
400 3 21 30 45907 157 49 56052 250 0063 000000

KANEOHE B F RNG LT (LT LST 3742.1) FAIRWEATHER 1982
401 3 21 29 55842 157 50 08093 139 0007 000000

BOZO 1982 FAIRWEATHER 1982
450 3 21 33 11353 157 50 58165 250 0002 000000

STATE SURVEY 5-1 1969 NGS QUAD 211574 1012
500 3 21 33 45145 157 52 00153 250 0049 000000

ABSTRACT OF POSITIONS

H- 10059

FA- 10-9-82

Console # 701 (or Mobile unit)

FA-3

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR # S1/XPDR	M	S2/XPDR	TYPE OF HYDRO MS	XL	MS SPLITS	PSR #	DEVEL. #	BS or DPs	Sheets where Plotted Main Sheet	Enlargement #	Rejected or Duplicated Positions
286	2000-2192	04	300 7		400 5	X						X		2015, 2016, 2114 2088-2092, 2118-2122 2134-2140, 2153-2158, 2165-2171, 2190-2192
287	2193-2348	04	300 7		400 5	X						X		2191, 2192, 2209, 2210, 2226, 2227, 2246, 2248, 2262, 2263, 2279, 2288, 2300, 2301, 2323, 2324, 2341, 2348
288	2351-2550	04	300 7		400 5	X						X		2349, 2350, 2396, 2397, 2503, 2531
332	2551-2552	03	400 5								X	X		Console # 703

CONTROL CODES: 01 Visual; 03 Range/Az; 04 Range/Range; 05 Hyperbolic; 08 Hyper/Visual; 09 Range/Visual

ABSTRACT OF POSITIONS

H- 10059

FA- 10-9-82

Console # B0323 (or Mobile unit) FA-4

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR # S1/XPDR	M	S2/XPDR	TYPE OF HYDRO MS	XL	MS SPLITS	PSR #	DEVEL. #	BS or DPs	Sheets where Plotted Main Sheet	Enlargement #	Rejected or Duplicated Positions
289	4000-4004	04	300 5		400 7		X					X		
289	4005-4018	04	310 6		400 7		X					X		
289	4019-4100	04	300 5		400 7		X					X		4036,
289-290	4101-4145	04	300 5		400 7	X						X		4112, 4128
290	4146-4214	04	300 7		400 5	X						X		4164, 4180
290-291	4215-4271	04	400 5		500 C	X						X		4224, 4225, 4234, 4250, 4257
294	4272-4320	04	300 7		400 5	X						X		4275, 4276
294	4321-4328	04	300 7		400 5		X					X		4325-4328
294	4329-4335	04	400 5		500 C		X					X		4329-4335
299	4337-4418	04	300 7		500 C	X						X		4345, 4353, 4354, 4362

CONTROL CODES: 01 Visual; 03 Range/Az; 04 Range/Range; 05 Hyperbolic; 08 Hyper/Visual; 09 Range/Visual

ABSTRACT OF POSITIONS

H- 10059

FA- 10-9-82

Console # B0323
(or Mobile unit)
FA-4

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR # S1/XPDR	M	S2/XPDR	TYPE OF HYDRO MS	XL	MS SPLITS	PSR #	DEVEL. #	BS or DPs	Sheets where Plotted Main Sheet	Enlargement #	Rejected or Duplicated Positions
299-300	4420-4506	04	300 7		400 5	X						X		4419, 4486 4472-78, 4483-4485, 4491-4493, 4497-4506
321	4507-4525	04	400 5		500 C	X						X		4507-4536 4525
321-322	4526-4585	04	400 5		500 B	X						X		4558
322	4586-4592	04	400 5		500 B		X					X		
322	4593-4664	04	310 6		400 5	X						X		4605, 4612 4593-4613
322	4665-4703	04	400 5		450 C	X						X		
322-323	4704-4770	04	450 C		500 B	X						X		4731, 4751
323	4771-4775	04	450 C		500 B		X					X		4
323	4776-4851	04	310 6		500 B	X						X		4790, 4821, 4829 4836-4838 4845-4851

CONTROL CODES: 01 Visual; 03 Range/Az; 04 Range/Range; 05 Hyperbolic; 08 Hyper/Visual; 09 Range/Visual

ABSTRACT OF POSITIONS

H- 10059

FA- 10-9-82

Console # 702
(or Mobile unit)

FA-5

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR # S1/XPDR	M	S2/XPDR	TYPE OF HYDRO MS	XL	MS SPLITS	PSR #	DEVEL. #	BS or DPs	Sheets where Plotted Main Sheet	Enlargement #	Rejected or Duplicated Positions
299-300	6000-6013	04	300 A		400 5						X	X		
300	6014-6019	04	300 A		500 C						X	X		
300-301	6020-6034	04	300 A		400 5						X	X		
329	6035-6036	03	400 5								X	X		CONSOLE# 701

CONTROL CODES: 01 Visual; 03 Range/Az; 04 Range/Range; 05 Hyperbolic; 08 Hyper/Visual; 09 Range/Visual

ABSTRACT OF POSITIONS

H- 10059

FA- 10-9-82

Console # 702 (or Mobile unit) AVON

DAY	POSITIONS	CONTROL CODE*	CONTROL STATIONS and XPDR # S1/XPDR	M	S2/XPDR	TYPE OF HYDRO MS	XL	MS SPLITS	PSR #	DEVEL. #	BS or DPs	Sheets where Plotted Main Sheet	Enlargement #	Rejected or Duplicated Positions
322-323	9000-9049	03	400 5				X					X		
323 324	9050-9217	03	400 5			X						X		

CONTROL CODES: 01 Visual; 03 Range/Az; 04 Range/Range; 05 Hyperbolic; 08 Hyper/Visual; 09 Range/Visual

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	OPR-T126-FA-82	1982	H-10059 (FA-10-9-82)	FJM	12/5/82

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	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	10/26/82	21/34/19.3	157/51/15.1	3.9					Co, Wd		SR
6001	"	21/34/22.8	157/50/37.9	15.4				br	fne S		
6002	"	21/34/19.9	157/50/58.0	6.2					hrd		
6003	"	21/34/01.3	157/51/03.8	2.9					Co, Wd		
6004	"	21/34/05.1	157/50/46.5	5.8					hrd		
6005	"	21/34/26.8	157/50/19.8	20.0					hrd		
6006	"	21/34/08.7	157/50/25.3	10.0					Co, Wd		
6007	"	21/33/50.1	157/50/31.5	4.8					Co		
6008	"	21/33/53.97	157/50/10.9	8.4					hrd		
6009	"	21/33/58.2	157/49/50.8	19.2					Co		
6010	"	21/33/34.6	157/50/17.8	4.8				wh	fne S		
6011	"	21/33/40.21	157/49/55.7	7.9					Co, Wd		
6012	"	21/33/20.4	157/50/04.1	5.0					Co, Wd		
6013	10/26/82	21/33/24.8	157/49/42.5	8.4					Co, Wd		
6014	10/27/82	21/34/53.1	157/51/39.9	5.4					Co, Wd		
6015	"	21/34/37.6	157/51/27.9	14.6					hrd		
6016	"	21/34/55.4	157/51/19.5	18.8				br	fne S, Co		

Use more than one line per sample if necessary.

★ U.S. GOVERNMENT PRINTING OFFICE: 1978—885-018/1084

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	OPR-7126-FA-82	1982	H-10059 (FA-10-9-82)	FJM	12/5/82

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	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.
6017	10/27/82	21/34/39.0	157/51/06.9	16.8				br	fne S, Co		SR
6018	"	21/34/42.8	157/50/48.2	18.7				rd	crs S, Co		
6019	"	21/33/47.2	157/50/52.1	2.2					Co, Wd		
6020	"	21/34/39.6	157/49/08.7	2.8					Co		
6021	"	21/34/09.8	157/49/18.3	2.9				wh	fne S, Co, Wd		
6022	REJECTED										
6023	"	21/32/34.4	157/50/14.1	4.2					Co		
6024	"	21/32/30.3	157/50/01.3	3.2				wh	fne S, Co, Wd		
6025	"	21/32/33.0	157/49/41.9	4.9				wh	fne S, Co, Wd		
6026	"	21/32/18.7	157/49/26.4	6.3				wh	fne S, Co, Wd		
6027	"	21/32/08.9	157/49/14.5	16.5				wh	Co, Wd, fne S		
6028	"	21/31/46.0	157/49/20.6	3.8				wh	Co, S, Wd		
6029	"	21/31/49.5	157/49/00.2	16.8				wh	S		
6030	"	21/31/31.4	157/49/06.8	4.2					hrd		
6031	"	21/31/35.1	157/48/46.4	11.3				wh	S, Co		
6032	"	21/31/20.0	157/48/51.5	18.0				wh	fne S		
6033	"	21/31/01.8	157/48/40.0	13.0				wh	fne S, Sh		

Use more than one line per sample if necessary.

★ U.S. GOVERNMENT PRINTING OFFICE: 1978—665-018/1084

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	OPR-T126-FA-82	1982	H-10059 (FA-10-9-82)	FJM	12/5/82

SERIAL NO.	DATE	SAMPLE POSITION LATITUDE	SAMPLE POSITION LONGITUDE	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.
6034	10/27/82	21/31/06.8	157/48/18.3	24.3				GY	S		SR

Use more than one line per sample if necessary.

★ U.S. GOVERNMENT PRINTING OFFICE: 1978—665-018/1094

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

~~NONFLOATING AIDS~~ OR LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [X] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [ ] 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)	STATE	LOCALITY	DATE
	NOAA Ship FAIRWEATHER	Hawaii	Kaneohe Bay, Oahu	11-30-82

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
OPR-T126-FA-82			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
Stack	Large Chimney (Large Chimney (1910)	21 31	32.31 993.694	157 50	17.19 494.711	(Published Position) (DIPFIL)	Triang. Rec. 11-30-82	19359 19357
	NC/dip file T-Sheet 1039/75							

RESPONSIBLE PERSONNEL*		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	in lieu of Meyer R. for Ens. Craig L. Bailey, NOAA	☐ PHOTO FIELD PARTY ☐ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER *(Specify)*
POSITIONS DETERMINED AND/OR VERIFIED	Cdr. Walter F. Forster, NOAA	FIELD ACTIVITY REPRESENTATIVE OFFICE ACTIVITY REPRESENTATIVE
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

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

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

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

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

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

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

FIELD (Cont'd)

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

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

II. TRIANGULATION STATION RECOVERED

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

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

NONFLOATING AIDS OR ~~LANDMARKS~~ FOR CHARTS

ORIGINATING ACTIVITY
- [X] 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
- [X] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (If Field Party, Ship or Office)	STATE	LOCALITY	DATE
NOAA Ship FAIRWEATHER	Hawaii	Kaneohe Bay, Oahu	11-30-82

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
OPR-T126-FA-82			Old Hawaiian

Light List ~~XXXXXXXX~~	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
3742.10	Kaneohe Bay-Entrance Range Front Light (Kaneohe B F RNG LT) 1982	21 29	55.842 1717.421	157 50	08.093 232.949		F-2-6-L 11-30-82	19359 19357
3742.20	Kaneohe Bay-Entrance Range Rear Light (Kaneohe B R RNG LT) 1982	21 29	44.563 1370.535	157 50	21.122 607.997		F-2-6-L 11-30-82	19359 19357
3742.30	Kualoa Point Range Front Light (Kualoa Pt F RNG LT) 1982	21 29	55.842 1717.421	157 50	08.093 232.949		F-2-6-L 11-30-82	19359 19357
3742.40	Kualoa Point Range Rear Light (Kualoa Pt R RNG LT) 1982	21 30	02.714 83.469	157 50	09.529 274.283		F-2-6-L 11-30-82	19359 19357
	NC 2-93(83)							

RESPONSIBLE PERSONNEL		
TYPE OF ACTION	NAME	ORIGINATOR
OBJECTS INSPECTED FROM SEAWARD	Ens Frank J. Migaud for Ensign Craig L. Bailey, NOAA	☐ PHOTO FIELD PARTY ☒ HYDROGRAPHIC PARTY ☐ GEODETIC PARTY ☐ OTHER (Specify)
POSITIONS DETERMINED AND/OR VERIFIED	Cdr. Walter F. Forster, NOAA	FIELD ACTIVITY REPRESENTATIVE ~~OFFICE ACTIVITY REPRESENTATIVE~~
FORMS ORIGINATED BY QUALITY CONTROL AND REVIEW GROUP AND FINAL REVIEW ACTIVITIES		☐ REVIEWER ☐ QUALITY CONTROL AND REVIEW GROUP REPRESENTATIVE

INSTRUCTIONS FOR ENTRIES UNDER 'METHOD AND DATE OF LOCATION'

(Consult Photogrammetric Instructions No. 64,

OFFICE

I. OFFICE IDENTIFIED AND LOCATED OBJECTS

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

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

FIELD

I. NEW POSITION DETERMINED OR VERIFIED

Enter the applicable data by symbols as follows:

F - Field	P - Photogrammetric
L - Located	Vis - Visually
V - Verified	
1 - Triangulation	5 - Field identified
2 - Traverse	6 - Theodolite
3 - Intersection	7 - Planetable
4 - Resection	8 - Sextant

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

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

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

FIELD (Cont'd)

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

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

II. TRIANGULATION STATION RECOVERED

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

EXAMPLE: Triang. Rec.
8-12-75

III. POSITION VERIFIED VISUALLY ON PHOTOGRAPH

Enter 'V-Vis.' and date.

EXAMPLE: V-Vis.
8-12-75

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

J. Approval Sheet

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

Submitted by:

Frank J. Migaiolo
Ensign, NOAA

Approved by:

Walter F. Forster
Commander, NOAA
Commanding Officer

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): 161-2480 Mokuoloe, HI
161-2702 Laiemaloo, HI

Period: October 13-November 27, 1982

HYDROGRAPHIC SHEET: H-10059

OPR: T126

Locality: NE Coast, Island of OAHU, Hawaii

Plane of reference (mean lower low water): 161-2480=2.80 feet
161-2702=9.95 feet

Height of Mean High Water above Plane of Reference is 161-2480=1.7 feet
161-2702=1.7 feet

REMARKS: Recommended Zoning:

1. North of latitude 21°31.0' zone direct on 161-2702 Laiemaloo, HI. For J Day 286-299, Tide gage at 161-2702 was not installed. Zone direct on 161-2480 Mokuoloe, HI.

2. South of 21°31.0' zone direct on 161-2480 Mokuoloe, HI.

* This supersedes form 712 dated August 4, 1983.

James R. Hubbard
Chief, Datums and Information Branch

U.S. DEPARTMENT OF COMMERCE | REGISTRY NUMBER

HYDROGRAPHIC SURVEY STATISTICS

H-10059

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

RECORD DESCRIPTION	AMOUNT	RECORD DESCRIPTION	AMOUNT
SMOOTH SHEET	1	SMOOTH OVERLAYS: POS., ARC, EXCESS	3
DESCRIPTIVE REPORT	1	FIELD SHEETS AND OTHER OVERLAYS	2

DESCRIPTION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/ SOURCE DOCUMENTS	
ACCORDIAN FILES						
ENVELOPES						
VOLUMES						
CAHIERS	1					
BOXES				1		

SHORELINE DATA

SHORELINE MAPS(List): TP-00718

PHOTOBATHYMETRIC MAPS(List):

NOTES TO THE HYDROGRAPHER(List):

SPECIAL REPORTS(List):

NAUTICAL CHARTS(List):

OFFICE PROCESSING ACTIVITIES

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

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	*EVALUATION*	*TOTALS*
POSITIONS ON SHEET			1483
POSITIONS REVISED	872	0	872
SOUNDINGS REVISED	316	0	316
CONTROL STATIONS REVISED	0	0	0
	TIME-HOURS		
	VERIFICATION	*EVALUATION*	*TOTALS*
PRE-PROCESSING EXAMINATION	0	0	2
VERIFICATION OF CONTROL	2	1	3
VERIFICATION OF POSITIONS	35	8	43
VERIFICATION OF SOUNDINGS	104	21	125
VERIFICATION OF JUNCTIONS	2	3	5
APPLICATION OF PHOTOBATHYMETRY	0	0	0
SHORELINE APPLICATION/VERIFICATION	6	0	6
COMPILATION OF SMOOTH SHEET	21	4	25
COMPARISON WITH PRIOR SURVEYS AND CHARTS	0	24	24
EVALUATION OF SIDESCAN SONAR RECORDS	0	0	0
EVALUATION OF WIRE DRAGS AND SWEEPS	0	0	0
EVALUATION REPORT	4	18	22
OTHER Update	0	10	10
Digitization	7	0	7
TOTALS	183	89	272

Pre-processing Examination by	*Beginning Date*	*Ending Date*
Verification of Field Data by L. T. Deodato	~~Time (Hours)~~ Beginning 6/6/83	*Ending Date* 2/3/84
~~Verification~~ Checks by S. H. Otsubo, J. S. Green	*Time (Hours)* 45	*Ending Date* 6/26/84
Evaluation and Analysis by G. E. Kay	~~Time (Hours)~~ Beginning 4/28/84	*Ending Date* 5/22/84
Inspection by	*Time (Hours)*	*Ending Date*

PACIFIC MARINE CENTER
EVALUATION REPORT

REGISTRY NO: H-10059 FIELD NO: FA-10-9-82

Hawaii, East Coast of Oahu, Kualoa Point to Mahie Point

SURVEYED: October 13 - November 28, 1982

SCALE: 1:10,000 PROJECT NO: OPR-T126

SOUNDINGS: Ross Fineline Fathometer CONTROL: Range/Azimuth
Range/Range
Motorola Mini-
Ranger III/Wild T-2

Chief of Party.....Cdr. W. F. Forster

Surveyed by.....Lt. (jg) G. Tuell
Ens. F. Migaiolo
Ens. A. Francis
Ens. P. Steele

Automated Plot by.....PMC Xynetics Plotter

Verified by.....L. T. Deodato

Evaluated by.....Gordon E. Kay

1. INTRODUCTION

H-10059 is a basic hydrographic survey conducted by the NOAA Ship FAIRWEATHER in accordance with the following:

Project Instructions (P.I.) for OPR-T126-FA-82, dated July 30, 1982
Change 1, dated September 7, 1982
Change 2, dated November 17, 1982
Change 3, dated January 20, 1983

The survey area is situated along the east coast of Oahu, Hawaii, extending from Kualoa Point to Mahie Point.

The following was changed during verification:

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

b. Tide level values are from observed tides, see form 712.

c. Velocity table #3 was generated to produce a feet velocity table for vessel 2027.

2. CONTROL AND SHORELINE

Horizontal control and hydrographic positioning are adequately discussed in Descriptive Report paragraphs F and G, and Horizontal and Electronic Control Report for OPR-T126-FA-82.

The smooth sheet was plotted using field and published geographic positions on the Old Hawaiian Datum.

Shoreline comes from TP-00718 (Hawaii, Kauloa Point) 1:10,000.

Date of Photography	December 1974 and January 1975
Date of Field Edit	March 1976
Date of Final Review	April 1978

3. HYDROGRAPHY

Soundings at crosslines are in good agreement. The hydrography contained within this survey is adequate to determine the bottom configuration and least depths, except as listed in section 9.

Standard depth curves were adequately drawn and developed with the exception of the 0 and 1 fathom curves, where hydrography was terminated due to surf and wind conditions.

4. CONDITION OF SURVEY

The hydrographic records and final reports adequately conform to the requirements of the Hydrographic Manual (H.M.), 4th Edition revised through change number 3, with the following exceptions:

a. Numerous areas within the limits of this survey require further development. These areas include holidays, gaps, and isolated peaks (P.I. 1.9, H.M. 1.4.3 and 4.5.9 through 4.5.11). See section 9 of this report for exact locations.

b. Presurvey review items (#50458 and 50459) were not investigated or disposed of in accordance with P.I. 6.11, 7.12.2, 7.12.2.1, 7.12.2.2 and H.M. 4.8.3.10 paragraph #12, and the Automated Wreck and Obstruction Information System (AWOIS) file listing.

5. JUNCTIONS

H-10059 junctions the following:

Survey	Year	Scale	Note	Color	Junctions on
H-9594	1976	1:10,000	Adjoins	Brown	South
H-10058	1982	1:10,000	Joins	Orange	Southeast
H-10061	1982-83	1:20,000	Adjoins	Red	West, Northwest
H-10068	1982-83	1:80,000	Adjoins	Violet	Northeast

The junction has been satisfactorily effected with the "Joins" survey. Soundings in the junctional area of the "Adjoins" surveys are in agreement. Refer to H-10059 for depth curves in junctional area.

6. COMPARISON WITH PRIOR SURVEYS

H-3252 (1910) 1:20,000. Present survey data compares well with this prior survey. H-10059 survey data continues further inshore than the prior and delineates better the inshore features, including the two fathom curve. H-10059 is adequate to supersede H-3252 over their common areas.

H-5289 (1933) 1:10,000. Present survey data compares well but overlaps very little (two sounding lines) over this prior survey. To be consistent with junctional survey H-9594, present survey should supersede H-5289 over their common areas.

H-5321 (1933) 1:5,000. Present survey data compares well with this prior survey. H-5321 survey continues further inshore than the present survey and it delineates better the inshore features, including the zero fathom curve. Soundings are in agreement along the entire 3-fathom/18 foot curve, where a butt junction has been made. H-10059 is adequate to supersede H-5321 in areas of common coverage in depths greater than 18 feet. Inshore of 18 foot curve use H-5321 for charting purposes.

There are two presurvey review items within the limits of H-10059 as listed in the AWOIS file listing of September 8, 1982. They are as follows:

#50458 obstruction - visible pipe at latitude 21°31'15.77"N, longitude 157°50'15.11"W
#50459 obstruction - visible pipe at latitude 21°31'15.87"N, longitude 157°50'06.67"W

These items were not located. No attempt was made during the course of this survey to investigate these items. They should remain as charted.

7. COMPARISON WITH CHART

Chart 19359, 1:15,000, 7th Edition, August 5, 1978, depths in feet
Chart 19357, 1:80,000, 16th Edition, December 5, 1981, depths in fathoms

a. Hydrography. Charted soundings in depths greater than 18 feet/3 fathoms come from the aforementioned prior surveys and compare well with slight differences noted, generally within a few tenths of a fathom in areas of regular bottom topography. Survey data inside the three fathom curve is incomplete and not adequate to supersede charted data. Shoaler soundings found on the present survey may be used to supplement prior surveys in areas where common coverage occurs. Charted rocks on 19537 and 19359, all within 3 fathoms and generalized on the chart to indicate hazardous conditions, were not investigated and resolved and should continue to be charted from existing sources.

b. Controlling depths. There are no controlling depths located within the limits of H-10059.

c. Aids to navigation. There are no fixed aids and four floating aids to navigation located within the limits of this survey. The floating aids are as follows:

Buoy	Light List Number	Latitude (North)	Longitude (West)
N "2"	3742	21°31'04.2"	157°48'499"
C "3"	3742	21°30'46.5"	157°49'07.3"
N "4"	3742	21°30'30.5"	157°49'29.9"
BW "K"	3742	21°31'18.4"	157°48'24.3"

There have been no dangers to navigation identified or reports submitted by the NOAA Ship FAIRWEATHER or the Pacific Marine Center, Seattle, Washington, during processing of H-10059.

H-10059 is adequate to supersede the hydrography on Charts 19359 and 19357 in depths greater than 18 feet/3 fathoms over their common areas. Charted information inshore of the above depth curve should continue to be charted from the existing sources, supplemented by the present survey.

8. COMPLIANCE WITH INSTRUCTIONS

H-10059 complies with the instructions and changes listed in section 1 of this report except where noted in section 4.

9. ADDITIONAL FIELD WORK

H-10059 is a fair hydrographic survey. Additional field work is required in the following areas:

a. to supersede H-5321 inshore from the three fathom curve from latitude 21°34'03"N, longitude 157°51'33" West, to latitude 21°32'18" North, longitude 157°49'48" West

b. to determine least depths over shoal indications, as follows:

Position Number	Depth (fathoms)	Latitude (N)	Longitude (W)
2312/5	4.6	21°31'54.6	157°49'16.3"
2109/5	5.4	21°32'03.1"	157°49'17.0"
2083/3	5.1	21°31'49.9"	157°49'12.0"

c. to delineate the three entrance channels that are shown on H-5321 through the reefs

d. investigation and disposition of presurvey review items #50458 and #50459 (AWOIS listing)

The additional field work will require a period of calm weather to be accomplished. The priority for field work should be based on the charting requirement for updated source data inside the 3 fathom depth curve.

Respectfully,

Gordon E. Kay
Cartographer
May 22, 1984

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

James S. Green
Supervisory Cartographer

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10059

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.

7/6/84

Chief, Nautical Chart Branch (Date)

CLEARANCE:

SIGNATURE AND DATE:

N/MOP2:LWMordock 7/10/84

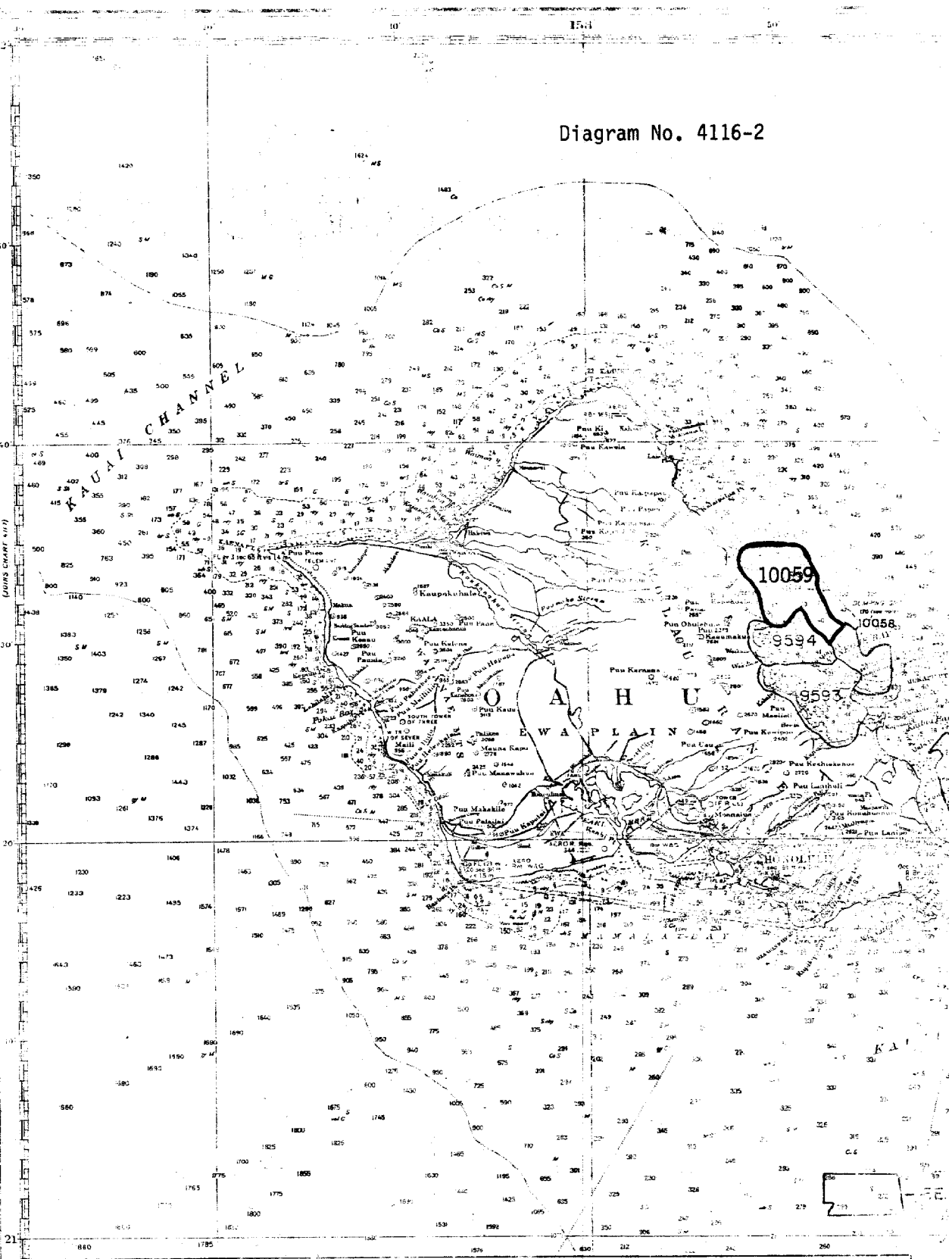
After review of the smooth sheet and accompanying reports, I hereby certify this survey is accurate, complete, and meets appropriate standards with only the exceptions as noted above. The above recommendations are forwarded with my concurrence.

7/11/84

Director, Pacific Marine Center (Date)

4116

Diagram No. 4116-2



Hydrographic Surveys

Number	Hydrographer	Scale	Date	Number	Hydrographer	Scale	Date
8579-80	W.P. Porter	10000	1961				

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

NAUTICAL CHART DIVISION

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10059

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
19010	9-24-85	B. Fernanders	~~Full~~ Part Before After Verification Review Inspection Signed Via
			Drawing No. 15 Exam for crit. corr only, No Corr
19340	9/12/85	H.J. Brownski	~~Full~~ ~~Part Before~~ Part After Verification Review Inspection Signed Via
			Drawing No. ~~Part~~ #1935 ~~Part~~ appl'd before application to larger scales. Re-examine for accuracy + content after survey is appl'd to 19357.
19359	1/13/89	S.H. Ohnk	Full ~~Part Before~~ After ~~Verification Review Inspection~~ Signed ~~Via~~
			Drawing No. full application of sndgs
19340	2/9/89	S.H. Ohnk	Full ~~Part Before~~ After ~~Verification Review Inspection~~ Signed Via
			Drawing No. full application of sndgs thru 19359
19357	1/26/89	S.H. Ohnk	Full ~~Part Before~~ After ~~Verification Review Inspection~~ Signed Via
			Drawing No. full application of sndgs thru 19359, SS and improvement with 19340
19010	3/6/89	S.H. Ohnk	Full ~~Part Before~~ After ~~Verification Review Inspection~~ Signed Via
			Drawing No. full application of Sndgs thru 19340
19007	5/3/89	RA SHIPLEY	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. EXAMINED - NO CORRECTIONS APPLIED
540	7/11/89	RA SHIPLEY	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. EXAMINED - NO CORRECTIONS APPLIED
19004	3-8-91	John Pierce	Full ~~Part Before~~ After Verification Review Inspection Signed Via
			Drawing No. 36 thru chart 19357
			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