

10128

Diagram No. 4116-2

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-20-2-84.....
Office No..... H-10128.....

LOCALITY

State Hawaii.....
General Locality Northwest Coast of Oahu.....
Locality Mail Point to Kaena Point.....

19 84

CHIEF OF PARTY
CDR J.P. Vandermeulen

LIBRARY & ARCHIVES

DATE March 7, 1985.....

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

10128

10,000
80,000
60,000
47,482
75,000
675,000
1,650,000
3,121,170
4,869,700
10,600,000

TO SIGN OFF SEC
RECORD OF APPLICATION

HYDROGRAPHIC TITLE SHEET

H-10128

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-20-2-84

State Hawaii

General locality Northwest Coast of Oahu

Locality Maili Point to Kaena Point

Scale 1:20,000 Date of survey April 11-25, 1984

Instructions dated 9 January 1984 Project No. OPR-T126-RA-84

Vessel RAINIER Launches (2123), (2124), (2125), (2126)

Chief of party CDR J. P. Vandermeulen

Surveyed by LT S. Iwamoto, LT T. Rulon, LTJG S. Konrad, ENS J. Judson,
ENS K. Barton, ENS C. Wilson, ENS J. Griffin, ENS M. Pickett

Soundings taken by echo sounder, ~~and lead line~~ Raytheon DSF-6000N

Graphic record scaled by RAINIER personnel

Graphic record checked by RAINIER personnel

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

Evaluation by C. R. Davies

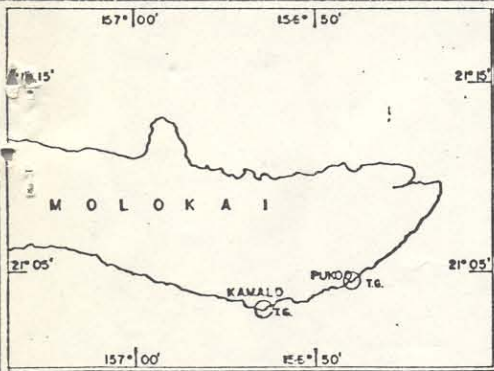
Soundings in fathoms ~~xxxx~~ at ~~xxxx~~ MLLW

REMARKS: Time meridian: 0 (UTC) Revisions and marginal notes in black by the
Evaluator.

Awards of SURF cancelled 851 7/19/85

SA 4-16-97

XWW 8/29/91



PROGRESS SKETCH

OPR-TI26-RA-84
HYDROGRAPHIC SURVEY
HAWAII, HAWAIIAN ISLANDS

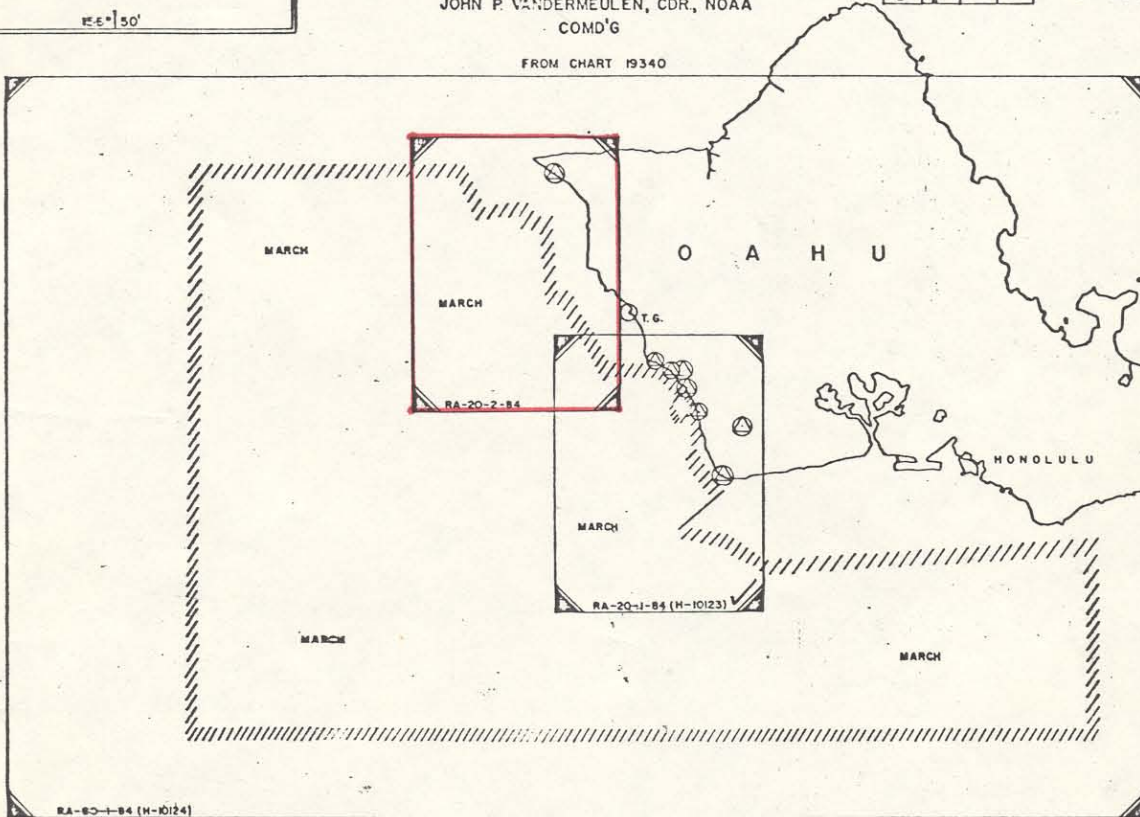
FEB. 28 - MAR. 31, 1984

NOAA SHIP RAINIER
JOHN P. VANDERMEULEN, CDR, NOAA
COMD'G

FROM CHART 19340

FEB	MAR	APR	MAY
728.20			
1302.4			
0.85			
20.4			
400.7			
3			
1			
3	5		
-	-		
-	1		
1	2		
-	2		

80 NM SOUNDING
LNM SOUNDING LINE
80 NM SIDE SCAN SONAR
LNM SIDE SCAN SONAR
LNM MISCELLANEOUS DISTANCE
BOTTOM SAMPLES (GRAB)
WATER SAMPLES ANALYZED (SALINITY)
CONTROL STATIONS (ELECTRONIC)
MANSEN CAST (S)
SOUND VELOCITY, TEMPERATURE, DEPTH CAST
TIDE GAGE (O)
STATIONS ESTABLISHED BY TRAVERSE



158° 40'

158° 20'

158° 00'

157° 40'

A. PROJECT ✓

Survey H-10128 was conducted in accordance with Project Instructions OPR-T126-RA-84, Hawaii, Hawaiian Islands, dated January 9, 1984, Change No. 1, dated February 22, 1984 and Change No. 2, dated April 16, 1984. 16

B. AREA SURVEYED ✓

Survey H-10128 was performed along the northwest coast of the island of Oahu, between Kaena Point and Maili Point between April 11 and April 25, 1984 (Julian Dates 102-116). Between Kaena Point and Kepuhi Point the survey area was from the shore to 3 miles offshore. From Kepuhi Point to Maili Point the survey area was generally from the 10 fathom curve to 3 miles offshore. The nearshore portion not surveyed during this survey will be surveyed in the future at a 1:5,000 scale.

C. SOUNDING VESSELS ✓

All soundings were obtained using the following hydrographic survey vessels: RA-3(2123), RA-4(2124) and RA-6(2126). Bottom samples were obtained by RA-3(2123), RA-5(2125) and RAINIER(2120). No unusual sounding vessel configuration or problems were utilized or encountered. RAINIER was used for all sound velocity casts.

D. SOUNDING EQUIPMENT AND CORRECTIONS TO ECHO SOUNDINGS ✓

Survey launches were equipped with Raytheon DSF-6000N dual beam echo sounders and leadlines. See Table I, SOUNDING EQUIPMENT, for a list of equipment used by each launch and inclusive dates.

Weather conditions during this survey were variable. Winds varied from calm to 30 knots and seas from flat to 4 feet. Corrections for heave were applied during scanning of the graphic records when required, as per section 4.9.8.2 of the Hydrographic Manual.

Depths on this survey ranged from 0 fathoms to 446 fathoms.

TABLE I

SOUNDING EQUIPMENT

<u>LAUNCH</u>	<u>DATES</u>	<u>MODEL</u>	<u>SERIAL NUMBER</u>
2123	JD 102-109	DSF-6000N	A119N
2124	JD 103-110	DSF-6000N	A115N
2125	JD 108-109	DSF-6000N	A123N
2126	JD 106-110	DSF-6000N	A103N

No fathometer problems occurred and no data had to be rejected as a result of a fathometer malfunction.

The Andist value for all launches was 0.0 meters and all launch data was plotted on the final sheet using this value.

All bar check lines and leadlines were checked for accuracy in Seattle, Washington in January 1984. All errors were negligible and no bar check line or leadline correctors apply for this survey.

Velocity corrections were obtained by averaging the data from two SV/D casts. See Table II VELOCITY CASTS.

TABLE II

VELOCITY CASTS

<u>CAST NUMBER</u>	<u>DATE</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>
1	1 March (061)	21/20/30 N	158/10/00 W
2	16 April (107)	21/25/30 N	158/19/18 W

The Plessy 9040 SV/D profiling system, serial number 5647, was calibrated at the Northwest Regional Calibration Center (NRCC), Seattle, Washington in December 1983. Velocity values were taken directly from the digital display unit. Surface comparisons were made in accordance with instructions from N/MOP dated 1 April 1983. In accordance with these instructions, depth was taken from the line readout as the SV/D depth error exceeded 3 meters. A laboratory thermometer was used to measure temperature, and the salinity of the surface water was determined by use of a Beckman model RS-7B salinometer (S/N 59265) calibrated by NRCC in February 1984. The surface comparisons agreed with

the SV/D to within 3 M/S for the two casts. See Velocity Corrections Table in the separates following the text and Corrections to Echo Soundings Report, Project OPR-T126-RA-84 for applicable correctors. The velocity correctors apply to both beams of the DSF-6000N.

Bar checks at a depth of 2 fathoms were performed at least once daily in accordance with the Provisional Operating and Processing Instructions for the Raytheon DSF-6000N Echo Sounder. The bar checks were used to confirm proper system function and to compute TRA correctors. The TRA for the wide and narrow beams were within 0.1 fathoms of each other and were averaged together to obtain a single TRA value. The bar check data when combined with the velocity corrections indicated a 0.2 fathom TRA for vessels 2123 and 2124 and a 0.3 fathom TRA for vessel 2126. Vessel 2125 was only used for bottom samples. The 0.2 fathom TRA differs from the historic value of 0.3 fathoms when using the Ross Fineline Fathometer system. This difference is due to an apparent instrument error of 0.1 fathoms.

All soundings on the final field sheet were plotted using a 0.3 fathom TRA and a preliminary velocity corrections table as shown in the separates following the text.

Settlement and squat correctors were not applied as they were less than 0.1 fathoms for this survey.

The DSF-6000N echo sounder was set to digitize on the narrow beam in shallow water to a depth of approximately 60 fathoms at the edge of a steep shelf, and on the wide beam for greater depths. There were no discrepancies between the junctions of the wide beam and narrow beam data as the two traces were in close agreement at this point.

TC/TI tapes were made in accordance with PMC OORDER, Appendix Q "Hydrographic Data Requirements for the 1983 Field Season", dated 24 April 1983. Printouts of the TC/TI tapes and the velocity tape are included in the separates following the text.

For further details on corrections to echo soundings for this survey, see Corrections to Echo Soundings Report, Project OPR-T126-RA-84.

E. HYDROGRAPHIC SHEETS ✓

Field sheet RA-20-2-84 was prepared on RAINIER using the PDP 8/e Hydroplot system and Complot plotter which produce a modified transverse Mercator projection. A list of parameters used to define the field sheet is provided in the separates following the text. The sheet is at a scale of 1:20,000.

All data and accompanying field records will be sent to Pacific Marine Center, Seattle, Washington for verification.

F. CONTROL STATIONS ✓

All horizontal control stations used for this survey were existing Third Order, Class I (or better) stations on the Old Hawaiian Datum. No new stations were established.

The following is a list of stations used in this survey:

<u>STATION NAME</u>	<u>SIGNAL NUMBER</u>	<u>GEOGRAPHIC POSITION</u>
STATE SURVEY 8-7C 1970	111	21/24/18.245 N 158/10/46.134 W
LAHILAHI 1927	112	21/27/48.634 N 158/12/57.953 W
BENCH MARK K 3 1969	116	21/30/13.618 N 158/13/56.957 W
RED 1958	117	21/33/55.169 N 158/15/15.515 W
STATE SURVEY 8-3 1969	119	21/32/55.961 N 158/14/34.393 W
KAENA POINT LIGHT, 1927	205	21/34/38.983 N 158/14/55.772 W

For more information concerning the above signals, refer to the Horizontal Control Report, OPR-T126-RA-84.

G. HYDROGRAPHIC POSITION CONTROL ✓

Range/Range and Range/Azimuth were the methods used for hydrographic position. Motorola Mini-Ranger III and a Wild Theodolite (S/N 57259) were the instruments used. The following tables summarize the location of all Mini-Ranger mobile and shore equipment.

MINI-RANGER MOBILE EQUIPMENT

<u>VESSEL</u>	<u>CONSOLE</u>	<u>R/T</u>	<u>S/N</u>
	2123	720	2710
	2124	B0269	B1388
	2125	715	1635
	2126	711	B1405

MINI-RANGER SHORE EQUIPMENT

<u>CODE</u>	<u>TRANSPONDER S/N</u>	<u>STATION NO.</u>
A	1645	117
B	4951	116
F	911711	111
0	C1789	112
2	B1106	119

CALIBRATIONS AND PERFORMANCE

Mini-Ranger system calibration was performed in accordance with PMC OORDER, Appendices M and S.

Initial Mini-Ranger baseline calibrations for this project were conducted at Lake Union, Seattle, Washington on February 2 and 3, 1984. Ending calibrations for vessels 2124 and 2126 were performed in Honolulu Harbor, Hawaii on April 26, 1984. Calibrations for vessel 2123 and 2125 were impossible due to R/T failure. *Baseline correctors for vessels 2123 and 2125 were confirmed by daily and weekly systems checks.*

Only initial correctors were used to plot the smooth field sheet. The initial calibrations also determined the minimum signal strength cutoff values for each system. Daily systems checks, including weekly three-point sextant fix with check angle (critical check), were performed to confirm baseline correctors. For more information regarding calibrations and systems checks, refer to the Electronic Control Report, OPR-T126-RA-84.

Mini-Ranger performance was generally good. All transponders were set up on Third Order (or better) geodetic stations.

H. SHORELINE ✓

The shoreline was transferred from enlargements of 1:24,000 scale U.S.G.S. quadrangle maps and is for orientation only.

Sounding operations were conducted as near to shore as possible. Numerous rocks, ledges, and islets shown on prior larger scale hydrographic surveys and topographic maps were not specifically investigated when they existed inshore from safe sounding areas. All features seaward of the inshore limits of the present survey were specifically investigated.

*See Section 3
of Eval. Report*

I. CROSSLINES ✓

A total of 30.1 nautical miles of crosslines were run during the survey, representing 7.8% of the mainscheme mileage.

Agreement of soundings at crossings was excellent (within 1 or 2 fathoms) except in areas of steep bottom gradients where the agreement was between 3 and 10 fathoms in depths of 200 fathoms and greater.

J. JUNCTIONS ✓

This survey junctions with contemporary surveys H-10123, scale 1:20,000 in the south and H-10124, scale 1:80,000 in the west. Soundings agree to within 2 fathoms and depth contours can be drawn smoothly at the junctions.

CONCUR

K. COMPARISON WITH PRIOR SURVEYS ✓

H-3292 and H-3293

Surveys H-3292 and H-3293 were conducted in 1911 (with soundings recorded in feet) at a scale of 1:20,000. The present survey was compared to these surveys. The comparison revealed a shoaling trend of 2-15 fathoms. This trend is apparent throughout the survey and is more pronounced in the southern portion of the survey area.

CONCUR

H-4649

Survey H-4649 was conducted in 1926 (with soundings recorded in feet) at a scale of 1:5,000. A comparison of this survey (reduced to 1:20,000) to the present survey was made. Soundings agreed within 1 fathom and depth contours agreed well.

H-4779

Survey H-4779 was conducted in 1926 at a scale of 1:5,000. Soundings and depth contours of this survey (enlarged to 1:20,000) were compared to those of the present survey. Soundings agreed within 1 fathom, except for a 1 1/4 fathom sounding charted from this prior survey at 21° 34.5'N, 158° 16.9'W. The present survey recorded a depth value of 4 fathoms in this area, and did not disprove the 1 1/4 fathom sounding. The prior survey sounding of 1 1/4 fathoms should be used for charting purposes in this area of the survey. Depth contours were in good agreement between these two surveys.

CONCUR

H-5055b

Survey H-5055b was conducted in 1929 at a scale of 1:250,000. Due to the extremely small scale at which survey H-5055b was conducted, a meaningful comparison could not be made.

See EVAL
Report Section 6

L. COMPARISON WITH THE CHART ✓

Survey H-10128 was compared to NOS Chart No. 19357, 17th Edition, Oct. 15, 1983, published at a scale of 1:80,000, enlarged to a scale of 1:20,000.

A wreck (Pos. No. 3171) is located within the limits of this survey. The wreck is a sunken minesweeper located at $21^{\circ}24'58.70''N$, $158^{\circ}11'54.36''W$. This wreck is not presently charted. A Dangers to Navigation Notice was issued to the United States Coast Guard, 14th District on April 16, 1984. A dive investigation was conducted on this wreck and a least depth of 6.7 fathoms was determined by lead line.

A sunken barge was also found approximately 50 meters south of the above sunken minesweeper. A dive investigation was conducted on April 19, 1984. The barge was found to be 2.0 fathoms off the bottom in 14.1 fathoms of water, yielding a least depth of 12.1 fathoms.

See EVAL
Report Section 7

It is recommended that these wrecks be charted with one symbol at the above position (least depth of 6.20 fathoms) on the next edition of the chart and that the limits of the charted Fish Haven be enlarged to the south to include these wrecks.

See EVAL
Report Section 7

Comparison of soundings and depth contours between survey H-10128 and the chart showed good agreement except as listed below.

1. A 192 fathom sounding, charted at $21^{\circ}29.8'N$, $158^{\circ}15.5'W$ is in an area of 250 fathoms on the present survey. Survey H-3292 is the source of this charted sounding. The prior survey does not show this sounding as a peak in a developed area but rather as an isolated sounding which appears to be in error. The present survey found the area as a flat bottom with no signs of peaks. It is recommended that the prior sounding be superseded.

concur

2. A 295 fathom sounding, charted at $21^{\circ}26.9'N$, $158^{\circ}13.7'W$ is in an area of 171 fathom on the present survey. The source of this charted sounding is survey H-3292. Survey H-3292 shows a sounding in this area of 1170 feet, which converts to 195 fathoms. It is believed that this sounding was mistakenly compiled as 1770 feet, which would result in a depth of 295 fathoms. It is recommended that the soundings from the present survey supersede the charted sounding in this area.

concur

M. ADEQUACY OF THE SURVEY ✓

This survey is complete and adequate to supersede all prior surveys for charting purposes with the exception noted in section K of this report.

N. AIDS TO NAVIGATION ✓

No new Aids to Navigation were found that were not contained in the Light List.

*See EVAL
Report Section 4
and 7*

Changes concerning landmarks are discussed in detail in the Descriptive Report for Survey H-10124, OPR-T126-RA-84.

O. STATISTICS ✓

<u>Sounding Vessel</u>	<u>Linear Nautical Miles of Hydro</u>	<u>Square Nautical Miles of Hydro</u>	<u>Number of Positions</u>
2123	144.7		564 534
2124	230.4		918 869
2126	57.7		401 398
TOTAL	432.8	30.3	1883 1806

Bottom Samples: 7

Velocity Casts: 2

Tide Stations: 1

P. MISCELLANEOUS ✓

No anomalous currents were observed or reported during this survey.

Q. RECOMMENDATIONS ✓

None

R. AUTOMATED DATA PROCESSING ✓

Data acquisition and processing were accomplished in accordance with the Hydrographic Manual (Fourth Edition), Manual of Automated Hydrographic Surveys, the PMC OORDER, Hydrographic Survey Guidelines and the Hydrographic Data Requirements for 1983.

Soundings and positions were taken by an ASI Logger and a Hydroplot system. Hyperbolic Range/Range Hydroplot program RK 112 was used in conjunction with the Hydroplot system. There are daily master tapes and corresponding corrector tapes which include the TRA for the sounding vessels, electronic control baseline correctors for Mini-Ranger consoles and R/T units and all depth corrections. Velocity tapes were generated from SV/D cast data. The following is a list of all computer programs and version dates used for data acquisition or processing:

<u>Number</u>	<u>Description</u>	<u>Version</u>
RK 112	Hyperbolic,R/R Hydroplot	10/12/83
RK 201	Grid, Signal, and Lattice Plot	4/18/75
RK 211	Range/Range Non-Real Time Plot	2/13/84
RK 212	Visual Station Table Load	4/01/74
RK 216	Range/Azimuth Non-Real Time Plot	2/24/84
RK 300	Utility Computations	10/21/80
RK 330	Reformat and Data Check	5/04/76
PM 360	Electronic Corrector Abstract	2/02/76
RK 407	Geodetic Inverse/Direct Computation	9/25/78
AM 500	Predicted Tide Generator	11/10/72
RK 561	H/R Geodetic Calibration	12/01/82
AM 602	Elinore-Line Oriented Editor	12/08/82
AM 603	Tape Consolidator	10/10/72
AM 606	Tape Duplicator	8/22/74
AM 607	Self-Starting Binary Loader	8/10/80
RK 610	Binary Tape Duplicator	12/01/82
RK 900	Plot Test Tape Generator for AM902	5/07/76
RK 901	Core Check	3/01/72
AM 902	Real Time Checkout	11/10/72
DA 903	Diagnostic-Instruction Timer	2/27/76
RK 905	Hydroplot Controller Checkout	3/18/81
RK 935	Hydroplot Hardware Tests	3/15/82
RK 950	Hardware Tests (Documentation Only)	6/02/75

S. REFERENCE TO OTHER REPORTS ✓

The following reports contain information related to this survey:

Echo Sounding Report	OPR-T126-RA-84
Electronic Control Report	OPR-T126-RA-84
Horizontal Control Report	OPR-T126-RA-84
Coast Pilot Report	OPR-T126-RA-84
Descriptive Report	OPR-T126-RA-84, H-10124

Respectfully submitted,

Joyce L. Judson

Joyce L. Judson
ENS, NOAA

OBJECT DESCRIPTION

NAME OF OBJECT SUNKEN MINESWEEPER

DATE & GMT OF OBSERVATION APRIL 12, 1984 (JD 103) 2255 UTC

HEIGHT ABOVE, BELOW THE WATER 38.2 FEET BELOW SURFACE

WATER VISIBILITY AT THAT TIME 4150 FEET PLUS

DISTANCE OFF ANY NEARBY CHARTED/UNCHARTED OBJECTS & FEATURES _____

CONSTRUCTION (WOOD, STEEL, etc; DIMENSIONS) ^{approx. 165'} 150 FT MINESWEEPER

SUNK IN 90 FEET OF WATER, UPRIGHT, BOW TO WEST

COLOR (OF ALL PARTS OF THE OBJECT) _____

ANY OTHER IDENTIFYING MARKS NAME OF SHIP "MAHI"

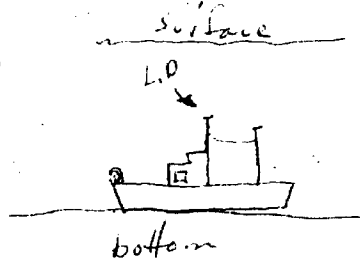
SUNK IN 1982

MAIN MAST 38.2 FEET BELOW WATER AT 2255 UTC, JD 103
by leadline (38 FT BY DIVER DEPTH GAGE)

AFTER MAST 41 FEET BELOW WATER AT 2232 UTC, JD 103
approx by diver depth gage

FOR POSITION SEE POSITION 3171, 2123, JD 104

4 DIVERS IN WATER



^(approx. 50m)
A SUNKEN BARGE TO SOUTH OF MINESWEEPER, appear to be
~~BOTH ARE~~ PART OF CHARTED FISH HAVEN. The barge is
approximately 6 feet off of the bottom

OBJECT DESCRIPTION

NAME OF OBJECT SUNKEN BARGE (FISH HAVEN)

DATE & GMT OF OBSERVATION APRIL 19, 1984

HEIGHT ABOVE/BELOW THE WATER BARGE IS IN 85 FEET OF WATER

WATER VISIBILITY AT THAT TIME 100 FEET

DISTANCE OFF ANY NEARBY CHARTED/UNCHARTED OBJECTS & FEATURES PART OF

CHARTED FISH HAVEN, 50.0^M SOUTH OF PREVIOUSLY DESCRIBED MINESWEEPER

~~21 24 58 79~~ ~~158 11 54 36 W~~
CONSTRUCTION (WOOD, STEEL, etc; DIMENSIONS)

COLOR (OF ALL PARTS OF THE OBJECT)

ANY OTHER IDENTIFYING MARKS

HIGHEST POINT OF BARGE IS 11.65 FEET OFF BOTTOM

See descriptive report for charting recommendation.

0021z nmo nmo de wtef

NMO JDR
16 APR 04573.0 MHz
84
0021z

rttuzyuw ruhptef0078 1072332-uuuu--ruhpsuu.
znr uuuuu

r 162332z apr 84

fm noaas rainier

to ccgdfourteen honolulu hi

info noaamop seattle wa

acct cm-vcaa

bt

unclas

ra-pmc-029

notice to mariners

1. an uncharted wreck has been found along the west coast of oahu, at latitude 21deg. 24min. 58.79sec. north longitude 158deg. 11min. 54.36sec. west with a least depth of 6.2 fathoms at predicted mllw. the wreck is a minesweeper, approximately 150 ft long and is 300 meters south of a charted fish haven. this information was obtained during rainier survey ra-20-2-84 and affects charts 19340, 19357, 19361.

2. the offshore end of the kahe power plant outfall is at latitude 21deg. 21min. 23.45sec north, longitude 158deg. 08min. 06.97sec west, with a least depth of 1.9 fathoms at predicted mllw. the surrounding depths are 4-5 fathoms. this information was obtained during rainier survey ra-20-1-84, h10123 and affects charts 19340, 19357.

bt

#0078

nnnnn

NNNNN

July 10, 1984

Source: Telephone call from John Griffin, NOAA Ship RAINIER, received by Nona Lewis (N/MOP21)

The following additional information on the steel minesweeper described in survey H-10128 was provided in response to a request by LT Maureen Kenny on July 6, 1984:

Steel Minesweeper --

The mast had been cut off because the top was hollow. There is no cross piece. The wreck is well preserved and sits upright on the bottom. It was sunk August 1982. This information comes from local divers. The name of the ship is MAHI. It is 165 ft. long and weighs 600 tons. It has a metal hull and superstructure.

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE
	<i>any</i>	<i>7/10/84</i>			

National Ocean Service
Pacific Marine Center
1801 Fairview Ave. East
Seattle, WA 98102-3767

July 30, 1984

N/MOP21x2/MK

TO: N/CG2 - C. William Hayes

FROM: N/MOP - Charles K. Townsend

SUBJECT: Wreck Report

In response to a request received from Mr. Kevin Shaw (N/CG2221) on July 16, 1984, please find enclosed information relative to uncharted wreckage located within the area of hydrographic survey H-10128, Hawaii, Northwest Coast of Oahu, Kaena Point to Maili Point.

The MAHI, a 165-foot long minesweeper, was located at latitude 21°24'58.79"N, longitude 158°11'54.36"W, and is believed to be the wreck reported sunk within the Waianae Fish Haven through Local Notice to Mariners 38 of 1982.

A second wreck, an unidentified barge, was located approximately 50 meters south of the MAHI. It is recommended that this wreck be charted as position approximate until additional position data can be obtained.

Additional descriptive information is contained in documentation provided by the hydrographer, NOAA Ship RAINIER, and is attached.

Questions regarding this report should be referred to Mr. Dennis Hill, N/MOP211, telephone FTS 392-6853.

Attachments

cc: MOP211
C.O., RAINIER

FILE COPY

CODE	SURNAME	DATE	CODE	SURNAME	DATE
MOP21x2	Kenny MKR	7/29	MOPx1	Sandquist	7/30
MOP21	Yeager	7/29	MOP	Townsend	
MOP2	Mordock	7/27			

APPROVAL SHEET

DESCRIPTIVE REPORT TO ACCOMPANY

HYDROGRAPHIC SURVEY

H-10128

RA-20-2-84

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

The boatsheet and the accompanying records have been examined by me, are considered complete and adequate for charting purposes, and are approved.


John P. Vandermeulen, CDR, NOAA
Commanding Officer
NOAA Ship RAINIER

MASTER STATION LIST
 OPR-T126-RA-84
 HAWAII, HAWAIIAN ISLANDS

FINAL VERSION

*	101	4	21	24	03766	158	10	18087	250	0010	000000	
	/NANAKULI USN LAB 111 N STA 1984											RAINIER
*	102	4	21	23	33491	158	09	26154	250	0010	000000	
	/NANAKULI USN LAB III MID STA 1969											NGS LISTING
*	103	4	21	21	17800	158	07	50217	250	0085	000000	
	/KAHE 1875											NGS LISTING
*	104	4	21	23	31391	158	08	42588	250	0112	000000	
	/NANAKULI 1964											NGS LISTING
*	105	2	21	18	00433	158	06	35414	250	0001	329650	
	/SURF 1984											RAINIER
*	106	4	21	15	57756	157	41	54728	250	0100	329650	
	/HANAUMA 1983											FAIRWEATHER G.P.
*	107	0	21	33	55490	158	15	15359	250	0381	329650	
	/RED RM1 1984											RAINIER G.P.
*	109	1	21	18	09048	158	04	18471	250	0004	000000	
	/NAVAIR 1969											NGS LISTING
	110	1	21	34	13640	158	15	46717	250	0322	000000	
	/CLIFF 1958											NGS LISTING
	111	4	21	24	18245	158	10	46134	250	0004	000000	
	/STATE SURVEY 8-7C 1970											NGS LISTING
	112	4	21	27	48634	158	12	57953	250	0070	000000	
	/LAHILAHI 1927											NGS LISTING
*	113	4	21	27	09290	158	11	56453	250	0005	000000	
	/WAIANAE HARBOR RANGE REAR LIGHT 1984											RAINIER
	114	4	21	27	06966	158	11	56594	250	0004	000000	
	/WAIANAE HARBOR RANGE FRONT LIGHT 1984											RAINIER
	115	4	21	27	02078	158	11	58793	250	0006	000000	
	/WAIANAE HARBOR BREAKWATER LIGHT 1 1984											RAINIER
	116	1	21	30	13618	158	13	56957	250	0005	000000	
	/BENCH MARK K 3 1969											NGS LISTING

117	1	21	33	55169	158	15	15515	250	0382	000000	NGS LISTING	
/RED 1958												
118	1	21	33	44377	158	15	30800	250	0016	000000	NGS LISTING	
/STATE SURVEY 8-2 1969												
119	1	21	32	55961	158	14	34393	250	0008	000000	NGS LISTING	
/STATE SURVEY 8-3 1969												
*	120	5	21	18	28623	157	53	57262	250	0006	000000	NGS LISTING
/KALIHI CHANNEL GREEN LIGHT 9 1964												
*	200	1	21	33	54820	158	15	02845	139	0517	000000	NGS LISTING
/KAENA POINT RADIO MAST(1550) 1969												
*	201	1	21	30	39651	158	08	43434	139	1341	000000	NGS LISTING
/MT KAALA NW RADAR DOME 1965												
*	202	4	21	30	38692	158	08	41754	139	1341	000000	NGS LISTING
/MT KAALA SE RADAR DOME 1965												
*	203	4	21	22	41488	158	08	33497	139	0017	000000	NGS LISTING
/NANAKULI USN LAB III S STA 1969												
*	204	7	21	17	58275	158	06	32121	139	0027	000000	NGS LISTING
/BARBERS PT LIGHTHOUSE (NEW) 1933												
	205	4	21	34	38983	158	16	55772	139	0022	000000	NGS LISTING
/KAENA POINT LIGHT 1927												
*	206	4	21	20	38011	158	05	36362	139	0150	000000	NGS LISTING
/PALAILAI 1873												
	208	4	21	33	55524	158	14	41502	139	0477	000000	NGS LISTING
/KAENA POINT RADAR DOME(1430) 1969												
*	209	1	21	21	28929	158	07	51726	139	0145	000000	RAINIER G.P.
/KAHE STACK												
	211	1	21	25	24752	158	09	24197	139	0475	000000	RAINIER
/WEST RADAR TOWER (1555)												
	212	4	21	25	23147	158	09	03487	139	0477	000000	RAINIER
/EAST RADAR TOWER (1564)												
*	213	4	21	18	36756	157	52	07425	139	0058	000000	NGS LISTING
/HONOLULU ALOHA TOWER 1925												
*	218	4	21	16	50262	157	49	54275	139	0000	000000	NGS LISTING
/HONOLULU ROYAL HAWAIIAN C TWR												

*	219	4	21	20	45631	157	57	53722	139	0050	000000	NGS LISTING
	/HICKAM AFB WATER TOWER											
*	220	4	21	18	16765	157	52	36375	139	0028	000000	NGS LISTING
	/SAND IS ARTILLERY FIRE CONT TR											
*	221	4	21	20	32625	158	02	17670	139	0000	000000	NGS LISTING
	/EWA MILL STACK 1969											
*	222	4	21	15	31970	157	48	44250	250	0017	000000	NGS LISTING
	/DIAMOND HEAD LIGHTHOUSE 1925											
*	236	4	21	19	12521	157	52	26595	139	0059	000000	NGS LISTING
	/HONOLULU HAWAIIAN PINEAPPLE TK											
*	238	4	21	21	49644	157	57	51242	139	0059	000000	NGS LISTING
	/PEARL HARBOR FORD IS CONT TWR											
*	239	1	21	17	14866	157	50	28580	139	0124	000000	NGS LISTING
	/HONOLULU ILIKAI HOTEL CUPOLA											
*	242	4	21	17	45495	157	50	44550	139	0096	000000	NGS LISTING
	/HONOLULU ALA MOANA BLDG OBS LT											
*	244	3	21	20	06720	157	55	21216	139	0040	000000	NGS LISTING
	/HONOLULU INTL APT CONT TWR BCN											
*	245	4	21	17	07441	157	50	27203	139	0090	000000	NGS LISTING
	/HONOLULU HILTON RAINBOW TWR LT											
*	246	3	21	16	05810	157	42	20585	139	0224	000000	AID TO NAV
	/BUILDING(VORTAC)											
*	247	3	21	18	48622	157	53	41731	139	0006	000000	NGS LISTING
	/KALIHI CHANNEL RED LIGHT 16 1964											
*	248	3	21	20	10077	157	56	56797	139	0050	000000	NGS LISTING
	/HICKAM AFB CONTROL TOWER 1957											
*	249	4	21	18	48622	157	53	41731	139	0006	000000	NGS LISTING
	/KALIHI CHANNEL RED LIGHT 16 1964											
*	250	4	21	18	08642	157	53	54932	139	0006	000000	RAINIER G.P
	/KAHILI CHANNEL RED LIGHT 6 1984											

* Not used for H-10128

Replaces C&GS Form 167.

NON-FLOATING AIDS OR LANDMARKS FOR CHARTS

TO BE CHARTED
 TO BE REVISED
 TO BE DELETED

REPORTING UNIT (If Aid Party, Ship or Office)
 NOAA Ship RAINIER

STATE
 Hawaii

LOCALITY
 Oahu

DATE
 4/5/84

The following objects HAVE HAVE NOT been inspected from seaward to determine their value as landmarks.
 D.P. PROJECT NO. H-10124

SURVEY NUMBER
 H-10124

DATUM
 Old Hawaiian

CHARTING NAME	DESCRIPTION (Reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION			METHOD AND DATE OF LOCATION (See instructions on reverse side)		CHARTS AFFECTED
		LATITUDE ° / ' / D.M. Meters	LONGITUDE ° / ' / D.P. Meters	DATUM	OFFICE	FIELD	
Tower	West of two radar towers. See Revised Position	21 25	158 09	Old Hawaiian	Dipfile	Revised	19357
Tower	East of two radar towers. See Revised Position	21 25	158 09	Old Hawaiian	Dipfile	Revised	19357 19340
Stack	Tallest Kahe Stack See Revised Position	21 21	158 07	Old Hawaiian	Dipfile	Revised	
Tower	Most Northerly of three towers. See Revised Position	21 24	158 10	Old Hawaiian	Dipfile	Revised	19357
Tower	Honolulu International Control Tower. See Revised Position	21 19	157 55	Old Hawaiian	Dipfile	Revised	19357 19340

4-204 (86)

FIELD TIDE NOTE

RA-20-2-84
H-10128

Field tide reduction of soundings for survey H-10128 was based on predicted tides from Honolulu, Hawaii (161-2340). Corrections were obtained from Preliminary Tidal Zoning OPR-T126-RA-84. The predicted tides were derived using program AM500.

The reference station at Honolulu was leveled on March 3, 1984. Three permanent benchmarks (including the primary mark) were connected to the ETG reading mark. Levels were run at the end of survey operations on April 26, 1984. Initial and final levels compared very well.

A subordinate station at Waianae, Pokai Bay, Oahu, Hawaii (161-2482) provided data for this survey. A Fisher/Porter ADR tide gage was installed on the south face of pier A at the Waianae Boat Harbor on February 28, 1984, $21^{\circ} 27' 8.9'' \text{N}$, $158^{\circ} 11' 58.8'' \text{W}$. The historical site for this station was on Kaneilio Point, at the southern end of Pokai Bay. The location was changed to allow the installation of an ADR gage rather than a bubbler. The gage operated well throughout the time of hydrography.

Two historic benchmarks were recovered near the historic site. Three new benchmarks were established between the historic site and the new location of the gage. Initial levels were run to these five marks on March 1, 1984. Final levels were run on April 25, 1984. The gage was removed following the final levels on April 25. Comparison of the initial and final levels indicated no significant movement of the staff during the survey period.

DATE: 8/14/84

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

TIDE NOTE FOR HYDROGRAPHIC SHEET

Marine Center: Pacific

OPR: T126

Hydrographic Sheet: H-10128

Locality: West Coast Oahu, Hawaii

Time Period: April 12-18, 1984

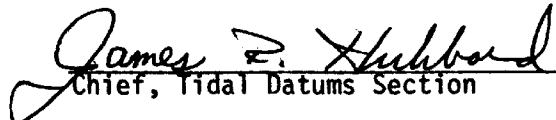
Tide Station Used: 161-2482 Waianae, HI

Plane of Reference (Mean Lower Low Water): 24.45 ft.

Height of Mean High Water Above Plane of Reference: 1.5 ft.

Remarks: Recommended Zoning:

Zone Direct.


Chief, Tidal Datums Section

GEOGRAPHIC NAMES

OPR-T126-RA-84
Name on Survey
(RA-20-2-84)

A ON CHART NO. 19357
17th Ed.
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
K

	A	B	C	D	E	F	G	H	K
KAENA POINT									1
KEPUHI POINT									2
MAILI POINT									3
OAHU									4
PACIFIC OCEAN									5
WAIANAE									6
									7
									8
									9
									10
									11
									12
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									14
									15
									16
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									22
									23
									24
									25

HYDROGRAPHIC SURVEY STATISTICS

H-10128

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

RECORD DESCRIPTION		AMOUNT	RECORD DESCRIPTION		AMOUNT
SMOOTH SHEET		1	SMOOTH OVERLAYS: POS., ARC, EXCESS		
DESCRIPTIVE REPORT		1	FIELD SHEETS AND OTHER OVERLAYS		8
DESCRIP-TION	DEPTH/POS RECORDS	HORIZ. CONT. RECORDS	SONAR-GRAMS	PRINTOUTS	ABSTRACTS/SOURCE DOCUMENTS
ACCORDIAN FILES					
ENVELOPES					
VOLUMES	1				
CAHIERS	2				
BOXES					

SHORELINE DATA					
SHORELINE MAPS(List): <u>Enlargement of U.S.G.S. and Kaena Hawaii</u>					
PHOTOBATHYMETRIC MAPS(List):					
NOTES TO THE HYDROGRAPHER(List):					
SPECIAL REPORTS(List): <u>two reductions of H-4779 and H-4649 (1926)</u>					
NAUTICAL CHARTS(List):					

OFFICE PROCESSING ACTIVITIES 10128
The following statistics will be submitted with the cartographer's report on the survey

PROCESSING ACTIVITY	AMOUNTS		
	VERIFICATION	EVALUATION	TOTALS
POSITIONS ON SHEET			1806
POSITIONS REVISED	1696		
SOUNDINGS REVISED	137		
CONTROL STATIONS REVISED	None		
	TIME-HOURS		
	VERIFICATION	EVALUATION	TOTALS
PRE-PROCESSING EXAMINATION	2		2
VERIFICATION OF CONTROL	8		8
VERIFICATION OF POSITIONS	48		48
VERIFICATION OF SOUNDINGS	46		46
VERIFICATION OF JUNCTIONS	4		4
APPLICATION OF PHOTOBATHYMETRY	0		
SHORELINE APPLICATION/VERIFICATION			
COMPILATION OF SMOOTH SHEET	3 05		3 05
COMPARISON WITH PRIOR SURVEYS AND CHARTS		18.5	18.5
EVALUATION OF SIDESCAN SONAR RECORDS			
EVALUATION OF WIRE DRAGS AND SWEEPS			
EVALUATION REPORT	4	17.0	21.0
OTHER		17.0	17.0
Digitization	7.0		7.0
TOTALS	149.5	52.5	202

Pre-processing Examination by James L. Stringham	Beginning Date 7/3/84	Ending Date 7/3/84
Verification of Field Data by Robert D. Mueller	Time(Hours) Begin DATE 7/3/84	Ending Date 11/30/84
Verification Check by James L. Stringham/ J. S. Green	Time(Hours) 26	Ending Date 12/19/84
Evaluation and Analysis by C. R. Davies	Time(Hours) Begin Date 12-11-84	Ending Date 12/20/84
Inspection by <i>D. Hill</i>	Time(Hours) 2	Ending Date 12-26-84

PACIFIC MARINE CENTER

EVALUATION REPORT

REGISTRY NO: H-10128

FIELD NO: RA-20-2-84

Hawaii, Northwest Coast of Oahu, Maili Point to Kaena Point

SURVEYED: April 11 - 25, 1984

SCALE: 1:20,000,

PROJECT NO: OPR-T126-RA-84

SOUNDINGS: Ross Fineline Fathometer,

CONTROL: Range/Range
Range/Azimuth
Motorola MiniRanger III

Chief of Party.....CDR J. P. Vandermeulen

Surveyed by.....LT S. Iwamoto
LT T. Rulon
LT (JG) S. Konrad
ENS J. Judson
ENS K. Barton
ENS C. Wilson
ENS J. Griffin
ENS M. Pickett

Automated Plot by.....PMC Xynetics Plotter

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

Evaluated by.....C. R. Davies

I. INTRODUCTION

H-10128 is a basic hydrographic survey conducted by the NOAA Ship RAINIER in accordance with the following:

Project Instructions for OPR-T126-RA-84, dated January 9, 1984
Change No. 1, dated February 16, 1984
Change No. 2, dated April 16, 1984

The survey was conducted on the northwest coast of Oahu between latitude 21°24'00"N to latitude 21°35'00"N. It extends from the two fathom curve or surf line north of latitude 21°29'00"N and to the offshore limits of future planned 1:5000 inshore surveys south of that latitude, offshore to encompass the 300-fathom depth curve.

Predicted tides based on the Honolulu, Hawaii (161-2340) with times and range adjustments were utilized during shipboard processing. Tide correctors used for the reduction of the final soundings are computed from approved hourly heights from one temporary ADR tide gage, Waianae Boat Harbor.

During office processing, the following were changed.

- a) Projection parameters were changed to center the hydrography on the smooth sheet and to change the projection to polyconic.
- b) Electronic correctors were revised to reflect the mean of baseline correctors.

II. CONTROL AND SHORELINE

Hydrographic control and positioning are adequately discussed in Descriptive Report paragraphs F and G, and Horizontal and Electronic Control Reports for OPR-T126-RA-84.

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

Although a basic hydrographic survey, photogrammetric manuscripts to assist the hydrographer in the positioning and delineation of foreshore features were not available.

Shoreline for orientation purposes is not shown on H-10128, in accordance with N/CG letter dated February 16, 1984, entitled "Reduction of Marine Center Hydrographic Survey Processing Backlog."

III. HYDROGRAPHY

Crossline soundings are in good agreement. The hydrography within the limits of H-10128 was adequate to determine the bottom configuration and least depths beyond the two-fathom curve. Standard depth curves were adequately drawn and developed with the exception of the one and zero-fathom curves. Inshore of the two-fathom curve, hydrography was terminated because of surf conditions. Areas which were not investigated and where rocks were sighted are shown on H-10128 as foul with rock limit lines.

IV. CONDITION OF SURVEY

The hydrographic records and reports are adequate and conform to the requirements of the Hydrographic Manual with the following exception:

Kaena Point Light is a fixed aid to navigation within the limits of this survey. According to paragraph 4.2.2.4 of the project instructions, if an adequate position exists a Form 76-40 is not necessary, however, it should have been listed and its condition described in Section N of the descriptive report.

V. JUNCTIONS

H-10128 is bordered by contemporary surveys to the west and south,

- H-10123 (1984) - Kahe Point and Vicinity
- H-10124 (1984) - Offshore Diamond Head to Makaha.

Soundings, depth curves and junctional notes are inked in agreement. There are no contemporary surveys to the north and southeast but H-10128 is in harmony with charted depths in the junction areas.

VI. COMPARISON WITH PRIOR SURVEYS

H-3292 (1911) 1:20,000
H-3293 (1911) 1:20,000

The prior surveys compare well with H-10128. Differences are small, ± 1 to 3 fathoms north of latitude $21^{\circ}28'00''N$. South of latitude $21^{\circ}28'00''N$ and beyond the 100 fathom curve there is a greater difference, with prior depths being deeper by 2 to 15 fathoms. These differences are attributed to more accurate data acquisition techniques and general shoaling. The present survey supersedes H-3292 and H-3293 within the area of common coverage.

H-4649 (1926) 1:5000
H-4779 (1926) 1:5000

These prior surveys compare well with H-10128. Differences are small, ± 1 to 3 fathoms, attributable to the different surveying methods. The many rocks located on these priors are not positioned on this survey but are generally located in areas labeled as foul on the present survey. One submerged rock and three Rk symbols falling outside of the foul limit line, have been carried forward from H-4779. The present survey is adequate to supersede H-4649 and H-4779 offshore from the two-fathom depth curve. Between the two fathom depth curve and the high water line these two 1:5000 prior surveys should be retained as the charting source.

H-5055b (1929) 1:250,000

H-5055b is common to the present survey along the extreme western edge. Considering the large differences in scale, the agreement is adequate. The present survey supersedes H-5055b within the area of common coverage.

VII. COMPARISON WITH CHART

Chart 19357, 17th Edition, October 15, 1983

- a) Hydrography -- Charted information originates with the prior surveys discussed previously.

A sunken wreck located by the hydrographer at latitude $21^{\circ}24'58.78''N$, longitude $158^{\circ}11'54.36''W$ is described as a minesweeper. Notes in the raw data further describe the vessel as the MAHI, approximately 165 feet long, lying upright with the bow to the west. A 36.0-foot MLLW least depth was obtained by a diver using a leadline on the mainmast of the wreck. This wreck is believed to be the vessel reported sunk within the Waianae Fish Haven through INM 38 of 1982. Additional descriptive information is contained in the letter, dated July 30, 1984 from N/MOP to N/CG2 (copy attached). A copy of the hydrographer's field notes has also been attached for use in updating the AWOIS file. This wreck

should be charted as a wreck covered 6-fathoms MLLW at the above position.

A second sunken wreck was located approximately 50 meters south of the minesweeper wreck. This vessel was observed by divers and is described as a barge. No depth is reported but field notes indicate that the wreck rises between 6 and 11.65 feet off the bottom in depths of 14 fathoms. A copy of the hydrographer's field notes is attached. The position of the wreck is computed to be approximately 21°24'54.2"N, longitude 158°11'54.4"W and is referenced on the smooth sheet only by a note. The wreck is considered non-dangerous and should be charted at the discretion of the chart compiler.

There was one danger to navigation identified by the hydrographer during survey operations. This information has been forwarded to the 14th USCG District.

Geographic names appearing on the smooth sheet originate from the chart.

H-10128 is adequate to supersede the chart within the limits of hydrography.

- b) Controlling Depths — There are no controlling depths within the limits of the present survey.
- c) Aids to Navigation — Kaena Point Light (Light List No. 3836) falls within the limits of this survey. Although not specifically discussed by the hydrographer, it was used in the control for this survey. It is adequate to serve its intended purpose. Aids to Navigation inside Waianae Harbor and Pokai Bay were located and discussed in H-10124 (1984).

VIII. COMPLIANCE WITH INSTRUCTIONS

H-10128 adequately complies with the project instructions as amended and noted in section 1 of this report.

IX. ADDITIONAL FIELD WORK

This is a good basic hydrographic survey. No additional field work is required. A more accurate position for the sunken barge discussed in Section 7 should be considered in future project planning for Oahu.

Respectfully submitted,

Charles R. Davies

Charles R. Davies
Cartographer
November 8, 1984

This survey has been examined by me and it meets the Charting and Geodetic Services survey standards and requirements for use in nautical charting except as noted in the Evaluation Report. The survey is recommended for approval.



Dennis Hill
Chief, Hydrographic Section

ATTACHMENT TO DESCRIPTIVE REPORT FOR H-10128

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 (G&GS) standards, complies with instructions, and is accurately and completely represented by the smooth sheet and digital data file for use in nautical charting.

Demetri Hill 12-26-84
For Chief, Nautical Chart Branch (Date)

CLEARANCE:
N/MOP2:LWMordock

SIGNATURE AND DATE:
Larry W. Mordock 12/27/84

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

Robert L. Seibert 12/27/84
Director, Pacific Marine Center (Date)

MARINE CHART BRANCH
RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-10128

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
19361	6-10-85	J.M.O'Connor	Full Part Before After Marine Center Approval Signed Via Drawing No. 9
19340	7/10/85	H.G. Bransford	^{Part} Full Part Before After Marine Center Approval Signed Via Drawing No. ^{Part} 23 Part Fully appl'd to 19340 prior to application to larger scale 19357. Re-examine for accuracy content after application to 19357. Full Part Before After Marine Center Approval Signed Via
19361	2/15/89	Stanley H. Gault	Drawing No. Reapplied to correct deficiencies in first full application
19357	3/29/89	R.A. Shipley	Full Part Before After Marine Center Approval Signed Via Drawing No. full application of sndgs applied thru 19361 and SS subm wreck PA, LAT 21/24/54.2, long 158/11/54.4
19340	5/9/89	R.A. Shipley	Full Part Before After Marine Center Approval Signed Via Drawing No. full application of sndgs thru SS and 19357
19380	3/16/90	Sam Abrams	Full Part Before After Marine Center Approval Signed Via Drawing No. Full application of soundings thru CHART 19340
19004	7/2/90	Araczen	Full Part Before After Marine Center Approval Signed Via full application of Drawing No. sndgs. from SS thru 19340
19007	7/5/90	Araczen	Full Part Before After Marine Center Approval Signed Via full application of Drawing No. sndgs. from SS thru 19004.
530	9/27/90	Eric B. Domingo	Full Part Before After Marine Center Approval Signed Via Examined, No Drawing No. soundings and corrections applied.
19013	8/16/90	Eric B. Domingo	Full Part Before After Marine Center Approval Signed Via Full application of Drawing No. soundings from SS thru 19004.
540	7/11/89	R. Shipley	STANDARDS CK'D 3-13-85 Examined, No. Corr. Applied C. Lay
50	10/3/90	Eric B. Domingo	Examined, NO soundings or corrections applied