

9017

Diag. Cht. No. 4115.

FORM C&GS-504

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. AR 10-6-68 Office No. H 9017

LOCALITY

State Hawaii

General locality Hawaii Island - West Coast

Locality Vicinity of Malae Pt. to Kawaihae
~~West Coast Hawaii Island~~

19 69

CHIEF OF PARTY

Ronald L. Newson, CDR, USN

LIBRARY & ARCHIVES

DATE 11-26-71

USCOMM-DC 37022-P66

CHS

4115

4140 ✓

4167

4000 ✓

HYDROGRAPHIC TITLE SHEET

H 9017

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.

AR 10-6-68

State Hawaii

General locality Hawaii Island - West Coast

Locality Vicinity of Malae Pt. to Kawaihae
~~West Coast, Hawaii Island~~

Scale 1:10,000

Date of survey 11 Nov 1968 - 6 Dec 1968

Instructions dated 31 Oct., 12 Nov 1968 ~~2a291868 69~~ Project No. OPR 119

Vessel USC&GSS McARTHUR

Chief of party Ronald L. Newsom, CDR, USESSA

Surveyed by R.C. Husted, R.G. Kraynick

Soundings taken by echo sounder, ~~hand level~~ DE723's #920, 918, 915

Graphic record scaled by Ship Personnel

Graphic record checked by Ship Personnel

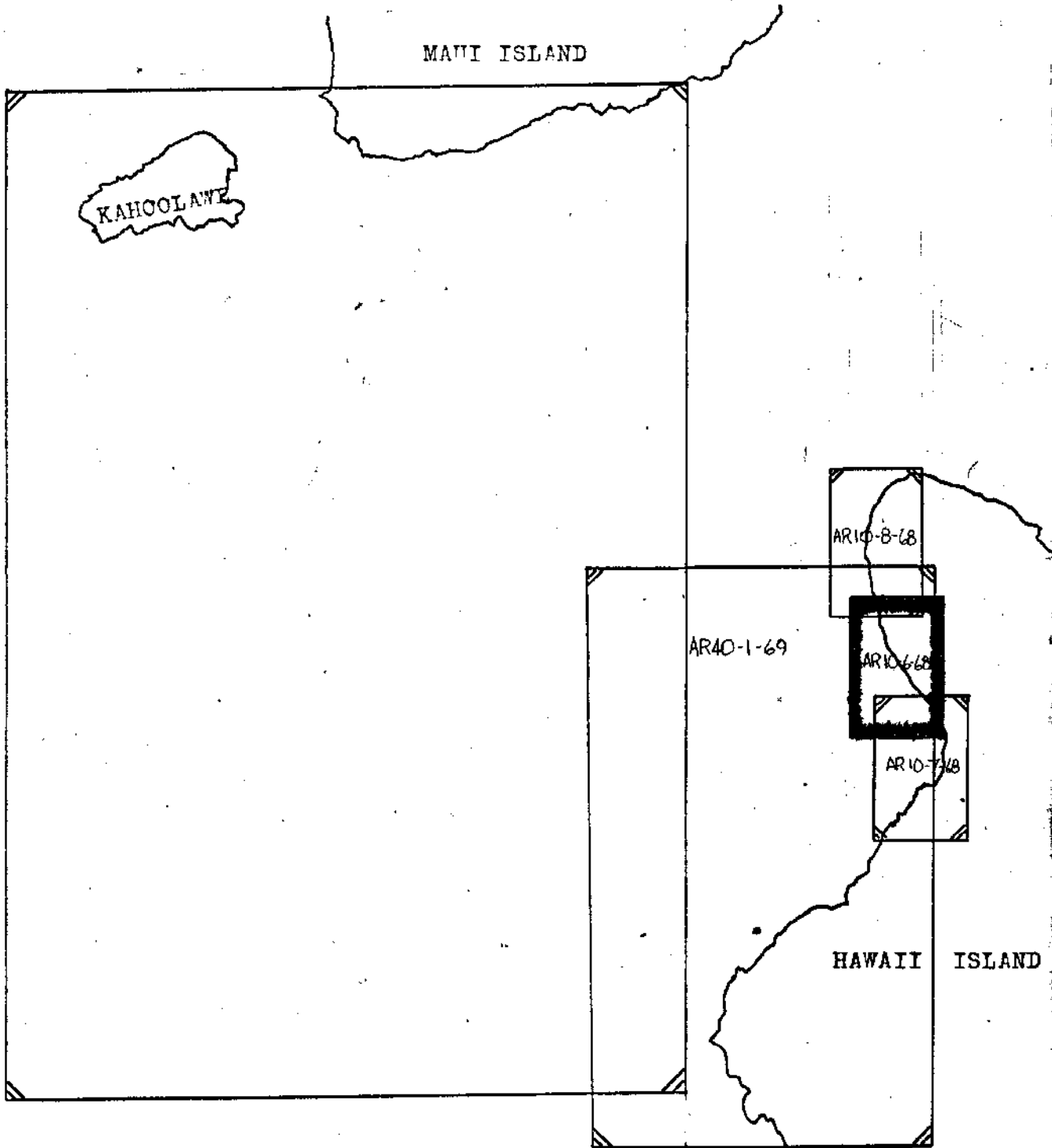
Protracted by _____ Automated plot by GERDER

Soundings ~~checked~~ by VERIFIED by NICHOLAS LESTENKOF

Soundings in fathoms ~~SEE~~ at ~~MLLW~~ MLLW

REMARKS: This survey was accomplished using Launch AR-1 and Launch AR-2 with the Ship McARTHUR

Applied to stds 12-7-71



MAUI ISLAND

KAHOOLAWE

ARIO-8-68

ARIO-1-69

ARIO-6-68

ARIO-7-68

HAWAII ISLAND

OPR - 419

West Coast HAWAII Island

Descriptive Report
To Accompany
Hydrographic Survey H 9017 (AR 10-6-68)

USC&GSS McARTHUR
Ronald L. Newsom, CDR, USESSA

Scale 1:10,000
1968

A. PROJECT

Hydrography on this boatsheet was accomplished in accordance with Project Instructions OPR-419, West Coast of Hawaii Islands, Hawaii dated 31 October 1968 (CFS 4060/02) and with changes No. 1 and No. 2 thereto dated 12 November 1968 and 29 January 1969 respectively.

B. AREA SURVEYED

The area surveyed is located on the northwestern coast of Hawaii. It is bounded on the north and south by Latitudes 20°08.7' and 20°03' respectively. It extends westward from the shoreline to Longitude 155°54.5' and covers 9.0 square miles. This survey was conducted between 11 November 1968 and 6 December 1968.

This survey overlaps the following prior surveys:

| Registry No. | Scale | Date |
|--------------|----------|-------------|
| H 3650 | 1:20,000 | March, 1914 |
| H 3652 | 1:60,000 | March, 1914 |

This survey junctions with the following contemporary surveys:

H 9018 (AR 10-7-68)
H 9019 (AR 10-8-68)
H 9015 (AR 40-1-69)

C. SOUNDING VESSELS

This survey was accomplished using three sounding vessels:

| Vessel | Ink Color | Pos. Nos. |
|---------------|-----------|-----------|
| Launch AR-1 | Blue | 1000-1728 |
| Launch AR-2 | Purple | 1567-1693 |
| Ship McARTHUR | Red | 3002-3612 |

D. SOUNDING EQUIPMENT

Soundings were obtained as follows:

| Vessel | Depth Recorded | Instrument |
|-------------|----------------|-------------------|
| McARTHUR | 26 to 166 fms | DE723 Serial #918 |
| Launch AR-1 | 0.6 to 50 fms | DE723 Serial #920 |
| Launch AR-2 | 0.7 to 44 fms | DE723 Serial #915 |

Bar checks were taken at least once daily in both launches to depths of 6 fathoms to calculate transducer draft and provide corrections for instrument and velocity error. Velocity corrections below 6 fathoms were obtained from a Nansen cast taken to 100 fathoms off

the northwest coast of Hawaii Island on 10 December 1968. In depths greater than 100 fathoms velocity corrections were obtained from "Tables of the Velocity of Sound and of Depth Corrections for Echo-Sounding in Hawaiian Waters", Applied Oceanography Series No. 5, University of Hawaii, by John C. Belshe, September 1967. The fathometer initial was set at 2.0 fathoms on the Ship and 0.0 fathoms on the launches. A mean transducer draft of 1.8 fathoms was determined for the Ship. No settlement squat, or phase corrections were necessary. Tide reducers were obtained from actual 1968 tide records of the portable automatic tide gage at Kawaihae Harbor, Hawaii Island.

E. SMOOTH SHEET

The smooth sheet is to be plotted at the Electronic Data Processing Division, Pacific Marine Center, using a Gerber Plotter. Field data has been logged into the following punched tapes by McARTHUR Personnel.

| <u>Data</u> | <u>Format</u> |
|---------------------|---------------|
| Velocity Correctors | Velocity Tape |
| Tide Correctors | Tide Tape |
| Signal Positions | Signal Tape |

Sounding and position tapes for this boatsheet are being cut by PMC, processing division.

F. CONTROL

Visual methods were used throughout this survey for control purposes. Horizontal control was furnished by three triangulation stations, located using their listed geographic positions, and forty-two photo-hydro signals on 1:10,000 scale Advanced Manuscripts T12530, T12531, T12532 and T12533.

G. SHORELINE

Shoreline, for this survey, was transferred from a blue-line copy of the above mentioned T-sheets. All shoreline and topographic detail on this boatsheet has been verified. The low-water line on this boatsheet was not defined by the hydrography due to a rather steep shoreline bottom contour and the irregular shape of the coastline.

H. CROSSLINES

242.8 nautical miles of hydrography was run on this boatsheet of which 20.0 nautical miles were crosslines which amounts to 8% of the total. There were no discrepancies at crossings.

I. JUNCTIONS

Agreement was excellent between this boatsheet and its junctions with H 9018 and H 9019. No adjustments here were necessary. Contemporary survey H 9015 (AR 40-1-69) showed some discrepancies with this boatsheet (maximum of 4 fathoms) but these were acceptable considering the difference of scale between this boatsheet and H 9015.

J. COMPARISON WITH PRIOR SURVEYS

There were no pre-survey review items applicable to this boatsheet. Two prior surveys of the area of this boatsheet were undertaken in March of 1914. These surveys were designated as H 3650 (scale 1:20,000), and H 3652 (scale 1:60,000). Comparison of AR 10-6-68 with these prior surveys showed many major discrepancies present in both H 3650 and H 3652 ranging from five to fifteen fathoms. The high frequency of these discrepancies might indicate a lack of precision in the horizontal control used for the two prior surveys.

K. COMPARISON WITH THE CHART

This boatsheet was compared with C&GS chart #4140, scale 1:80,000 printed 24 January 1966. It was found that the positioning of soundings did not agree with recorded depths on our boatsheet which was primarily due, as explained in the pre-survey review, to the deliberate seaward shift of chart soundings to provide clarity for the chart user.

L. ADEQUACY OF SURVEY

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

M. AIDS TO NAVIGATION

None

N. STATISTICS

| | |
|-------------------------------|-------|
| McARTHUR | |
| Nautical miles sounding lines | 150.6 |
| number of positions | 566 |
| bottom samples | 26 |
| Launch AR-1 | |
| Nautical miles sounding line | 77.9 |
| number of positions | 585 |
| bottom samples | 8 |

Launch AR-2
Nautical miles sounding lines 11.3 ✓
number of positions 127
bottom samples 6

Total
Nautical miles sounding line 242.8
number of positions 1278
bottom samples 40
square miles surveyed 9.0

O. MISCELLANEOUS

A revised signal tape is being submitted with the records of this survey. A signal overlay from this tape has not been verified.

P. RECOMMENDATIONS

None

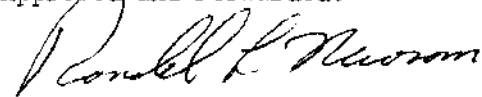
Q. REFERENCES TO REPORTS

Pre-survey report - OFR-419, Hawaii Island.

Submitted By:


Robert C. Husted Jr.
ENS, USESSA

Approved and Forwarded:


Ronald L. Newsom, CDR, USESSA
Commanding Officer, USC&GSS McARTHUR

Enclosures: Tide Note

Abstract of Corrections to Echo Soundings (table and curve)
List of Signals
Abstract of Position Numbers
List of Basic Field Records
Approval Sheet

GEOGRAPHICAL NAMES

HAWAII ISLAND

KEAWANUI BAY

KEAWAULA BAY

MALAE POINT

PACIFIC OCEAN

TIDE NOTE FOR HYDROGRAPHIC SHEET

August 7, 1969

~~Nautical Chart No. 1121~~ Pacific Marine Center

Plane of reference approved
~~for use of U.S. Coast and Geodetic Survey~~ for

HYDROGRAPHIC SHEET S 9015, 9017, 9018, 9019

Locality: West coast of Hawaii Island

~~Station No.:~~ Year: 1968-69

Plane of reference is mean lower low water

Tide Station Used (Form C&GS-681):

Kawaihae

Height of Mean High Water above Plane of Reference is as follows:

1.4 feet

Remarks

J. M. Symons
Chief, Tides and Currents Branch

OPR-419
BOAT SHEET "E"
AR-10-6-68
TIDE TAPE PRINTOUT
KAWAIHAE HARBOR, HAWAII ISLAND

~~)))))) #)))))) #))))))~~ CORRECTED ON TAPE

| | | | | | | | |
|--------|----|------|------|-----|---|--------|--------|
| 060000 | 00 | 1003 | 0000 | 316 | 0 | 000000 | 000000 |
| 064000 | 00 | 1003 | | | | | |
| 102000 | 00 | 1004 | | | | | |
| 120000 | 00 | 1003 | | | | | |
| 140000 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 060000 | 00 | 1003 | 0000 | 317 | 0 | 000000 | 000000 |
| 070000 | 00 | 1003 | | | | | |
| 103000 | 00 | 1004 | | | | | |
| 125000 | 00 | 1003 | | | | | |
| 144400 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 061800 | 00 | 1003 | 0000 | 318 | 0 | 000000 | 000000 |
| 082500 | 00 | 1003 | | | | | |
| 112200 | 00 | 1004 | | | | | |
| 132600 | 00 | 1003 | | | | | |
| 150700 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 060000 | 00 | 1004 | 0000 | 325 | 0 | 000000 | 000000 |
| 070000 | 00 | 1004 | | | | | |
| 075000 | 00 | 1003 | | | | | |
| 090000 | 00 | 1002 | | | | | |
| 131000 | 00 | 1001 | | | | | |
| 183800 | 00 | 1002 | | | | | |
| 060000 | 00 | 1005 | 0000 | 326 | 0 | 000000 | 000000 |
| 061300 | 00 | 1005 | | | | | |
| 071000 | 00 | 1004 | | | | | |
| 082500 | 00 | 1003 | | | | | |
| 093000 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 060000 | 00 | 1005 | 0000 | 327 | 0 | 000000 | 000000 |
| 073000 | 00 | 1005 | | | | | |
| 084000 | 00 | 1004 | | | | | |
| 095000 | 00 | 1003 | | | | | |
| 110000 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 061000 | 00 | 1003 | 0000 | 331 | 0 | 000000 | 000000 |
| 080000 | 00 | 1003 | | | | | |
| 110000 | 00 | 1004 | | | | | |
| 122400 | 00 | 1003 | | | | | |
| 134500 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 060000 | 00 | 1003 | 0000 | 338 | 0 | 000000 | 000000 |
| 065000 | 00 | 1003 | | | | | |
| 070500 | 00 | 1002 | | | | | |
| 134000 | 00 | 1001 | | | | | |
| 160000 | 00 | 1002 | | | | | |
| 180000 | 00 | 1001 | | | | | |
| 060000 | 00 | 1003 | 0000 | 339 | 0 | 000000 | 000000 |
| 071500 | 00 | 1003 | | | | | |

094200 00 1002
180000 00 1001
060000 00 1003 0000 340 0 000000 000000
073200 00 1003
090000 00 1002
150000 00 1001
170000 00 1002
180000 00 1001
060000 00 1004 0000 341 0 000000 000000
071800 00 1004
083200 00 1003
094200 00 1002
180000 00 1001

ABSTRACT OF VELOCITY CORRECTIONS H-9017 (AR 10-6-68)

VELOCITY TAPE TYPE NO. 2

All depths and corrections are in fathoms. These corrections apply to all soundings of the survey.

000040 00 0000 0001 000 0 000000 000000 (Ship)
000070 00 0002
000110 00 0004
000150 00 0006
000190 00 0008
000230 00 0010
000270 00 0012
000310 00 0014
000350 00 0016
000395 00 0018
000438 00 0020
000480 00 0022
000524 00 0024
000570 00 0026
000616 00 0028
000663 00 0030
000711 00 0032
000760 00 0034
000811 00 0036
000863 00 0038
000928 00 0040
000982 00 0042
001033 00 0044
001190 00 0048
001350 00 0053
001540 00 0058
001750 00 0063
002020 00 0068
000010 00 0001 0002 000 0 000000 000000 (Launches)
000040 00 0003
000070 00 0005
000110 00 0007
000150 00 0009
000190 00 0011
000230 00 0013
000270 00 0015
000310 00 0017
000350 00 0019
000395 00 0021
000438 00 0023
000480 00 0025
000524 00 0027
000570 00 0029
000616 00 0031
000663 00 0033

(Let 1 inch equal 4 fathoms for deep water and 1 inch equal 0.4 fathom for shoal.)

CORRECTIONS IN XXXX, FATHOMS

| | |
|--|--|
| FORM CGS-117 (4-68) | U.S. DEPARTMENT OF COMMERCE COAST AND GEODETIC SURVEY |
| VELOCITY CORRECTIONS | |
| Ship <u>USCGC EGSS MCARTHUR</u> | |
| by <u>R. L. NEWSOM (CDR., USESSA) Comdr.</u> | |
| These corrections are to be used | |
| between <u>11 NOVEMBER 1968</u> and <u>12 DEC. 1968</u> | |
| in the locality <u>WEST COAST HAWAII ISLAND</u> | |
| for hydrographic surveys Nos. <u>H 9017 (AR 10-6-68)</u> | |
| <u>& H 9019 (AR 10-8-68) & H 9018</u> | |

For deep water add a 0 to these figures

DEPTHS IN FATHOMS

RESULTS OF NANSEN
CAST OF 10 DEC. 1968

VALUES FROM UNIV. OF HAWAII
TABLES, SHIFTED 0.15 fm
TO THE RIGHT TO MATCH THE
NANSEN CAST CURVE.

| DEPTH (fm) | CORRECTION (fm) |
|------------|-----------------|
| 1.0 | 0.0 |
| 4.0 | 0.2 |
| 7.0 | 0.4 |
| 11.0 | 0.6 |
| 15.0 | 0.8 |
| 19.0 | 1.0 |
| 23.0 | 1.2 |
| 27.0 | 1.4 |
| 31.0 | 1.6 |
| 35.0 | 1.8 |
| 39.0 | 2.0 |
| 43.8 | 2.2 |
| 48.0 | 2.4 |
| 52.4 | 2.46 |
| 57.0 | 2.68 |
| 61.6 | 2.80 |
| 66.3 | 3.02 |
| 71.1 | 3.24 |
| 76.0 | 3.46 |
| 81.1 | 3.68 |
| 86.3 | 3.80 |
| 92.8 | 4.02 |
| 98.2 | 4.24 |
| 103.3 | 4.46 |
| 119.0 | 5.05 |
| 135.0 | 5.05 |
| 151.0 | 5.80 |
| 175.0 | 6.05 |
| 202.0 | 76.50 |

NOTE: TRANSDUCER DRAFT CORRECTIONS (SHIP -0.2 fm; LAUNCHES +0.2 fm) ARE INCLUDED IN THE VELOCITY TABLES.

| | | | | | | |
|-------|-----|----|----------|-----------|-------|-------|
| 09017 | 001 | 68 | 20085668 | 155535530 | 07544 | 14420 |
| 09017 | 002 | 68 | 20084403 | 155535430 | 07514 | 14012 |
| 09017 | 003 | 68 | 20082907 | 155534332 | 07179 | 13529 |
| 09017 | 004 | 68 | 20082059 | 155532183 | 06523 | 13255 |
| 09017 | 005 | 68 | 20081636 | 155534300 | 07169 | 13119 |
| 09017 | 006 | 68 | 20080842 | 155533949 | 07062 | 12862 |
| 09017 | 007 | 68 | 20075662 | 155533956 | 07064 | 12481 |
| 09017 | 008 | 68 | 20074159 | 155533925 | 07055 | 11906 |
| 09017 | 009 | 68 | 20073259 | 155533350 | 06879 | 11706 |
| 09017 | 010 | 68 | 20072676 | 155532775 | 06704 | 11518 |
| 09017 | 011 | 68 | 20071613 | 155532231 | 06538 | 11174 |
| 09017 | 012 | 68 | 20071050 | 155531701 | 06376 | 10993 |
| 09017 | 013 | 68 | 20065779 | 155531363 | 06274 | 10582 |
| 09017 | 014 | 68 | 20065291 | 155531071 | 06184 | 10425 |
| 09017 | 015 | 68 | 20064611 | 155530726 | 06080 | 10205 |
| 09017 | 016 | 68 | 20063470 | 155530083 | 05883 | 09837 |
| 09017 | 017 | 68 | 20063437 | 155531095 | 06192 | 09826 |
| 09017 | 018 | 68 | 20061691 | 155525442 | 05688 | 09262 |
| 09017 | 019 | 68 | 20060481 | 155524933 | 05532 | 08872 |
| 09017 | 020 | 68 | 20055551 | 155524496 | 05399 | 08572 |
| 09017 | 021 | 68 | 20054039 | 155523766 | 05177 | 08083 |
| 09017 | 022 | 68 | 20053057 | 155523019 | 04949 | 07766 |
| 09017 | 023 | 68 | 20052358 | 155522626 | 04829 | 07541 |
| 09017 | 024 | 68 | 20051428 | 155521535 | 04496 | 07240 |
| 09017 | 025 | 68 | 20050335 | 155521012 | 04337 | 06888 |
| 09017 | 026 | 68 | 20045343 | 155520533 | 04191 | 06567 |
| 09017 | 027 | 68 | 20044657 | 155520158 | 04076 | 06346 |
| 09017 | 028 | 68 | 20043909 | 155514120 | 03454 | 06105 |
| 09017 | 029 | 68 | 20042546 | 155513373 | 03225 | 05665 |
| 09017 | 030 | 68 | 20041620 | 155512953 | 03098 | 05365 |
| 09017 | 031 | 68 | 20040842 | 155512499 | 02960 | 05114 |
| 09017 | 032 | 68 | 20040117 | 155511879 | 02771 | 04880 |
| 09017 | 033 | 68 | 20035672 | 155511473 | 02647 | 04736 |
| 09017 | 034 | 68 | 20035203 | 155510995 | 02501 | 04585 |
| 09017 | 035 | 68 | 20034302 | 155506782 | 02131 | 04294 |
| 09017 | 036 | 68 | 20033659 | 155505083 | 01918 | 04087 |
| 09017 | 037 | 68 | 20032624 | 155504887 | 01858 | 03753 |
| 09017 | 038 | 68 | 20031919 | 155504611 | 01774 | 03525 |
| 09017 | 039 | 68 | 20031408 | 155503397 | 01403 | 03360 |
| 09017 | 040 | 68 | 20030556 | 155502987 | 01278 | 03085 |
| 09017 | 041 | 68 | 20025896 | 155502660 | 01178 | 02872 |
| 09017 | 042 | 68 | 20025089 | 155502158 | 01025 | 02612 |
| 09017 | 043 | 68 | 20024452 | 155501542 | 00837 | 02406 |
| 09017 | 044 | 68 | 20024013 | 155500822 | 00617 | 02264 |
| 09017 | 045 | 68 | 20022533 | 155501222 | 00739 | 01786 |

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List of Stations On
H 9017 (AR 10-6-68)

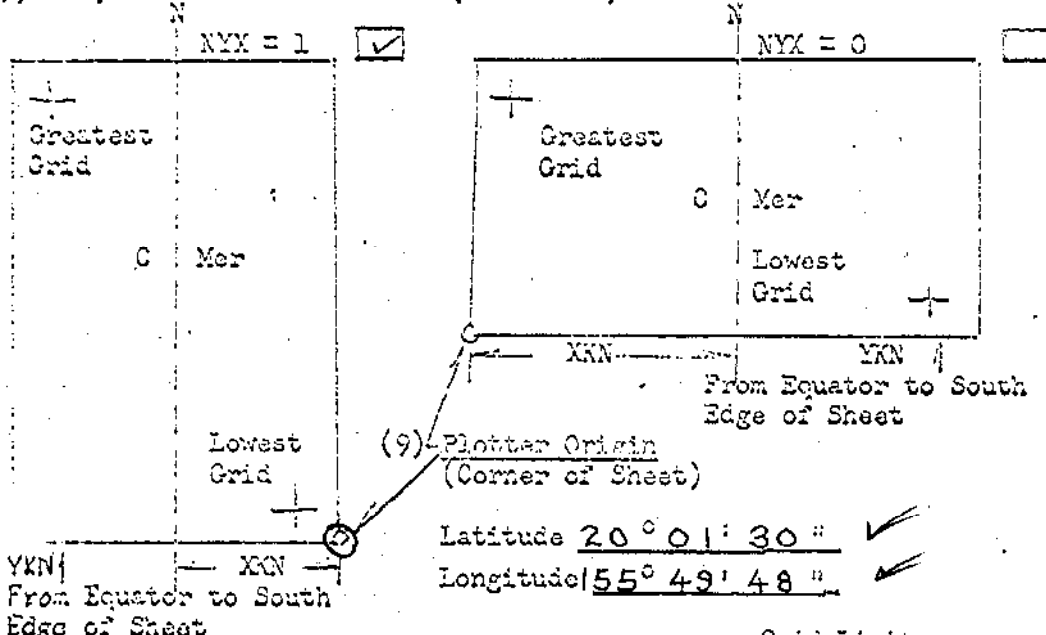
| <u>Name</u> | <u>Number</u> | <u>Origin</u> |
|-------------|---------------|----------------------|
| ABE | 043 | T12533 |
| ACE | 025 | T12532 |
| AIM | 010 | T12531 |
| BOB | 042 | T12533 |
| BON | 009 | T12530 |
| CAM | 024 | T12532 |
| COD | 008 | T12530 |
| CON | 041 | T12533 |
| DIM | 040 | T12533 |
| EGO | 023 | T12532 |
| EMD | 045 | T12533 |
| EVA | 039 | T12533 |
| FED | 007 | T12530 |
| FIN | 038 | T12533 |
| GEM | 037 | T12533 |
| GIN | 022 | T12532 |
| HAM | 005 | T12530 |
| HEN | 004 | KEHENA, 1881 |
| HUT | 036 | T12533 |
| IDA | 035 | T12533 |
| JIM | 034 | T12532 |
| JOE | 021 | T12531 |
| JOY | 006 | T12530 |
| JRC | 046 | GRID POINT |
| KEA | 016 | KEAWAHI, 1881 |
| KEN | 033 | T12532 |
| KIM | 020 | T12531 |
| LEO | 032 | T12532 |
| LUG | 019 | T12531 |
| MAX | 031 | T12532 |
| MIK | 003 | T12530 |
| NED | 030 | T12532 |
| OBI | 018 | T12531 |
| OIL | 029 | T12532 |
| PIN | 027 | T12532 |
| POI | 001 | T12530 |
| PUP | 017 | T12531 |
| RAG | 026 | T12532 |
| RAM | 015 | T12531 |
| SAM | 014 | T12531 |
| TAN | 013 | T12531 |
| TOM | 002 | T12530 |
| VIM | 012 | T12531 |
| WAI | 044 | KAWAIHAE LIGHT, 1928 |
| WIG | 011 | T12531 |
| WIN | 028 | T12532 |
| ZOT | 047 | GRID POINT |

Abstract of Position Numbers
On H 9017 (AR 10-6-68)

| Vessel | Day | Date | Julian Day | Positions |
|-------------|-----|-------------|------------|-----------|
| McARTHUR | A | 26 Nov 1968 | 331 | 3002-3016 |
| | B | 3 Dec 1968 | 338 | 3019-3218 |
| | C | 4 Dec 1968 | 339 | 3223-3478 |
| | D | 5 Dec 1968 | 340 | 3482-3598 |
| | E | 6 Dec 1968 | 341 | 3599-3612 |
| Launch AR-1 | a | 11 Nov 1968 | 316 | 1000-1077 |
| | b | 12 Nov 1968 | 317 | 1078-1257 |
| | c | 13 Nov 1968 | 318 | 1257-1413 |
| | d | 20 Nov 1968 | 325 | 1419-1566 |
| | e | 22 Nov 1968 | 327 | 1694-1714 |
| | f | 12 Dec 1968 | 347 | 1721-1725 |
| Launch AR-2 | a | 21 Nov 1968 | 326 | 1567-1693 |

SYSTEMS FOR SPECIAL OPERATIONS
HYDROGRAPHIC SURVEILLANCE

- (1) Project No. OPR-419
- (2) H No. _____
- (3) Field No. E-03058
- (4) Requested by PROJECTS, PMC
- (5) Ship or Office McARTHUR
- (6) Date Required A.S.A.P.
- (7) Visual Ft.(0) or Fathoms (1) (8) Electronic (fill out form #3)
- 10) XKN (SP 5) Distance from CMER to East Edge (NYX = 1) or West Edge (NYX = 0). 4,708.4 Meters
- 11) YKN (SP 24) Distance from Equator to South Edge of Sheet. 2,215,002.1 Meters
- 12) Central Meridian 155° 52' 30"
- 13) Survey Scale 1:10,000
- 14) Size of Sheet (Check one) 36x60 42x60
- 15) NYX, Orientation of sheet (Check one)



Grid Limits

| | | |
|-------------------------|---------------------|--------------------------------|
| (16) Greatest Latitude | <u>20° 09' 30"</u> | (Projection Line) |
| (17) Lowest Latitude | <u>20° 02' 00"</u> | (Interval Page 4 Hydro Manual) |
| (18) Difference | <u>07' 30"</u> | (19) <u>00' 30"</u> |
| (21) Greatest Longitude | <u>155° 55' 00"</u> | (20) <u>15</u> XSN |
| (22) Lowest Longitude | <u>155° 50' 00"</u> | (24) <u>00' 30"</u> |
| (23) Difference | <u>05' 00"</u> | (25) <u>10</u> XSN |

Comp. by: G.H.E.
 by: _____

HYDRO II- AND III PARAMETER CARDS

H
Field No. 03058 (414-E)
Date 10/12/68

PARAMETER CARD II

| | | | | | | | | | | | |
|---|---|------------------------|---|---|---|---|---|---|---|---|---|
| Semi major axis of the earth | | 6,378,206.4 | | | | | | | | | |
| X Constant - Distance from central meridian to origin of plotter SP 5 | | meters | | | | | | | | | |
| Y Constant - Distance from equator to origin of plotter SP 241 | | meters | | | | | | | | | |
| Central Meridian of Projection | ✓ | 1 | 5 | 5 | 5 | 2 | 3 | 0 | 0 | 0 | 0 |
| Plotter Scale/Survey Scale | ✓ | *10498.6876 1:70000 | | | | | | | | | |
| North/south axis of sheet - to correspond to (Y axis - 0) | | | | | | | | | | | |
| Feet/Fathom indicator | | 0 - Feet 1 - Fathom | | | | | | | | | |
| H Identification No. | | | | | | | | | | | |
| FOR - 1 | | | | | | | | | | | |

PARAMETER CARD III

| | | | | | | | | | | | | | | | | | | | |
|---------------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Lowest Lat. Intersection | ✓ | 2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Lowest Long. Intersection | ✓ | 1 | 5 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Difference between Grid | ✓ | | | | | | | | | | | | | | | | | | |
| Interval (Long) | | | | | | | | | | | | | | | | | | | |
| Interval (Lat) | | | | | | | | | | | | | | | | | | | |

Computed DR
Punched MM
Checked MM
Date 10/12/68

FORM CGCS-733M
(6-68)

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

U.S. DEPARTMENT OF COMMERCE
ESSA
COAST AND GEODETIC SURVEY

| SERIAL NO. | DATE | SAMPLE POSITION | | DEPTH (Fathoms) | WEIGHT OF SAMPLER | AP- PROX. PENE- TRATION | LENGTH OF CORE | COLOR OF SEDI- MENT | FIELD DESCRIPTION | REMARKS <small>(Unusual conditions, corals, organisms, depth cutters, etc.; no. type of bottom noted; etc.)</small> | OBS. INIT. |
|--|----------|-----------------|-----------|--------------------|-------------------------|----------------------------------|----------------------|------------------------------|-------------------|--|---------------|
| | | LATITUDE | LONGITUDE | | | | | | | | |
| VESSEL LAUNCH AR-2 PROJ. NO. 419 YEAR 1968 AR 10-6-68 Launch 152 CHECKED BY DATE CHECKED | | | | | | | | | | | |
| 1681 | 11-21-68 | 155 54.0 | 20 08.7 | 9 | 18 | | | | wh s & brk Co | | |
| 1682 | 11-21-68 | 155 53.8 | 20 08.3 | 12 | 18 | | | | wh s & Co | | |
| 1683 | 11-21-68 | 155 53.7 | 20 07.7 | 7 | 18 | | | | Co | | |
| 1648 | 11-21-68 | 155 53.6 | 20 07.3 | 6 | 18 | | | | hrd | | |
| 1692 | 11-21-68 | 155 53.5 | 20 06.7 | 8 | 18 | | | | Co | | |
| 1693 | 11-21-68 | 155 53.1 | 20 06.2 | 10 | 18 | | | | wh s & brk Co | | |
| | | | | | | | | | | | |
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Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

| VESSEL | SERIAL NO. | DATE | SAMPLE POSITION | | DEPTH (Fathoms) | WEIGHT OF SAMPLER | AP- PROX. PEN- TRA- TION | LENGTH OF CORE | COLOR OF SEDI- MENT | FIELD DESCRIPTION | REMARKS (Unusual conditions, cohesion, density, cutter, size, no., type of bottom relief i.e., slope, plain, disposition, etc.) | OBS. INIT. |
|----------|------------|----------|-----------------|-----------|--------------------|-------------------------|--------------------------------------|----------------------|------------------------------|-------------------------------------|--|---------------|
| | | | LATITUDE | LONGITUDE | | | | | | | | |
| MCARTHUR | | | OPR | 419 | 1968 | AK | 10-6-68 | | | HAWAII ISL. | | |
| | | | PROJ. NO. | | YEAR | | | | | CHECKED BY | | DATE CHECKED |
| 3599 | 12-6-68 | 185 52.7 | 20 05.1 | 32 | 45 | | | | | blk S, fine gy S, blk sh | | |
| 3600 | 12-6-68 | 185 53.3 | 20 05.3 | 61 | 45 | | | | | crs gy S, fine gy S, blk sh | | |
| 3601 | 12-6-68 | 185 53.8 | 20 04.9 | — | 45 | | | | | slt br M, fld br S | | |
| 3602 | 12-6-68 | 185 53.2 | 20 04.9 | 72 | 45 | | | | | crs gy S, crs br S, blk sh | | |
| 3603 | 12-6-68 | 185 52.6 | 20 04.8 | 43 | 45 | | | | | fine gy S, blk sh, blk co | | |
| 3604 | 12-6-68 | 185 52.2 | 20 04.1 | 46 | 45 | | | | | fine gy S, blk sh, blk co | | |
| 3605 | 12-6-68 | 185 52.9 | 20 04.3 | 09 | 45 | | | | | crs gy S, blk sh, blk co | NOT ENOUGH SAMPLE TO KEEP | |
| 3606 | 12-6-68 | 185 53.4 | 20 04.4 | 95 | 46 | | | | | br S, fine br S, blk sh | | |
| 3607 | 12-6-68 | 185 52.7 | 20 03.9 | 76 | 45 | | | | | crs br S, fine br S, blk sh, blk co | | |
| 3608 | 12-6-68 | 185 52.2 | 20 03.8 | 58 | 45 | | | | | crs br S, fine br S, blk sh, blk co | | |
| 3609 | 12-6-68 | 185 51.6 | 20 03.7 | 37 | 45 | | | | | crs br S, fine br S, blk sh, blk co | | |
| 3610 | 12-6-68 | 185 51.2 | 20 03.3 | 35 | 45 | | | | | co | | |
| 3611 | 12-6-68 | 185 51.7 | 20 03.2 | 75 | 45 | | | | | slt br, fine br S | | |
| 3612 | 12-6-68 | 185 52.1 | 20 03.2 | 75 | 45 | | | | | crs br S, blk co, blk sh | | |

Use more than one line per sample if necessary.

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

| VESSEL | SERIAL NO. | DATE | PROJ. NO. | | YEAR | DEPTH (Fathoms) | WEIGHT OF SAMPLER | APPROX. FINESTRACTION | LENGTH OF CORE | COLOR OF SEDIMENT | FIELD DESCRIPTION | REMARKS (Unusual conditions, corals, etc., depth, slope, plain, disposition, etc.) | OBS. INIT. |
|----------|------------|---------|-----------|---------|------|-----------------|-------------------|-----------------------|----------------|-------------------|--------------------------------|---|------------|
| | | | ORR | 419 | | | | | | | | | |
| McArthur | 3587 | 12-5-68 | 155.54.4 | 26.08.1 | 1968 | 46.8 | 75 lb | N/A | N/A | | CRS. gy S. brk Co. brk Sh. | | |
| | 3588 | " | 155.54.4 | 26.07.6 | | 54.5 | 75 | N/A | N/A | | CRS. gy S. brk Co. brk Sh. | | |
| | 3589 | " | 155.54.4 | 26.07.3 | | 56.2 | " | N/A | N/A | | CRS. gy S. brk Co. brk Sh. | | |
| | 3590 | " | 155.54.4 | 26.06.8 | | 66.9 | " | N/A | N/A | | CRS. gy S. brk Co. brk Sh. | | |
| | 3591 | " | 155.54.4 | 26.06.3 | | 77.8 | " | N/A | N/A | | brk Co. brk Sh. | | |
| | 3592 | " | 155.54.4 | 26.05.7 | | 96.0 | " | N/A | N/A | | Co. S. | | |
| | 3593 | " | 155.54.4 | 26.05.2 | | 136.0 | " | N/A | N/A | | br M. | | |
| | 3594 | " | 155.53.7 | 26.05.3 | | 70.2 | " | N/A | N/A | | br M. brk Sh. brk Co. | | |
| | 3595 | " | 155.53.9 | 26.05.8 | | 60.0 | " | N/A | N/A | | br M. brk Sh. brk Co. | | |
| | 3596 | " | 155.53.7 | 26.05.9 | | 33.5 | " | N/A | N/A | | blk. S. wh. S. brk Sh. brk Co. | | |
| | 3597 | " | 155.53.9 | 26.06.2 | | 55.2 | " | N/A | N/A | | wh. S. blk. S. brk Sh. brk Co. | | |
| | 3598 | " | 155.53.8 | 26.06.6 | | 36.3 | " | N/A | N/A | | Co, Wd | | |

CHECKED BY

DATE CHECKED

OCEANOGRAPHIC LOG SHEET - M
BOTTOM SEDIMENT DATA

| VESSEL | SERIAL NO. | DATE | PROJ. NO. | | YEAR | DEPTH (Fathoms) | WEIGHT OF SAMPLER | AP- PROX. TRAN- SECTION | LENGTH OF CORE | COLOR SED- IMENT | FIELD DESCRIPTION | REMARKS (Unusual conditions, corals, shells, detrital matter, etc., type of bottom, relief, etc., slope, plain, deposition, etc.) | OBS. INIT. |
|----------|------------|---------|-----------|---------|------|--------------------|-------------------------|----------------------------------|----------------------|------------------------|--|--|---------------|
| | | | OPR | 419 | | | | | | | | | |
| MCARTHUR | 3599 | 12-6-68 | 155 52.7 | 20 05.1 | 1968 | 32 | 45 | | | | blk S, fine gy S, blk Sh | | |
| | 3600 | 12-6-68 | 155 53.3 | 20 05.3 | | 61 | 45 | | | | crs gy S, fine gy S, blk Sh | | |
| | 3601 | 12-6-68 | 155 53.8 | 20 04.9 | | — | 45 | | | | sft br M, fine br S | | |
| | 3602 | 12-6-68 | 155 53.2 | 20 04.9 | | 72 | 45 | | | | crs gy S, crs brs, blk Sh | | |
| | 3603 | 12-6-68 | 155 52.6 | 20 04.8 | | 43 | 45 | | | | fine gy S, blk Sh, blk Co | | |
| | 3604 | 12-6-68 | 155 52.2 | 20 04.1 | | 46 | 45 | | | | fine gy S, blk Sh, blk Co | | |
| | 3605 | 12-6-68 | 155 52.9 | 20 04.3 | | 69 | 45 | | | | crs gy S, blk Sh, blk Co | Not enough sample to keep | |
| | 3606 | 12-6-68 | 155 53.4 | 20 04.4 | | 95 | 46 | | | | br S, fine br S, blk Sh | | |
| | 3607 | 12-6-68 | 155 52.7 | 20 03.9 | | 76 | 45 | | | | crs br S, fine br S, blk Sh, blk Co | | |
| | 3608 | 12-6-68 | 155 52.2 | 20 03.8 | | 58 | 45 | | | | crs br S, fine br S, blk Sh, blk Co | | |
| | 3609 | 12-6-68 | 155 51.6 | 20 03.7 | | 37 | 45 | | | | crs br S, fine br S, blk Sh, blk Co | | |
| | 3610 | 12-6-68 | 155 51.2 | 20 03.3 | | 35 | 45 | | | | Co | | |
| | 3611 | 12-6-68 | 155 51.7 | 20 03.2 | | 75 | 45 | | | | sft br, fine br S | | |
| | 3612 | 12-6-68 | 155 52.1 | 20 03.2 | | 75 | 45 | | | | crs br S, blk Co, blk Sh | | |

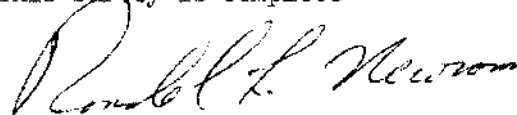
Use more than one line per sample if necessary.

List of Basic Field Records
To Accompany
H 9017-AR 10-6-68

1 Boatsheet
8 Form #275 - sounding volumes
12 Envelopes of DE 723 fathograms
2 Advance Manuscript #T12533 scale 1:10,000 (mailed with H9018 records)
2 Advance Manuscript #T12532 scale 1:10,000
2 Advance Manuscript #T12531 scale 1:10,000
2 Advance Manuscript #T12530 scale 1:10,000
4 Sheets C&GS form 733-M, Bottom Sample Log
1 Tide Tape and 2 pages printout
1 Revised signal tape and 1 page printout
1 Velocity tape type no. 2 & 1 page printout
1 Form 733A, Oceanographic Log Sheet A - with 1 page
of curve and 2 pages of computations (mailed with
records of H 9019)
1 Abstract of barchecks
1 Form #1 parameters for Digital computing polyconic
projection
1 *Signal Overlay*

Approval Sheet
for
H 9017 (AR 10-6-68)

Field work on this survey was accomplished under my general supervision. Frequent inspections of the Field data and boatsheet were made by me as the survey progressed. The sounding records have been inspected by me and are approved. This survey is complete and adequate, and is hereby approved.



9 July 1969

Ronald L. Newsom
CDR, USESSA
Commanding Officer
USC&GSSMcARTHUR

GEOGRAPHIC NAMES

Survey No. H-9017

| Name on Survey | Source of Name | | | | | | | | | | |
|-----------------|----------------|---|---|---|---|---|---|---|---|--|----|
| | A | B | C | D | E | F | G | H | K | | |
| Hawaii Island | | | | | | | | | | | 1 |
| Kaioopae Point | | | | | | | | | | | 2 |
| Kawaiahae | | | | | | | | | | | 3 |
| Keawamui Bay | | | | | | | | | | | 4 |
| Keawaula Bay | | | | | | | | | | | 5 |
| Malae Point | | | | | | | | | | | 6 |
| Pacific Ocean | | | | | | | | | | | 7 |
| Waiakeailio Bay | | | | | | | | | | | 8 |
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PREPARED BY

Frank M. Adcox
CARTOGRAPHIC ENGINEER

APPROVED BY

A. Joseph Wright
CHIEF GEOGRAPHER

VERIFIER'S REPORT

H-9017 West coast, Hawaii Island, Hawaii AR-10-6-68

This sheet was constructed and plotted at Pacific Marine Center, Seattle, Washington. Information relating to this will be noted under the heading by the number and letter as on the Verifier's Report C&GS form 946A.

PART II SHORELINE AND SIGNALS

List of Manuscripts; T-12530, T-12531, T-12532 and T-12533.

4. The date of photographs; August 1963.
Field inspection date; May-June 1964.
Field Edit date; December 1968.

7. Signal 042 falls outside the high-water line and has not been described.

PART III JUNCTIONS

10. Junction with H-9018, AR-10-7-68, on the South section was satisfactory. H-9019, AR-10-8-68, on the North section is being processed. H-9015, AR-40-1-69, on the West section is also being processed.

PART VII CURVES

23. The depth curves were inspected by Richard Lynn, cartographic technician.

25. In some inshore areas the depth curves were not completed due to lack of soundings.

CHART COMPARISON

Comparison was made with C&GS chart 4140, 1/80,000, 4th Edition, October 25, 1969. In general the comparison was excellent except for a few soundings noted in red on the chartlet included with this report.

PRIOR SURVEYS

Prior surveys H-3652 and H-3650 were not available to make comparison.

Respectfully Submitted,
Nicholas Lestenkof
Nicholas Lestenkof
Cartographic Technician

FORM C&GS-946
(REV. 11-65)
(PRESC. BY
HYDROGRAPHIC
MANUAL 20-2,
6-94, 7-13)

U.S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
COAST AND GEODETIC SURVEY
NAUTICAL CHART DIVISION

HYDROGRAPHIC SURVEY STATISTICS
HYDROGRAPHIC SURVEY NO. H-9017

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

| RECORD DESCRIPTION | AMOUNT | RECORD DESCRIPTION | AMOUNT |
|--------------------|--------|--------------------|--------|
| SMOOTH SHEET & PNO | 1 | BOAT SHEETS | 1 |
| DESCRIPTIVE REPORT | 1 | OVERLAYS | 3 |

| DESCRIPTION | DEPTH RECORDS | HORIZ. CONT. RECORDS | PRINTOUTS | TAPE ROLLS | PUNCHED CARDS | ABSTRACTS/SOURCE DOCUMENTS |
|-----------------------|---------------|----------------------|-----------|------------|---------------|----------------------------|
| STATISTICAL ENVELOPES | | | 1 | | | |
| CAHIERS | 1 | | | | | |
| VOLUMES | 8 | | | | | |
| BOXES | | | 1 | | | |

T-SHEET PRINTS (List)

SPECIAL REPORTS (List)

OFFICE PROCESSING ACTIVITIES

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

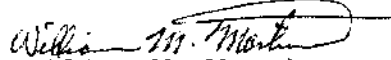
| PROCESSING ACTIVITY | AMOUNTS | | | |
|--|------------------|--------------|--------|--------|
| | PRE-VERIFICATION | VERIFICATION | REVIEW | TOTALS |
| POSITIONS ON SHEET | | | | 1287 |
| POSITIONS CHECKED | | 1287 | | |
| POSITIONS REVISED | | 37 | | |
| DEPTH SOUNDINGS REVISED | | 356 | | |
| DEPTH SOUNDINGS ERRONEOUSLY SPACED | | - | | |
| SIGNALS ERRONEOUSLY PLOTTED OR TRANSFERRED | | - | | |
| | TIME (MANHOURS) | | | |
| TOPOGRAPHIC DETAILS | | 24 | | |
| JUNCTIONS | | 4 | | |
| VERIFICATION OF SOUNDINGS FROM GRAPHIC RECORDS | | 126 | | |
| SPECIAL ADJUSTMENTS | | 20 | | |
| ALL OTHER WORK | | 25 | | |
| TOTALS | | 199 | | |

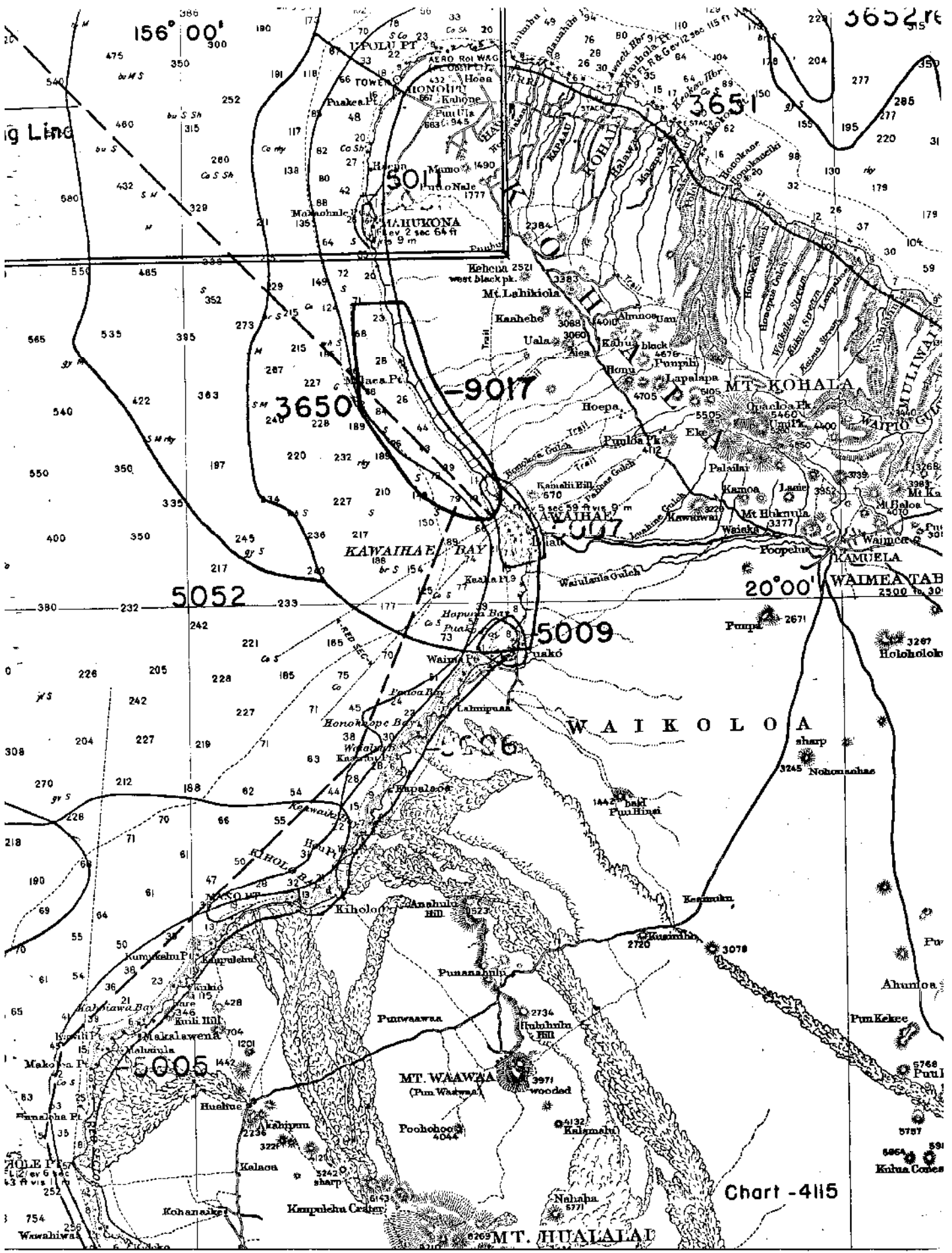
| | | |
|---|---------------------------|-------------------------|
| PRE-VERIFICATION BY | BEGINNING DATE | ENDING DATE |
| VERIFICATION BY <i>Michael S. Lentz</i> | BEGINNING DATE 11/2/70 | ENDING DATE Nov-9-71 |
| REVIEW BY | BEGINNING DATE | ENDING DATE |

APPROVAL SHEET

The smooth sheet has been inspected, is complete, and meets the requirements of the General Instructions for automated surveys and the Hydrographic Manual. (Note; All exceptions are listed in the Verifier's Report.)

Examined and approved


William M. Martin
Acting Chief, Processing
Division
Pacific Marine Center



156° 00'

3654.6

5011

3651

3650

-9017

5052

5009

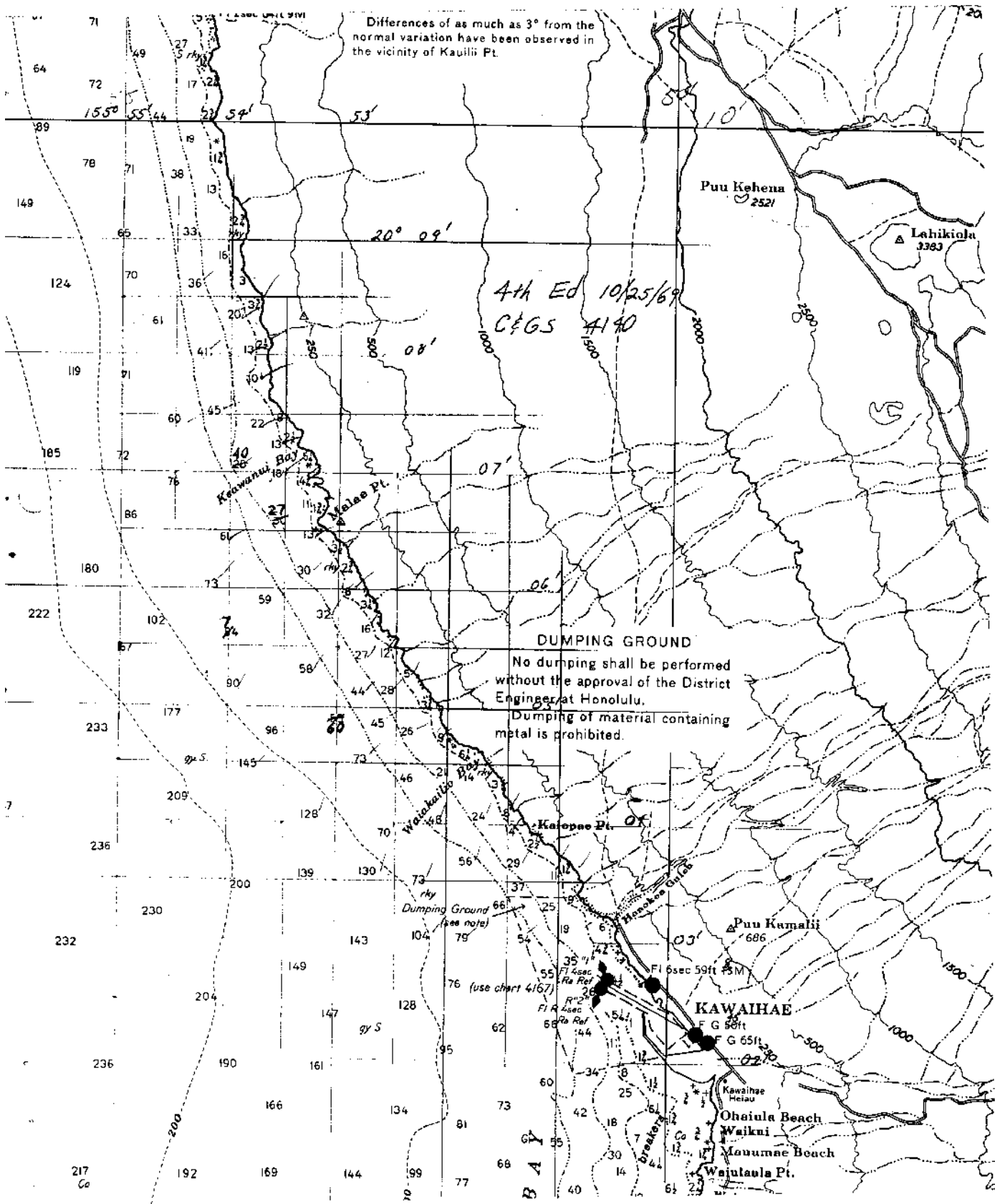
20° 00'

3506

5005

Chart - 4115

MT. HUALALAI



Differences of as much as 3° from the normal variation have been observed in the vicinity of Kaullii Pt.

4th Ed 10/25/69
C&GS 4140

DUMPING GROUND
No dumping shall be performed without the approval of the District Engineer at Honolulu.
Dumping of material containing metal is prohibited.

Puu Kehena
2521

Lahikiola
3363

Kaunani Bay
Maaloa Pt.

Kaunani Pt.

Puu Kamalii
686

KAWAIHAE
F G 58ft
F G 65ft

Kawaihae Meiau
Ohaiula Beach
Waikui
Maumae Beach
Waiulala Pt.

BAY

217
Co

VERIFIER'S REPORT
HYDROGRAPHIC SURVEY, H-9017

INSTRUCTIONS - This form serves to identify items of a check list in verification together with items which are separately reported to the Reviewer. The form is not to be forwarded to the Reviewer. A report, which is prepared for the Reviewer, should identify items by number and letter and will be filed in the Descriptive Report until the survey is reviewed.

CL - Check List Items: should be checked as having been completed during the verification processes.

R - Report Item: This column refers to those items reported to the reviewer and is used to indicate the items discussed.

| Part I - DESCRIPTIVE REPORT | CL | R | Part III - JUNCTIONS (Continued) | CL | R |
|--|----|---|--|----|---|
| <p>Note: The verifier should first read the Descriptive Report for general information and problems.</p> <p>1. The Descriptive Report was consulted, paragraphs checked if found satisfactory, and notations were made in soft black pencil regarding action taken. Remarks Required: -- None</p> | ✓ | | <p>10. Junctions with contemporary surveys were satisfactory except as follows: Remarks Required: -- Consider conditions after adjustments have been made; note adjustments made. Make special notes of Butt junctions and areas which are SUPERSEDED.</p> | | ✓ |
| <p>2. Soundings originating with the survey and mentioned in the Descriptive Report have been verified and checked in soft black pencil, including latitude and longitude, together with position identification. Remarks Required: -- None</p> | ✓ | | <p>Part IV - VOLUMES 11. All items affecting the plotting of the survey which are entered in the remarks columns of the sounding records were noted and check marked. In all cases appropriate action was taken and exceptions noted in the volumes. Remarks Required: -- None</p> | ✓ | |
| <p>3. All reference to survey sheets mentioned in the Descriptive Report should include registry number and year. Remarks Required: -- None</p> | ✓ | | <p>12. Condition of sounding records was satisfactory except as follows: Remarks Required: -- Mention deficiencies in completeness of notes or actions for the following: (a) rocks (b) line turns (c) position values of beginning and ending of lines (d) bar check or velocity correctors (e) time recording (f) notes or markings on fathograms (g) was reduction of soundings accurately done? (h) was scanning accurate? (i) were peaks at uneven intervals missed? (j) were stamps completed? (k) references to adjacent features</p> | | |
| <p>Part II - SHORELINE AND SIGNALS 4. Source of shoreline signals Remarks Required: -- List all surveys a. Give earliest and latest dates of photographs b. Field inspection date c. Field Edit date d. Reviewed-Unreviewed</p> | | ✓ | | | |
| <p>5. The transfer of contemporary topographic information was carefully examined and reconciled with the hydrography. Remarks Required: -- Discuss remaining differences.</p> | ✓ | | | ✓ | |
| <p>6. The plotting of all triangulation stations, topographic stations and hydrographic signals has been checked and noted in processing stamp No. 42 on the smooth sheet. Remarks Required: -- None</p> | ✓ | | | | |
| <p>7. Objects on which signals are located and which fall outside of the high-water line have been described on the sheet. Remarks Required: -- List those signals still unidentified.</p> | | ✓ | <p>Part V - PROTRACTING 13. All positions verified instrumentally were check marked in color in the sounding records, and verifier initialed the processing stamp. Remarks Required: -- None</p> | ✓ | |
| <p>Part III - JUNCTIONS Note: Make a cursory comparison preliminary to inking soundings in area of overlap.</p> | ✓ | | <p>14. The protracting and plotting of all unsatisfactory crossings were verified. Remarks Required: -- None</p> | ✓ | |
| <p>8. All junctions of contemporary or overlapping sheets were transferred in colored ink and overlapping curves were made identical. Remarks Required: -- None</p> | ✓ | | <p>15. All detached positions locating critical soundings, rocks, buoys, breakers, obstructions, kelp, etc., were verified and the position numbers are legible. Remarks Required: -- None</p> | ✓ | |
| <p>9. The notation in slanted lettering "JOINS H---- (19)" was added in colored ink for all verified contemporary adjoining or overlapping sheets. Those not verified are shown in pencil. Remarks Required: -- None</p> | ✓ | | | | |

| Part V - PROTRACTING (Continued) | CL | R | Part VIII - AIDS TO NAVIGATION | CL | R |
|--|----|---|--|----|---|
| 16. The protracting was satisfactory except as follows: Remarks Required: -- Refers to protracting in general except for specific faults repeated often, or faults in control information, which required considerable replotting or adjustments. | ✓ | | 26. All fixed aids located together with those on the contemporary topographic sheets, have been shown on the survey. Remarks Required: -- Conflicts of any nature listed. | ✓ | |
| 17. The protractor has been checked within the last three months. Remarks Required: -- Date of check, type of protractor and number. | ✓ | | 27. All floating aids listed in the Descriptive Report should be verified and checked in soft black pencil, including latitude and longitude and position identification. Remarks Required: -- None | ✓ | |
| Part VI - SOUNDINGS | | | Part IX - BOATSHEET | | |
| 18. All soundings are clear and legible, and critical soundings are a little larger than adjacent soundings. Remarks Required: -- None | ✓ | | 28. The boat sheet was constantly compared with the smooth sheer with reference to notes, position of sounding lines and supplemental information. Remarks Required: -- None | ✓ | |
| 19. Sounding line crossings were satisfactory except as follows: Remarks Required: -- Discuss adjustments. | ✓ | | 29. Heights of rocks awash were correctly reduced and compared with topographic information. Remarks Required: -- Note excessive conflicts with topographic information. | ✓ | |
| 20. The spacing of soundings as recorded in the records was closely followed; Remarks Required: -- None | ✓ | | Part X - GENERAL | | |
| 21. The scanning, reduction, spacing, plotting of questionable soundings have been verified. Remarks Required: -- None | ✓ | | 30. All information on the sheet is shown in accordance with figures 82 and 83 in the Hydrographic Manual (Pub. 20-2). Remarks Required: -- None | ✓ | |
| 22. The smooth plotting of soundings was satisfactory except as follows: Remarks Required: -- Refer to legibility, errors in spacing, and errors in numbers - but not to errors in scanning. | ✓ | | 31. Unnecessary pencil notes have been removed from the sheet. Remarks Required: -- None | ✓ | |
| Part VII - CURVES | | | 32. Degree, minute values and symbols have been checked; also electronic distance arcs have been properly identified and checked on the smooth sheet. Remarks Required: -- None | ✓ | |
| 23. The depth curves have been inspected before inking. Remarks Required: -- By whom was the penciled curves inspected. | | ✓ | 33. The bottom characteristics are adequately shown. Remarks Required: -- None | ✓ | |
| 24. The low-water line and delineation of shoal areas have been properly shown in accordance with the following: a. From T-Sheet in dotted black lines b. From soundings in orange c. Approximate position of sketched curve is dashed orange d. Approximate position of shoal area not sounded in black dashed Remarks Required: -- None | ✓ | | Part XI - NOTES TO THE REVIEWER | | |
| 25. Depth curves were satisfactory except as follows: (This statement should not refer to the manner in which the curves were drawn). Remarks Required: -- Indicate areas where curves could not be drawn completely because of lack of soundings. For some inshore areas a general statement is sufficient. | | ✓ | 34. Unresolved discrepancies and questionable soundings. | ✓ | |
| | | | 35. Notation of discrepancies with photogrammetric survey inserted in report of unreviewed photogrammetric survey or on copy. | ✓ | |
| | | | 36. Supplemental information. | ✓ | |
| Verified by <i>Rudolph A. [Signature]</i> | | | Date Nov 9, 71 | | |

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. H-9017 (Category I)

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 |
|-------|----------|-------------------|--|
| 4140 | 12-17-71 | Charles S. Forbes | Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>Revised curves and hydro.</i> |
| 4000 | 7-14-72 | Charles S. Forbes | Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>Examined for critical corrections - none.</i> |
| 4179 | 7-16-73 | Charles S. Forbes | Full Part Before After Verification ^{before} Review Inspection Signed Via Drawing No. <i>Examined for critical corrections only - none!</i> |
| 4115 | 7-16-73 | Charles S. Forbes | Full Part Before After Verification ^{before} Review Inspection Signed Via Drawing No. <i>Examined for critical corrections - none</i> |
| 4167 | 9-4-73 | Charles S. Forbes | Full Part Before After Verification ^{before} Review Inspection Signed Via Drawing No. <i>Examined for critical corrections - none</i> |
| 4167 | 2/8/77 | KAVIS | Full Part Before After Verification ^{Final} Review Inspection Signed Via Drawing No. <i>Final Application of CLASS I Survey</i> |
| 4000 | 9-20-77 | SAGER | Full Part Before After Verification ^{Final} Review Inspection Signed Via Drawing No. <i>Examined survey & chart 4179 draw off No corrections at this scale. FINAL APPLICATION OF CLASS I SURVEY</i> |
| 4179 | 12-1-77 | Forbes | Full Part Before After Verification ^{Final Part After} Review Inspection Signed Via Drawing No. <i>Final application of Class I survey.</i> |
| 4115 | 1/30/78 | M. J. Friesen | Full Part Before After Verification Review Inspection Signed Via Drawing No. <i>Consider Class I hydro fully appl in conj junction with chart 4179 - final appl!</i> Full Part Before After Verification Review Inspection Signed Via Drawing No. |