NOAA FORM 76–35
(6–80)
U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SURVEY

DESCRIPTIVE REPORT

Map No.  
TP-00822

Edition No.  
1

Job No.  
CM-7712

Map Classification  
FINAL, FIELD EDITED MAP

Type of Survey  
SHORELINE

LOCALITY

State  
HAWAII

General Locality  
HAWAII - NORTH COAST

Locality  
CAPE KUMUKAHI

1976 TO 1980

REGISTERED IN ARCHIVES

DATE
### DESCRIPCIVE REPORT - DATA RECORD

#### PHOTOGRAMMETRIC OFFICE
- Coastal Mapping Division, Norfolk, VA

#### OFFICER-IN-CHARGE
- Roy K. Matsushige

#### I. INSTRUCTIONS DATED

<table>
<thead>
<tr>
<th>OFFICE</th>
<th>FIELD</th>
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<tbody>
<tr>
<td>Aerotriangulation</td>
<td>Control</td>
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</table>

<table>
<thead>
<tr>
<th>OFFICE</th>
<th>FIELD</th>
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<tbody>
<tr>
<td>Compilation</td>
<td></td>
</tr>
<tr>
<td>April 12, 1979</td>
<td></td>
</tr>
</tbody>
</table>

#### II. DATUMS

1. **HORIZONTAL:**
   - 1927 NORTH AMERICAN
   - **OLD HAWAIIAN**

2. **VERTICAL:**
   - MEAN HIGH-WATER
   - MEAN LOW-WATER
   - MEAN LOWER LOW-WATER
   - MEAN SEA LEVEL

#### III. HISTORY OF OFFICE OPERATIONS

<table>
<thead>
<tr>
<th>OPERATIONS</th>
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<th>DATE</th>
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<tr>
<td>1. AEROTRIANGULATION</td>
<td>S. Solbeck</td>
<td>Jan. 1979</td>
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<tr>
<td>METHOD: Analytic</td>
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<td></td>
</tr>
<tr>
<td>LANDMARKS AND AIDS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. CONTROL AND BRIDGE POINTS</td>
<td>S. Solbeck</td>
<td>Jan. 1979</td>
</tr>
<tr>
<td>METHOD: Corodomat</td>
<td></td>
<td></td>
</tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>CHECKED BY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. STEREOSCOPIC INSTRUMENT</td>
<td>R. Kravitz</td>
<td>Apr. 1979</td>
</tr>
<tr>
<td>COMPILATION</td>
<td>F. Mauldin</td>
<td>Apr. 1979</td>
</tr>
<tr>
<td>INSTRUMENT: Wild B-8 and graphic</td>
<td></td>
<td></td>
</tr>
<tr>
<td>PLANIMETRY</td>
<td>N.A.</td>
<td>--</td>
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<tr>
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<td>CONTOURS</td>
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<td>--</td>
</tr>
<tr>
<td>CHECKED BY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. MANUSCRIPT DELINEATION</td>
<td>L. Williams</td>
<td>Apr. 1979</td>
</tr>
<tr>
<td>METHOD: Smooth drafted</td>
<td>F. Margiotta</td>
<td>May 1979</td>
</tr>
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<td>PLANIMETRY</td>
<td>N.A.</td>
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<td>CONTOURS</td>
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<tr>
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<tr>
<td>HYDRO SUPPORT DATA</td>
<td>L. Williams</td>
<td>Apr. 1979</td>
</tr>
<tr>
<td>CHECKED BY</td>
<td>F. Margiotta</td>
<td>May 1979</td>
</tr>
<tr>
<td>5. OFFICE INSPECTION PRIOR TO FIELD EDIT</td>
<td>F. Margiotta</td>
<td>May 1979</td>
</tr>
<tr>
<td>CHECKED BY</td>
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<td></td>
</tr>
<tr>
<td>CHECKED BY</td>
<td>D. Butler</td>
<td>Mar. 1982</td>
</tr>
<tr>
<td>7. COMPILATION SECTION REVIEW</td>
<td>J. Hancock</td>
<td>Sept. 1985</td>
</tr>
<tr>
<td>CHECKED BY</td>
<td></td>
<td></td>
</tr>
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<td>8. FINAL REVIEW</td>
<td>J. Hancock</td>
<td>Sept. 1985</td>
</tr>
<tr>
<td>CHECKED BY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH</td>
<td>E. Dempsey</td>
<td>Nov. 1985</td>
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<td>10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH</td>
<td>E. BAILEY</td>
<td>Dec. 1985</td>
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<td>11. MAP REGISTERED - COASTAL SURVEY SECTION</td>
<td></td>
<td></td>
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</table>
1. **Compilation Photography**

**Camera(s):** F.L. = 153.21 mm  
Zeiss RMK A15/23  Lens 118960

<table>
<thead>
<tr>
<th>Number and Type</th>
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<th>Time</th>
<th>Scale</th>
<th>Stage of Tide</th>
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<tr>
<td>77GSAASY-333-338</td>
<td>Feb.19,1977</td>
<td>12:37</td>
<td>1:50,000</td>
<td>0.5 ft. above M.L.L.W.</td>
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<tr>
<td>76GSAASY-202-205</td>
<td>Dec.18,1976</td>
<td>14:10</td>
<td>1:30,000</td>
<td>1.1 ft. above M.L.L.W.</td>
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<tr>
<td>76GSAASY-206-213</td>
<td>Dec.18,1976</td>
<td>14:04</td>
<td>1:30,000</td>
<td>1.2 ft. above M.L.L.W.</td>
</tr>
</tbody>
</table>

**Remarks:** Photography by American Aerial Survey, Inc. of Northern California Geodetic Survey

2. **Source of Mean High-Water Line:**

The mean high water line was compiled by instrument methods using the 1:50,000 scale photos and graphically using the 1:30,000 scale photos ratioed as follows:

202-205  x1.51
206-213  x1.50

3. **Source of Mean Low-Water or Mean Lower Low-Water Line:**

Alongshore breakers did not permit delineation of the mean lower low water line.

4. **Contemporary Hydrographic Surveys** *(List only those surveys that are sources for photogrammetric survey information.)*

<table>
<thead>
<tr>
<th>Survey Number</th>
<th>Date(s)</th>
<th>Survey Copy Used</th>
<th>Survey Number</th>
<th>Date(s)</th>
<th>Survey Copy Used</th>
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<tbody>
<tr>
<td>H-9908</td>
<td>Sept/Oct 80</td>
<td>Registered</td>
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<tr>
<td>H-9918</td>
<td>Oct/Nov 80</td>
<td>Registered</td>
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5. **Final Junctions**

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<th>North</th>
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<th>South</th>
<th>West</th>
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<tr>
<td>TP-00070</td>
<td>No survey</td>
<td>CM-7713</td>
<td>TP-00375</td>
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**Remarks:**

Mean range = 1.6 ft.
HISTORY OF FIELD OPERATIONS

1. **FIELD INSPECTION OPERATION**
   - Identification
   - NAME: R. Melby
   - DATE: Jan.-Feb. 1978

2. **HORIZONTAL CONTROL**
   - Recovered by: R. Melby
   - Established by: None
   - Jan. 1978

3. **VERTICAL CONTROL**
   - Recovered by: None
   - Established by: None
   - Jan. 1978

4. **LANDMARKS AND AIDS TO NAVIGATION**
   - Recovered (Triangulation Stations) by: R. Melby
   - Located (Field Methods) by: None
   - Identified by: R. Melby
   - Jan. 1978

5. **GEOGRAPHIC NAMES**
   - Investigation type: Complete
   - Specific Names Only
   - No Investigation

6. **PHOTO INSPECTION**
   - Clarification of Details: None

7. **BOUNDARIES AND LIMITS**
   - Surveyed or Identified by: N.A.

II. SOURCE DATA

1. **HORIZONTAL CONTROL IDENTIFIED**
   - Photo Number: 77GSAASY-616
   - Station Name: Cape Kumukahi Lighthouse, 1949 (Direct)

2. **VERTICAL CONTROL IDENTIFIED**
   - None

3. **PHOTO NUMBERS (Clarification of details)**
   - None

4. **LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED**
   - Photo Number: 77GSAASY-616
   - Object Name: Cape Kumukahi Light

5. **GEOGRAPHIC NAMES:**
   - None

6. **BOUNDARY AND LIMITS:**
   - None

7. **SUPPLEMENTAL MAPS AND PLANS**
   - None

8. **OTHER FIELD RECORDS (Sketch books, etc., DO NOT list data submitted to the Geodesy Division)**
   - 1 - Field Operations Report
   - 1 - Form 76-53, 2 - Forms M-2504-12, 1 - Form 269c
   - 1 - Photo 77GSAASY-616 (Contact)
### History of Field Operations

<table>
<thead>
<tr>
<th>Operation</th>
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<tr>
<td>Horizontal Control</td>
<td>C.P. Hancock, F. R. Krick</td>
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<tr>
<td>Vertical Control</td>
<td>C.P. Hancock, V. D. Ross</td>
<td>Oct. 1980</td>
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<tr>
<td>Landmarks and Aids to Navigation</td>
<td>A. F. Trimble</td>
<td>Oct. 1980</td>
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<td>Geographical Names</td>
<td>A. F. Trimble</td>
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<tr>
<td>Photo Inspection</td>
<td>A.F. Trimble, T.A. Baxter</td>
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### Source Data

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</table>

### Photos

**Photo Numbers**: 76GSAASY 202-205, 208-212 (Ratios)

### Geographical Names

**Geographical Names**: XX Report None

### Boundary and Limits

**Boundary and Limits**: XX Report None

### Other Field Records

One Field Edit Ozalid, 2 Field 76-40 forms, One Field Edit Report and accompanying note
I. MANUSCRIPT COPIES

<table>
<thead>
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<th>Date</th>
<th>Remarks</th>
<th>Marine Charts</th>
<th>Hydro Support</th>
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<td>Class III manuscript</td>
<td>Aug. 1979</td>
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<tr>
<td>Field edit applied,</td>
<td>March 1982</td>
<td>Class I manuscript</td>
<td>None</td>
<td>Mar. 1982</td>
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II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

<table>
<thead>
<tr>
<th>Number</th>
<th>Chart Letter</th>
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<th>Remarks</th>
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<tr>
<td>2</td>
<td></td>
<td>Oct. 31, 1985</td>
<td>One Landmark and One Aid for Charting</td>
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III. FEDERAL RECORDS CENTER DATA

1. XX BRIDGING PHOTOGRAPHS; XX DUPLICATE BRIDGING REPORTS; XX COMPUTER READOUTS.
2. XX CONTROL STATION IDENTIFICATION CARDS; XX FORM NOS SUBMITTED BY FIELD PARTIES.
3. XX SOURCE DATA (except for Geographic Names Report) AS LISTED IN SECTION II, NOAA FORM 76-36C.

IV. SURVEY EDITIONS (This section shall be completed each time a new map edition is registered)

<table>
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<tr>
<th>Second Edition</th>
<th>Survey Number</th>
<th>Job Number</th>
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<th>Revise</th>
<th>Resurvey</th>
<th>Map Class</th>
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<td>I, II, III, IV, V, FINAL</td>
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<td>Date of Field Edit</td>
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SUMMARY TO ACCOMPANY DESCRIPTIVE REPORT
TP-00822

This 1:20,000 scale final shoreline map is one of eight maps that comprise project CM-7712, Hawaii Island, North Coast, Hawaii. The eight 1:20,000 scale maps are assigned as TP-00064 through TP-00070 and TP-00822.

The purpose of this map was to furnish data in support of hydrographic operations and to provide current shoreline data for marine charts.

This map portrays a portion of shoreline along the eastern coast of Hawaii Island from Lat. 19°28.0' to Lat. 19°36.5'. This map defines the southeast limit of the project and junctions with shoreline project CM-7713.

Photo coverage for the project was adequately provided with panchromatic photography flown by a private contractor, American Aerial Survey, Inc., with the Zeiss RMKA 15/23 camera. Aerotriangulation/compilation photographs at 1:50,000 scale and supplemental compilation/photo-hydro support photographs at 1:30,000 scale were taken at various times from Dec. 1976 to March 1977.

Field work prior to compilation consisted of the recovery, establishment, and photoidentification of horizontal control necessary for aerotriangulation. This activity was completed February 1978.

Analytic aerotriangulation was adequately provided by the Washington Science Center in January 1979. This activity also included ruling the base manuscripts and providing ratio photographs for compilation.

Compilation by office interpretation of the mapping photographs was performed at the Coastal Mapping Section, Atlantic Marine Center in May 1979. Copies of the Class III manuscript and hydrographic support data were forwarded to the hydrographer for field edit. A copy of the Class III manuscript was also submitted to the Marine Charts Section.

Field edit for this map was performed in conjunction with hydrographic survey H-9908 by NOAA Ship FAIRWEATHER personnel in October 1980.

Application of field edit data was accomplished at the Photogrammetric Section, Pacific Marine Center in March 1982 and the manuscript was advanced to Class 1. A copy of the Class I manuscript was forwarded to the Hydrographic Surveys Branch.

Final review was performed at the Atlantic Marine Center in September 1985. At this time a comparison was made with a registered copy of the contemporary hydrographic surveys, H-9908 and H-9918, common
to this map. There were no significant differences. A final Chart Maintenance Print and Notes to Hydrographer Print were prepared and forwarded to Photogrammetry headquarters for distribution.

The Descriptive Report for this final field edited map contains all pertinent information used to produce this map. The original base manuscript and related data were forwarded to the Washington Science Center for final registration.
FIELD INSPECTION

TP-00822

There was no field inspection prior to compilation. Field work accomplished was limited to the recovery and photoidentification of the horizontal control necessary for the aerotriangulation of the project.
FIELD OPERATIONS REPORT
Projects CM-7712 & CM-7713
North and Southeast Coast, Island of Hawaii, Hawaii
January - February 1978

Area:

The two adjoining projects covers the southeast and northeast coast of the Island of Hawaii. The southernmost portion of the area is virtually a desert with little rainfall. The northeast coast is subjected to considerable rainfall and sugar cane fields are commonplace.

Except for a couple of small, isolated beaches, the shoreline is steep and rocky, where the lava flows reached the ocean.

Photography:

Panchromatic aerial photography was furnished the field unit for the photo-identification of the required horizontal control stations, necessary for the aerotriangulation. The photography was considered adequate for the field identification.

Horizontal Control:

All of the stations were reached by vehicle or short distance back packing

Several sun azimuths were observed to determine the azimuth to substitute stations. Greenwich Mean Time was observed and recorded with short wave radio signals from WMVH and a digital watch. Time and observed zenith distances were recorded to permit either the time/azimuth or time/altitude method of computation.

Station HILINA USGS 1961 was photo-identified and a sun azimuth was observed. B.M. 139YY USGS was used as an intermediate azimuth point, in conjunction with the sun azimuth. The B.M. did not have a previous azimuth or position. The U.S.G.S. published data lists R.M.I. as 46°00'26". A telephone conversation with the U.S.G.S. in Menlo Park, California confirmed the number 4 and 6 were transposed and the azimuth should read 64°00'26". The reference mark was used as a check angle.

Station PUU ULAULA was photo-identified using a sun azimuth and a stack. The stack is station PAHALA, KAU SUGAR CO STACK, 1977. An N.G.S. Geodetic Field Party was working in the area and a position of the stack should be available from Geodesy in the near future. However, the sun azimuth can be used to determine the azimuth to the sub-points.
The field-photo data was submitted to the Rockville office before this report was written to permit the aerotriangulation of the flightlines at the earliest date.

Two non-floating aids to navigation and one landmark for charts were located by triangulation/traverse methods. They have been entered and submitted on form 76-40 to C-3415.

Respectfully Submitted,

[Signature]

Robert B. Melby
Chief, PMC Photo Party
CPM 133
PHOTOGRAMMETRIC PLOT REPORT
Island of Hawaii, Hawaii
CM-7712

Jan. 2, 1979

AREA COVERED

The area covered by this report is the northern coast of the Island of Hawaii, excluding Hilo and its immediate surroundings. The area is covered by eight 1:20,000 scale manuscripts (TP-00064 through TP-00070 and TP-000822).

METHOD

Two strips of 1:50,000 scale black-and-white panchromatic photography were bridged by analytic aerotriangulation methods. Field identified control was provided.

Common points were located on the bridging photography and the 1:30,000 scale photography for ratio purposes.

Ratio prints have been ordered. The manuscripts were ruled on the Coradomat.

ADEQUACY OF CONTROL

The adjustment to ground of one strip in this project, as well as two strips on CM-7713 (the southeast coast), was not as good as expected. On strip one of CM-7713, the subpoints for Pulama, 1914 would not fit with the other control, being off by approximately 25 feet. Five stations were used to adjust this strip with a second degree curve. The largest residual error in the fit to the five stations was 3.5 feet which is considered reasonable.

On strips 2 and 4 of CM-7713 the intersection station, Honuopu, Hutchinson Sugar Co. Mill Stack, 1967, would not fit with the other control points. It was off approximately 16 feet. The fit to the other control points was good.

On strip one of this project the adjustment to ground is very poor, but no control points can be isolated as causing the poor adjustment. In the final adjustment, six control points were used to form a third degree curve. The largest residual error in the fit was six feet. Other control points were used as checks in this adjustment. The largest error of these was 16 feet and two were off by about 10 feet.

No apparent reason can be found for the discrepancies in the control for these two projects.
SUPPLEMENTAL DATA

USGS quads were used to provide vertical control for the job. Nautical charts covering this area were used to locate aids and landmarks.

PHOTOGRAPHY

The coverage, overlap, and quality of the photography proved adequate for the job.

Submitted by:  
Stephen H. Solbeck

Approved and Forwarded:  
Don O. Norman  
Chief, Aerotriangulation Section
<table>
<thead>
<tr>
<th>Station</th>
<th>Description</th>
<th>Year</th>
<th>Subpoint</th>
<th>X</th>
<th>Y</th>
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<td>385100</td>
<td>PEPEEKEO POINT LT., 1948</td>
<td>1948</td>
<td>sub point</td>
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<td>(-3.0)</td>
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<tr>
<td>385101</td>
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<td></td>
<td></td>
<td>(-0.8)</td>
<td>(-4.0)</td>
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<tr>
<td>386100</td>
<td>HONOHINA, 1877</td>
<td>1877</td>
<td>The image on the photo is very poor and its lack of fit has to be ignored although it does seem to be too large.</td>
<td>(-16.3)</td>
<td>(+7.7)</td>
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<tr>
<td>387101</td>
<td>PUU OHAI, 1877</td>
<td>1877</td>
<td>sub point</td>
<td>(-1.5)</td>
<td>(+3.4)</td>
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<td>392141</td>
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<td>(+8.4)</td>
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<tr>
<td>392101</td>
<td>OPIHILAIA, 1948</td>
<td>1948</td>
<td>sub point A</td>
<td>(+6.2)</td>
<td>(+3.6)</td>
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<tr>
<td>392102</td>
<td></td>
<td></td>
<td>sub point B</td>
<td>(+4.6)</td>
<td>(+1.4)</td>
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<td>394141</td>
<td>PAAUHAU, PAAUHAU SUGAR CO. STACK, 1913</td>
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<td>(+1.4)</td>
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<td>PUU MAUU NORTH, 1938</td>
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<td>Old Hawaiian</td>
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COORDINATES IN FEET

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<td>y</td>
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SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.
31 - DELINEATION

Delineation was by instrument method using the Wild B-8 stereoplotter and 1:50,000 scale photography. Points common to the 1:30,000 ratios were selected to aid in graphic compilation of the mean high water line.

32 - CONTROL


33 - SUPPLEMENTAL DATA

None.

34 - CONTOURS AND DRAINAGE

Contours are not applicable to this project. Drainage was delineated by the Wild B-8 stereoplotter and by office stereoscopic interpretation of the ratioed photographs.

35 - SHORELINE AND ALONGSHORE DETAILS

The mean high water line was office edited and refined from the ratioed photographs.

Alongshore details were delineated by the office interpretation of the ratioed photographs.

36 - OFFSHORE DETAILS

Offshore details such as submerged ledge and rocks were difficult to delineate due to the surf action.

37 - LANDMARKS AND AIDS

There were no landmarks within the mapping limits of this manuscript. There was one charted aid within the mapping limits and its position was verified photogrammetrically.

38 - CONTROL FOR FUTURE SURVEYS

None.
39 - JUNCTIONS

Refer to the Data Record Form 76-368, item 5.

40 - HORIZONTAL AND VERTICAL ACCURACY


46 - COMPARISON WITH EXISTING MAPS

Comparison was made with U.S.G.S. quadrangle Kāpoho, HA., scale 1:24,000, dated 1965.

47 - COMPARISON WITH NAUTICAL CHARTS

A comparison was made with N.O.S. Chart No. 19320, scale 1:250,000, 12th edition, dated June 17, 1978.

ITEMS TO BE APPLIED TO NAUTICAL CHARTS IMMEDIATELY

None.

ITEMS TO BE CARRIED FORWARD

None.

Submitted by:

[Signature]

For

L. Williams
Cartographic Technician
Date: April 12, 1979

Approved:

[Signature]

For

Albert C. Rauck, Jr.,
Chief, Coastal Mapping Section
ADDENDUM TO THE COMPILATION REPORT

CM-7712
TP-00822

FIELD EDIT

Two of the geographic names submitted by the field editor were not added to the manuscript pending verification by the Chief Geographer, Charles Harrington. A copy of the Field Edit Report with the recommended additions was forwarded to Mr. Harrington on March 19, 1982.

Since the stage of tide of the photography and the surf action alongshore would not permit delineation of a MLLW line, the ledge areas identified by the field editor were not applied. All of these areas are inshore of the breaker-limit line, which describes a hazard to navigation.

The field editor identified two rocks on photograph 76GSAASY204 but failed to submit any height data for them. These were delineated on the manuscript as rocks awash, but have no height assigned to them:

RK awash at 19°30'00", 154°49'15"
RK awash at 19°30'07", 154°49'12"

Submitted by:

[Signature]
for George A. Morris
Cartographic Technician
March 19, 1982
GEOGRAPHIC NAMES

FINAL NAME SHEET

CM-7712 (Island of Hawaii - North Coast)

TP-00822

Auwae
Cape Kumukahi
Hala Point
Hawaii (island)
Honolulu Landing
Kahonua
Kalamanu
Kalea
Kapoho Bay
Kapoho Point

Kipu Point
Makaukiu Point
Makuu
Mokuopipi Point
Nanawale Bay
Opihi Rock
Pacific Ocean
Pohakupala
Pualaa
Waiopae

Approved:

[Signature]

for
Charles E. Harrington
Chief Geographer
Nautical Charting Division
FIELD EDIT REPORT  
TP-00822
HAWAII, EAST COAST 
October, 1980

DESCRIPTION

The shoreline on this sheet from Kalea to the sheet's northern limit, latitude 19°36'30"N, is characterized by rugged, eroding lava cliffs with portions of relatively recent, unvegetated lava flow. Lava rock formations offshore from the recent flow areas and wave action eroding these and other areas have resulted in a stretch of foul coastline. Small beaches of boulders or coarse gravel occur infrequently, but their use for small boat landings is not practical due to offshore rocks and ledges. There are no small boat landings or harbors of refuge along this portion of the coast.

The only significant hazard to mariners in this area is the offshore reef, known as Opili Rock, at 19°34'57"N, 154°54'51"W. However, small craft attempting to approach close to shore have to contend with submerged rocks and strong swell common to this area.

A water tank at approximately 19°30'05"N, 154°50'25"W, is located atop Kapoho Crater and is the only feature of landmark value on shore. The position of this tank was not ascertained in the field and should be determined by photogrammetric methods.

METHODS

Field edit was accomplished by walking all of the shoreline with the photographs and paper manuscripts. Little regard was paid to heights of tides due to the small range of tide and the clarity of the water. Rocks not on the manuscript were identified on the paper photographs in the field using a magnifying glass and transferred to the cronopaque photos using a light table and a mirror stereoscope on board the ship. All items added to the manuscript are indicated on the photographs in violet ink. The appropriate photograph is referenced by number on the T-sheet. Green ink was used in the manuscript to indicate items to be deleted. Changes and additions to geographic names were indicated in red ink.

The Kapoho Bay area had numerous rocks which were individually designated on the T-sheet. Each rock was numbered and descriptions provided in a numbered legend for ease in interpretation. This entire bay should be labeled as foul.

ADEQUACY AND COMPLETENESS OF COMPILATION

With only two notable exceptions, compilation on this sheet was adequate. In the southern portion of the shoreline, between latitudes 19°28'40" and 19°29'50", the mean high water line was misinterpreted. This area was redrawn in violet by the field editor to include an area of exposed rock with intermittent tide pools.
Numerous rocks and ledges were added within the "foul with rocks and submerged ledge" limits by the field editor. The foul limits previously compiled extend much farther seaward than necessary. These foul limits were redrawn by the field editor based on field edit observations and shoreward limits of sounding lines since launch OIC's were instructed to end sounding lines at the surf line. This redrawn foul limit line should be considered as the "foul with rocks and surf" limits.

**GEOGRAPHIC NAMES**

There is one error in the compilation of geographic names on this sheet. The name "Honolulu Landing" was applied to two areas. The northern "Honolulu Landing," at 19°35'10"N, 154°55'12"W, could not be verified by any local sources and should be deleted. All other geographic names on this sheet were verified in the field as those used by local residents.

Three names were added to the sheet. Waipae is the name used for the pond area at 19°29'125"N, 154°49'22"W. Kapoho Bay is used for the bay at 19°30'10"N, 154°49'10"W, and Mokuapahi Point is the name given to the point of land at 19°34'55"N, 154°54'53"W. See the Geographic Names Report for OPR-T126-FA-80.

**MANUSCRIPT ACCURACY**

No formal accuracy tests were conducted.

**RECOMMENDATIONS**

This manuscript will be complete, accurate and acceptable for charting purposes upon application of field edit data.

Submitted by: 
A. F. Trimble  
Ensign, NOAA

Approved by: 
W. F. Forster  
Commander, NOAA
FIELD EDIT NOTE
OPR-T126-FA-80
HAWAII, NORTHEAST COAST
October, 1980

There is a distinct difference between the northern sheets, TP-00069 and T-13261, and the southern sheets, TP-00070 and TP-00822, in this project. The southern coastline is characterized by heavy surf and rugged lava terrain. Field edit was accomplished by walking the shoreline to identify items on the photographs. The northern coastline is characterized by steep, heavily vegetated bluffs which made walking impractical. Field edit for these sheets was accomplished from an open skiff. Little regard was paid to stages of tide during field edit investigations because of the small tidal range and tremendous clarity of the water in these areas.

Constant heavy surf made standing on rocks and ledges impossible, but photo clarity allowed most items to be picked directly on the photo. In a few instances, water clarity allowed the field editor to see submerged rocks which could not be seen on the photos but could be a potential hazard to mariners. In these instances, foul limits were extended, according to estimated distances, to include the potential hazard.

Compiled foul limits were changed in numerous areas on all of the sheets. In some cases, the foul limits were shown extending much farther seaward than deemed necessary by the field editor. Upon field inspection, these areas were found to have frequent foam patches which can be seen on the photographs and may have been mistaken for rocks or heavy surf.

Launch OIC's were instructed to end sounding lines inshore at the point where the surf, rocks or ledges made small boat handling hazardous. All foul limits were compared to these inshore sounding line limits and adjusted by the field editor to incorporate this data and any additional rocks and ledges added from the photo-identified items. It is recommended that these foul limits be labeled "foul with rocks, submerged ledge and surf" since they were derived by these methods.

All items added to the shoreline manuscript were identified in the field on the paper photographs using a magnifying glass. These items were later picked on the final, cronopaque photographs using a mirror stereoscope and a light table for greater accuracy. Additions and changes were made to the T-sheet, in violet ink, by sliding the photographs under and tracing the item onto the manuscript. Because of photographic distortions, these positions should all be considered approximate. All deletions were made in green ink.

An investigation of geographic names was performed. United States Geological Survey topographic maps, road maps, and other local sources were consulted (see Geographic Names Report, OPR-T126-FA-80). Prominent names compiled on the T-sheet were underlined in violet or green ink to indicate the recommendation for retention or deletion. Additional new names are written and underlined in red ink.
The only notable inadequacy in compilation was on sheet TP-00070. Photographic coverage for this sheet ended at approximate longitude 155°01'25"W. The section west of this point had no compiled items, demonstrating a possible lack of photo coverage for the compiler. Items were sketched on the T-sheet by the field editor using distances from prominent, identifiable points of land on the manuscript. This is not intended to be a precise survey of this area, but should serve as a guide to the compiler in future interpretations of photographs that were not made available for the field edit operations.

Submitted by: A. F. Trimble
Ensign, NOAA

Approved by: W. F. Forster
Commander, NOAA
61 - GENERAL STATEMENT

Final review for this final field edited map was accomplished at the Atlantic Marine Center in September 1985. For a schedule of the office and field operations, refer to the Summary included with this Descriptive Report.

62 - COMPARISON WITH REGISTERED TOPOGRAPHIC SURVEYS

Not applicable.

63 - COMPARISON WITH MAPS OF OTHER AGENCIES

A comparison was made with the following 1:24,000 scale U.S.G.S. quadrangles:
Pahoa North, Hawaii; dated 1965
Kapoho, Hawaii; dated 1965.

64 - COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS

A comparison was made with a registered copy of the following contemporary hydrographic surveys:
H-9908, FA-20-4-80, 1:20,000 scale, field surveyed Sept./Oct. 1980
H-9918, RA-20-7-80, 1:20,000 scale, field surveyed Oct./Nov. 1980.

The hydrographic surveys indicate various ledge limits along the shoreline. It appears that these limits were transferred from the field editors/hydrographer's delineation on the field edit print. However, according to the Addendum to Compilation Report the ledge limits were not compiled on the shoreline map.

65 - COMPARISON WITH NAUTICAL CHARTS

A comparison was made with the following NOS Chart:

66 - ADEQUACY OF RESULTS AND FUTURE SURVEYS

This map complies with the Project Instructions, and meets the requirements for National Standards of Map Accuracy.
Submitted by,

Jerry L. Hancock
Final Reviewer

Approved for forwarding,

Billy H. Barnes
Chief, Photogrammetric Section, AMC

Approved,

J. F. Kooner
Chief, Photogrammetric Section, Rockville

Ronald K. Brewer
Chief, Photogrammetry Branch Rockville
**LANDMARKS FOR CHARTS**

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

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<th>DESCRIPTION</th>
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<td>135 50</td>
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<td>V-VIS</td>
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### Instructions for Entries Under Method and Date of Location

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<th>Date of Location</th>
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<td>Field Determined and Located Objects</td>
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### Field Positions Are Determined by Field Observer

- **Example:** F-2-6-L
- **Location and Date of Field Work:**
  - **Traverse:** 8 - Septant
  - **Intersection:** 7 - Planarable
  - **Translation:** 5 - Field Identified
  - **Vertified:** L - Located
  - **Photo-geometric:** P - Photogrammetric

Field Objects Identified and Located the Subject.
- Day and Year of the Photograph used to enter the number and date (including month).
**NONFLOATING AIDS FOR CHARTS**

The following objects **HAVE** been inspected from seaward to determine their value as landmarks.

**REPORTING UNIT**
- Photogrammetric Branch
- PMC, Seattle, WA

**STATE**
- Hawaii

**LOCALITY**
- Hawaii, North Coast

**DATE**
- Mar. 1982

**CHARTING NAME**
- LIGHT

**DESCRIPTION**
- Cape Kumukahi Light
  (Cape Kumukahi Lighthouse, 1949)

**DATUM**
- Old Hawaiian

**POSITION**

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<td>Triang. Rec.</td>
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<td>August 1980</td>
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**CHARTS**
- 19320
Exhibit 1: Survey Methodologies

1. Position Vertifield Visually on Photograph

2. Transect

3. Intersection

4. Rasterization

5. Field Identified

6. Thedalite

7. Pavilion

8. Extend

Field Positions Are Determined by Field Observer

8-12-75
Example: V-VIs, VIs-V, V-In-VIs, VIs-V
Enter V-VIs, VIs-V, and date.

8-12-75
Example: Trangl. Rec.
accion, with date of recovery. When a landmark or object which is also a lift-

7.42 (C) 1982
8-12-75
Example: P-B-A

OFICE

Instructions for Entries Under Method and Date of Location

Office Activity Representative

Field Activity Representative

Other (Specify)

Receivin

Revie:

George A. Morris, Cartographic Tech.
A. F. Trimble

Type of Action

Name

Responsible Personnel

Activities

AND REVIE: AND FIAL REVIE:

FORMS ORGANIZED BY QUALITY CONTROL

Positions Determined and/or Verified

Object(s) Inspected From Setting

ORIGINATOR
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 Revie

<table>
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