

11822

11822

|                                                  |                           |
|--------------------------------------------------|---------------------------|
| Form 504                                         |                           |
| U. S. DEPARTMENT OF COMMERCE                     |                           |
| COAST AND GEODETIC SURVEY                        |                           |
| DESCRIPTIVE REPORT                               |                           |
| Type of Survey <u>Shoreline(Photogrammetric)</u> |                           |
| Field No. _____                                  | Office No. <u>T-11822</u> |
| LOCALITY                                         |                           |
| State <u>Hawaii</u>                              |                           |
| General locality <u>Molokai</u>                  |                           |
| Locality <u>Kahiu Point</u>                      |                           |
| <u>19 60<sup>2</sup> - 1968</u>                  |                           |
| CHIEF OF PARTY                                   |                           |
| <u>Allen L. Powell, Director, AMC</u>            |                           |
| LIBRARY & ARCHIVES                               |                           |
| DATE _____                                       |                           |

DESCRIPTIVE REPORT - DATA RECORD  
T-11822

PROJECT NO. (II):

PH-6201

FIELD OFFICE (III):

Honolulu, Hawaii

CHIEF OF PARTY

H. J. Seaborg

PHOTOGRAMMETRIC OFFICE (III):

Atlantic Marine Center

OFFICER-IN-CHARGE

Allen L. Powell, Director, AMC

INSTRUCTIONS DATED (II) (III):

II April 25, 1962  
III May 31, 1962  
III December 14, 1962, Amendment I  
III February 20, 1963, Amendment II  
III January 8, 1964, Amendment III

METHOD OF COMPILATION (III):

Kelsh Instrument

MANUSCRIPT SCALE (III):

1:5,000

STEREOSCOPIC PLOTTING INSTRUMENT SCALE (III):

Pantographed to 1:5,000

DATE RECEIVED IN WASHINGTON OFFICE (IV):

DATE REPORTED TO NAUTICAL CHART BRANCH (IV):

APPLIED TO CHART NO.

DATE:

DATE REGISTERED (IV):

GEOGRAPHIC DATUM (III):

Old Hawaiian

VERTICAL DATUM (III):

MEAN ~~SEA LEVEL~~ <sup>high water</sup> EXCEPT AS FOLLOWS:

Elevations shown as (25) refer to mean high water

Elevations shown as (5) refer to sounding datum

i.e., mean low water or mean lower low water

REFERENCE STATION (III):

Kahio, 1962

LAT.:

21°12'56.82"

LONG.:

156°58'17.87"

☐ ADJUSTED☒ UNADJUSTED

PLANE COORDINATES (IV):

Y = 320,614.23

X = 396,132.64

STATE

Hawaii

ZONE

2

ROMAN NUMERALS INDICATE WHETHER THE ITEM IS TO BE ENTERED BY (II) FIELD PARTY, (III) PHOTOGRAMMETRIC OFFICE, OR (IV) WASHINGTON OFFICE.

WHEN ENTERING NAMES OF PERSONNEL ON THIS RECORD GIVE THE SURNAME AND INITIALS, NOT INITIALS ONLY.

DESCRIPTIVE REPORT - DATA RECORD

|                                                                                                                                                     |                                  |                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------|
| FIELD INSPECTION BY (II):<br><br>L. F. Van Scoy                                                                                                     |                                  | DATE:<br>January<br>October 1962        |
| MEAN HIGH WATER LOCATION (III) (STATE DATE AND METHOD OF LOCATION):<br><br>August 30, 1962 by field inspection.<br>Compilation by Kelsh Instrument. |                                  |                                         |
| PROJECTION AND GRIDS RULED BY (IV):<br><br>A. E. Roundtree                                                                                          |                                  | DATE<br><br>2-2-65                      |
| PROJECTION AND GRIDS CHECKED BY (IV):<br><br>R. Glaser                                                                                              |                                  | DATE<br><br>2-10-65                     |
| CONTROL PLOTTED BY (III):<br><br>L. L. Graves                                                                                                       |                                  | DATE<br><br>5-3-65                      |
| CONTROL CHECKED BY (III):<br><br>U. S. Place                                                                                                        |                                  | DATE<br><br>5-3-65                      |
| RADIAL PLOT OR STEREOSCOPIC CONTROL EXTENSION BY (III):<br><br>H. P. Eichert                                                                        |                                  | DATE<br><br>Dec. 1964                   |
| STEREOSCOPIC INSTRUMENT COMPILATION (III):<br><br>Kelsh                                                                                             | PLANIMETRY<br><br>D. N. Williams | DATE<br><br>5-5-65                      |
|                                                                                                                                                     | CONTOURS<br><br>Inapplicable     | DATE                                    |
| MANUSCRIPT DELINEATED BY (III):<br><br>J. L. Harris                                                                                                 |                                  | DATE<br><br>6-14-65                     |
| SCRIBING BY (III):<br><br>B. Wilson                                                                                                                 |                                  | DATE<br><br>12-10-69                    |
| PHOTOGRAMMETRIC OFFICE REVIEW BY (III):<br>Compilation J. L. Harris<br>Field Edit R. E. Smith<br>Scribing and stick up: B. Barge                    |                                  | DATE<br>6-14-65<br>10-19-69<br>12-30-69 |
| REMARKS:<br><br>Field edit by: R. L. Newsom<br><br>December 1968                                                                                    |                                  |                                         |

| FORM C&GS-181c<br>(3-66)                                                        |          | U.S. DEPARTMENT OF COMMERCE<br>ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION<br>COAST AND GEODETIC SURVEY |                          |                                      |
|---------------------------------------------------------------------------------|----------|-----------------------------------------------------------------------------------------------------------|--------------------------|--------------------------------------|
| DESCRIPTIVE REPORT - DATA RECORD                                                |          |                                                                                                           |                          |                                      |
| CAMERA (KIND OR SOURCE) (III):<br>C&GS Single Lens "W"                          |          |                                                                                                           |                          |                                      |
| PHOTOGRAPHS (III)                                                               |          |                                                                                                           |                          |                                      |
| NUMBER                                                                          | DATE     | TIME                                                                                                      | SCALE                    | STAGE OF TIDE                        |
| 61W-778 thru 780                                                                | 9/24/61  | 0830                                                                                                      | 1:15,000                 | 0.1 above MLLW                       |
| 60W(c) 3222 thru 3226                                                           | 10/22/60 | 0825                                                                                                      | 1:10,000                 | 0.8 above MLLW                       |
|                                                                                 |          |                                                                                                           |                          | computed from predicted tide tables. |
| TIDE (III)                                                                      |          |                                                                                                           |                          | Diurnal                              |
|                                                                                 |          |                                                                                                           | RATIO OF RANGES          | MEAN RANGE                           |
| REFERENCE STATION: Honolulu, Hawaii                                             |          |                                                                                                           |                          | 1.2                                  |
| SUBORDINATE STATION: Waimanalo, Hawaii                                          |          |                                                                                                           |                          | 1.1                                  |
| SUBORDINATE STATION:                                                            |          |                                                                                                           |                          |                                      |
| WASHINGTON OFFICE REVIEW BY (IV): <i>Leo F. Beugnot, Atlantic Marine Center</i> |          |                                                                                                           | DATE: <i>August 1970</i> |                                      |
| PROOF EDIT BY (IV):                                                             |          |                                                                                                           | DATE:                    |                                      |
| NUMBER OF TRIANGULATION STATIONS SEARCHED FOR (II): 3                           |          | RECOVERED: 3                                                                                              | IDENTIFIED: 1            |                                      |
| NUMBER OF BM(S) SEARCHED FOR (II): None                                         |          | RECOVERED:                                                                                                | IDENTIFIED               |                                      |
| NUMBER OF RECOVERABLE PHOTO STATIONS ESTABLISHED (III): None                    |          |                                                                                                           |                          |                                      |
| NUMBER OF TEMPORARY PHOTO HYDRO STATIONS ESTABLISHED (III): 5                   |          |                                                                                                           |                          |                                      |
| REMARKS:                                                                        |          |                                                                                                           |                          |                                      |

T-11822

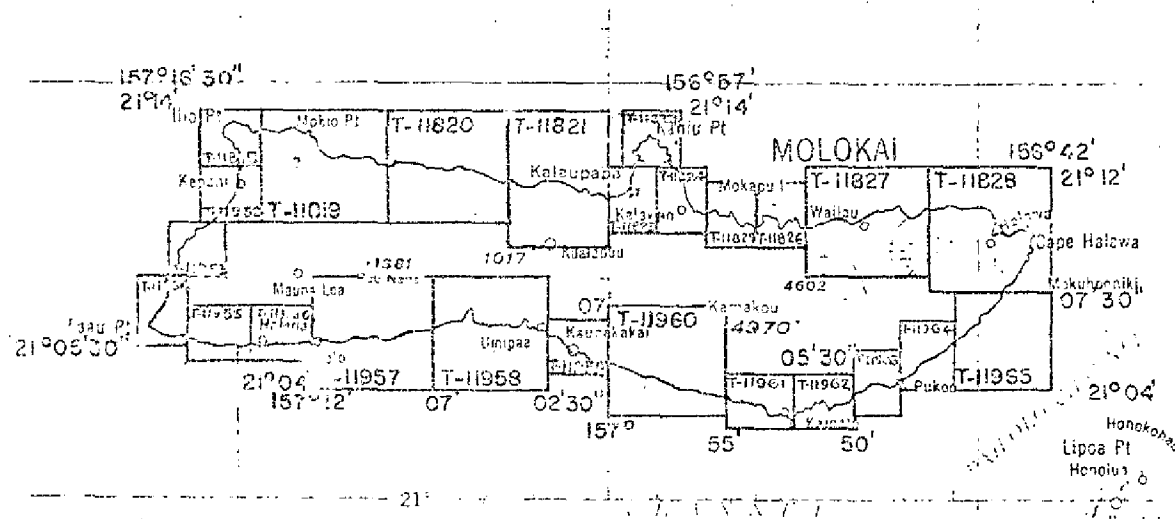
| COMPILATION RECORD                         | COMPLETION DATE | REMARKS    |
|--------------------------------------------|-----------------|------------|
| Alongshore Area for Hydro.                 | June 1967       | Superseded |
| Field edit applied<br>Compilation Complete | July 1969       |            |
|                                            |                 |            |
|                                            |                 |            |
|                                            |                 |            |

# PROJECT PH-620

## SHORELINE MAPPING

### 1:5,000 AND 1:10,000 SCALES

### MOLOKAI ISLAND HAWAII



#### Official Mileage for Cost Accounts

| Sheet No. | Shoreline<br>Lin. Mi. | Area<br>Sq. Mi. | Sheet No. | Shoreline<br>Lin. Mi. | Area<br>Sq. Mi. |
|-----------|-----------------------|-----------------|-----------|-----------------------|-----------------|
| 11818     | 4                     | 4               | 11952     | 3                     | 3               |
| 11819     | 6                     | 6               | 11953     | 3                     | 3               |
| 11820     | 6                     | 6               | 11954     | 2                     | 2               |
| 11821     | 4                     | 4               | 11955     | 3                     | 3               |
| 11822     | 3                     | 3               | 11956     | 3                     | 3               |
| 11823     | 1                     | 1               | 11957     | 6                     | 6               |
| 11824     | 3                     | 3               | 11958     | 3                     | 3               |
| 11825     | 3                     | 3               | 11959     | 3                     | 3               |
| 11826     | 3                     | 3               | 11960     | 6                     | 6               |
| 11827     | 6                     | 6               | 11961     | 3                     | 3               |
| 11828     | 9                     | 9               | 11962     | 4                     | 4               |
|           |                       |                 | 11963     | 3                     | 3               |
|           |                       |                 | 11964     | 3                     | 3               |
|           |                       |                 | 11965     | 3                     | 3               |
| Total     |                       |                 |           | 98                    | 98              |

SUMMARY TO ACCOMPANY  
DESCRIPTIVE REPORT T-11822

Shoreline survey T-11822 is one of twenty-five similar surveys in Project PH-6201. The surveys in this project cover the entire coast of Molokai Island, Hawaii. This survey covers a part of the Makenalua Peninsula which is located on the north shore of the island. See page 5 for the area of the survey within the project.

Field work preceding compilation consisted of identification of horizontal control, selection of photo-hydro signal sites, shoreline and field inspection, and identification of fixed aids to navigation.

Compilation was at 1:5,000 scale by Kelsh Instrument methods, using the panchromatic photography of September 24, 1961. Cronaflex copies of the manuscript along with ozalids and specially prepared photographs were furnished for transfer of the shoreline to the boat sheet, location of photo-hydro signals, and field edit use.

The manuscript was a vinylite sheet 2 minutes in latitude by 2 minutes 30 seconds in longitude. The survey was field edited in December 1968. After application of field edit data, the survey was scribed and reproduced on cronaflex. Final review was in the Atlantic Marine Center in August 1970. One cronaflex positive and a negative of the final reviewed survey are forwarded for record and registry.

FIELD INSPECTION REPORT

Map Manuscripts  
T-11952 thru 11965  
T-11918 thru 11828

Project PH-6201

January - October 1962

2. AREAL FIELD INSPECTION

The area covered by this report encompasses the whole of the island of Molokai. This is the fifth largest of the group of islands that form the State of Hawaii. The island was originally formed by the eruption of two volcanos. One was located somewhere near the east end of the island and the other somewhere near the west end. Following these eruptions the numerous deep drainages were created by stream erosion and the ocean created the great cliffs along the north coast. A later eruption formed the Makenalua Peninsula on the north central coast. The Kauhako Crater remains as evidence of this eruption. The highest peak is Kamakou which is 4958 feet above sea level.

The climate of the island varies considerably depending on the elevation and location in relation to the prevailing trade winds. The mean annual temperature at sea level is about 74 degrees. The temperature seldom varies more than 10 degrees except at the higher elevations. The yearly rainfall varies from about 7 inches around Kaunakakai to over 150 inches in the high mountain sections of the northeast.

The only port in use on the island is located at Kaunakakai. A small wharf connected to the shore by a long mole is used to load and unload barges, and serve small commercial and private boats. At one time a railroad connected the wharf to the area now known as Hoolehua Homesteads. It was abandoned soon after completion as the sugar plantation it was constructed to serve was a failure. The economy of the island is almost wholly dependant on the growing of pineapple and cattle ranching.

The wharf located at Kolo was used for a time to load pineapple from the Maunaloa area. It was later abandoned and since that time has been partially destroyed by fire. The wharf located at Kamalo is now in poor condition and seldom used except by an occasional small fishing or pleasure boat. The wharf located at Pukoo is no longer in evidence. Located at Haleolon is a small harbor protected by a breakwater. This is a private harbor and is used to load sand and cinder barges for shipment to Oahu. A small private airstrip is located along the easterly breakwater.

Located on the Makenalua Peninsula is the small settlement of Kalau-papa. The settlement is maintained by the State of Hawaii, Department of Health for the treatment of Hansen's Disease (Leper<sup>sey</sup>). Special permission must be obtained from the state before visiting this area. No facilities for serving the public are permitted on the peninsula. The U.S. Coast Guard maintains an isolated light station at the northern tip of the peninsula. The area is served by limited airplane service and supplies are brought in by barge at infrequent intervals. A small wharf protected by a short break-water is located at the settlement. This area is isolated from the remainder of the island except for a foot trail that leads down the steep rocky cliffs from the top of the pali southwest of the settlement.

Shoreline around the island vary from the almost vertical rock cliffs along most of the north and east coast, to the narrow and relatively flat coastal areas along the south coast. Most of the south coast is protected by an offshore reef. A few sandy beaches are located along the south and west coasts. Most of the north coast is accessible only by boat and any landings there should be attempted with extreme caution.

Photography was adequate for the identification of horizontal control and shoreline inspection for most of the island. A few sections of the shoreline along the northeast coast of the island were in complete shadow from the most vertical cliffs.

The shoreline for the entire island was visually inspected on the mean high water noted on the field photographs. The shoreline along the north coast except for the Makenalua Peninsula was inspected by cruising offshore in a small boat. The work was difficult due to the small size of the boat, the rough seas, and strong winds. A few landings were made on the more prominent points along the northeast coast. The remainder of the island was inspected by walking the shoreline in the more accessible areas, and by observations from vantage points along bluffs and cliffs where the shoreline could not be otherwise visited. Scattered sections of the shoreline along the south coast were obscured by overhanging Keawe trees and dense growths of Mangrove trees.

### 3. HORIZONTAL CONTROL

(a) The following described intersection stations were located by traverse or triangulation as nautical aids, aeronautical aids, and landmarks.

Molokai Lighthouse  
Molokai Airport Beacon  
Waihuna, Aero Beacon Red Light  
Kaulapuu, Aero Beacon Red Light

Molokai VOR (MKK)  
 Puu Apalu, Tank  
 Ilio Pt., Coast Guard Loran Mast  
 Waiahewahewa, Aero Beacon Red Light  
 Laau Pt. Light  
 Kaunakakai Harbor, Entrance Range, Front Light  
 Kaunakakai Harbor, Entrance Range, Rear Light

(b) No datum adjustments were made by the field party.

(c) WAIILI 2, 1945 was the only control station identified that was not established by the Coast and Geodetic Survey. This station was established by the Territory of Hawaii and can be considered as third order accuracy. The station was destroyed before it could be tied to the 1962 work. HELENA, 1962 which is located about a half mile west of this station was later identified. All other control stations identified were established by the Coast and Geodetic Survey or tied to by the geodetic party during the 1962 season. Many of the old stations could not be recovered and new stations had to be established to meet the control requirements.

(d) Control stations were positively identified in all areas indicated on the control diagram.

(e) All control stations within the limits of the project except for a few along the inaccessible northeast coast of the island were searched for. Part of this recovery was performed by the geodetic party located on the island. All stations searched for were listed on Form 526 which was submitted to the Honolulu District Officer. A complete list of all stations reported lost on Form 526 would have to be obtained from the Honolulu District Officer or the Division of Geodesy. No stations that were listed as lost were identified for use in the plot.

(g) The quality of identification of each station or substitute station has been indicated on the control station identification card. None of the identification was considered to be sub-standard.

#### 4. VERTICAL CONTROL

The only vertical control requirement was the recovery of all tidal bench marks in the project area and identification of one mark in each of the groups.

All tidal bench marks listed at Pukoo, Kamalo, Kaunakakai, and Kolo were searched for. A total of 18 bench marks were searched for. All marks were listed on Form 685 which was submitted to the Honolulu District Officer.

10 4

A total of 13 U. S. Geological Survey bench marks were searched for. These marks were used in conjunction with the tellurometer traverse work on the island and for use in determining the elevation of landmarks. All marks were listed on Form 685 which was submitted to the Honolulu District Officer.

#### 5. CONTOURS AND DRAINAGE

Contours not applicable

Drainage is self evident on the photographs. All streams except for a few in the larger valleys of the northeast coast and near the east end of the south coast are intermittent. During the wet season there are dozens of waterfalls cascading from the tops of the cliffs and rims of the valleys of the northeast coast. Marsh areas have been indicated on the field photographs.

#### 6. WOODLAND COVER

The mountainous areas of the northeast part of the island is covered with a dense growth of native ferns and hardwoods. A large stand of planted softwoods is located along the top of the pali in the north central part of the island. Keawe trees which were introduced to the island about 100 years ago cover most of the remainder of the island except for the cultivated areas. Along the mud flats of the south coast there are scattered stands of introduced Mangrove trees.

#### 7. SHORELINE AND ALONGSHORE FEATURES

(a) The mean high water line was indicated on the photographs. Along some sections of the northeast coast the shoreline was obscured due to the shadows created on the photographs from the almost vertical cliffs. In some areas of the south coast the shoreline was partially obscured by low overhanging Kiawe trees. In most cases this overhang was less than 10 meters and the approximate correct location was indicated on the photographs. Also along the south coast there are scattered stands of Mangrove trees. In these areas the mean high water line was indicated as apparent shoreline.

The shoreline along the north, east, and small areas of the west and southwest coast contain many areas of alongshore rocks, projecting reefs and ledges, and almost vertical bluffs. These features combined with a normally heavy surf breaking along the shore tend to confuse the location of the mean high water line on the photographs.

Where possible especially along the beach areas and the more accessible sections of the coast the location of the mean high water line was determined by measurements to near by objects.

- (b) The low water line was not indicated on the photographs.
- (c) Where possible the character of the foreshore was indicated on the photographs.
- (d) The north, east, and sections of the west and southwest coast is bordered by rocky cliffs. In some cases these cliffs are over 2000 feet high. Along most of the south coast, sections of the west coast, and the Moomomi area the land has a more gradual slope with a small relatively flat area adjacent to the coast.
- (e) The only unnatural features to be found in the project area were located at Kalaupapa, Kamalo, Kaunakakai, Kolo, and Haleolono. All information regarding these features was indicated on the field photographs.
- (f) Not applicable
- (g) Along the south shore there are the remains of many fishponds. The stone walls for some of these have been completely leveled and for most of the others large sections of the walls have been leveled. The location of these fishponds is apparent on the photographs.

#### 8. OFFSHORE FEATURES

Offshore rocks are located along many areas of the north, east, and sections of the west and southwest coast. Most of these rocks that are visible on the photographs are adjacent to the shore. In these areas it is probable that there are many rocks that are not visible on the photographs but are close enough to the surface of the water to consider the foreshore as being foul with submerged rocks. The height of many of the rocks along the shore were estimated at the time the shoreline was inspected.

A reef about 0.5 to 1.0 mile offshore is located along most of the south coast. Between the reef and the shore there are scattered areas of sand and many coral heads that project at low water.

#### 9. LANDMARKS AND AIDS

(a) All charted landmarks were investigated by the field party. A total of 13 old landmarks were deleted from the charts and four old landmarks were retained. A total of 11 new landmarks were selected for charting. The old landmarks which were to be deleted were indicated on the sections of the charts on which they appeared. These sections of the charts will be submitted with the field records. All old landmarks that were retained and the new landmarks selected for charting were listed on Form 567, and the elevation for each landmark was determined by the field party.

(b) No interior landmarks were selected for charting.

(c) The geographic positions for the following charted aeronautical aids was determined by traverse or triangulation during the 1962 field season.

Molokai, Airport Beacon  
 Waiahewahewa, Aero Beacon Red Light  
 Waihuna, Aero Beacon, Red Light  
 Kualapuu, Aero Beacon, Red Light

The geographic position of one new aeronautical aid selected for charting was determined during the 1962 field season.

Molokai VOR (MKK)

All aeronautical aids to be charted were listed on Form 567 and the elevation for each aid was determined by the field party.

(d) The geographic positions of the following list of aids to navigation was determined by the field party during the 1962 season.

Molokai Lighthouse  
 Laau Pt. Light  
 Ilio Pt., Coast Guard Loran Mast  
 Kaunakakai Harbor, Entrance Range, Front Light  
 Kaunakakai Harbor, Entrance Range, Rear Light

All nautical aids to be charted were listed on Form 567 and the elevation for each aid was determined by the field party.

(e) Not applicable

#### 10. BOUNDARIES, MONUMENTS, AND LINES

Not applicable

#### 11. OTHER CONTROL

No recoverable topographic stations were established.

In all areas where identifiable objects could be found photo hydro sites were selected. In some cases it will be necessary to locate a more suitable location for the hydrographic signals from the selected photo hydro sites .

#### 12. OTHER INTERIOR FEATURES

All roads in the project area were classified on the field photographs in compliance with the project instructions.

All public buildings with their function was indicated on the field photographs.

The main airport serving the island is located south of the Hoolehua Homestead area in the central section of the island. A small airport for use by small aircraft is located on the Makaanalua Peninsula. A small private airstrip is located at Haleolon near the southwest end of the island.

No bridges or overhead cable crossings over navigable water are located in the project area. There are no submerged cables connecting the island with other areas.

13. GEOGRAPHIC NAMES

Not Applicable

Approved:

*H. J. Seaborg*  
H. J. Seaborg  
Capt., C & G S  
Honolulu District Officer

OCT 30 1962

Respectfully submitted:

*Leonard F. Van Scoy*  
Leonard F. Van Scoy  
Supervisory Survey Technician  
Unit Chief, C & G S

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# Photogrammetric Plot Report

Project 21044

Molokai, Hawaii

December, 1964

## 21. Area Covered

This report pertains to the remainder of the Island of Molokai, It covers surveys T-11818 thru T-11824.

## 22. Method

Three strips were bridged by analytic aerotriangulation. Strips 6 and 7 were at a scale of 1:15,000 and strip 8 at 1:25,000.  
3,000 5,000

During the processing of the data for strip 8, distortions were evident at the eastern terminal. Model 2169-70 was eliminated from the bridge, and model 2170-2171 appeared to have distortions also in the center and north side although the two tie points on the south side of the model agreed well with strips 4 and 6. Fortunately these models were not needed as the area is adequately covered by strips 6 and 7.

## 23. Adequacy of Control

The failure of horizontal points in strip 8 to hold together beyond point 86110 and 11 was attributed at first to a possible datum difference. This could not be proved. When additional measurements and a study of the cantilever output indicated distortions in the bridge, this idea was discarded.

Although control point 10100 would not hold well with 86110 and 11 in strip 8, when 10100 was used as a terminal in strip 7, tie point 10403 agreed reasonably well with strip 8.

Control complied with project instructions and was adequate.

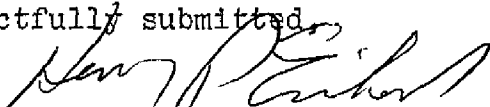
## 24. Supplemental Data

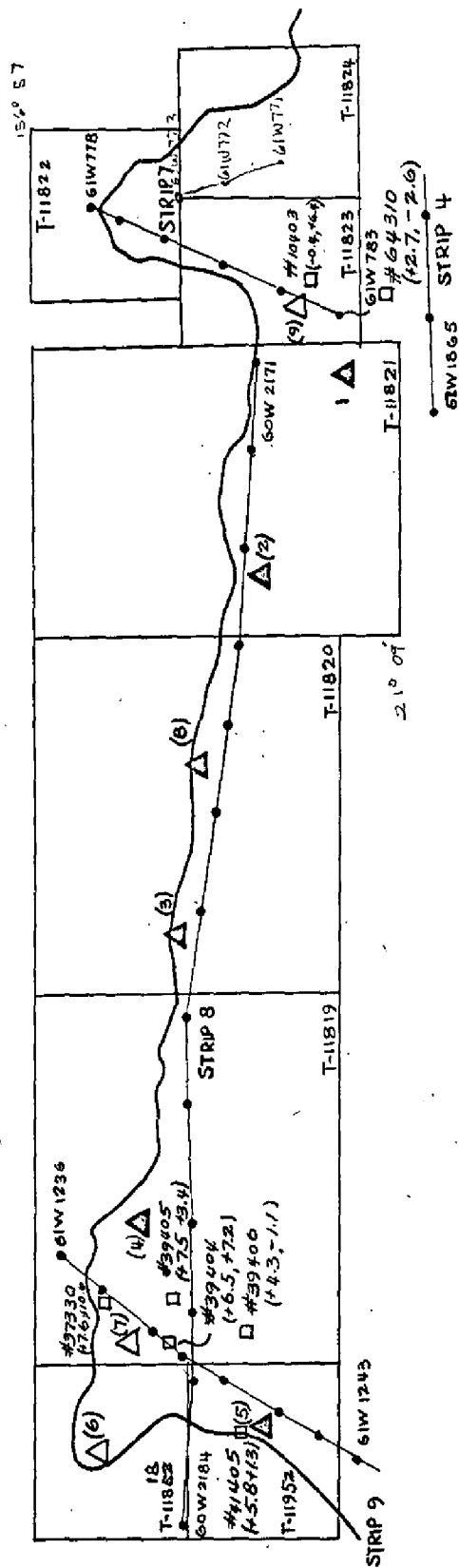
None

## 25. Photography

Photography was adequate with regard to coverage, overlap, and definition.

Respectfully submitted,

  
Henry P. Eichert, Acting Chief,  
Aerotriangulation Section



# AEROTRIANGULATION SKETCH

MOLOKAI ISLAND, HAWAII

PROJECT 21044

## LEGEND

△ CONTROL USED IN ADJUSTMENT

△ CONTROL USED AS CHECK

□ TIE POINTS

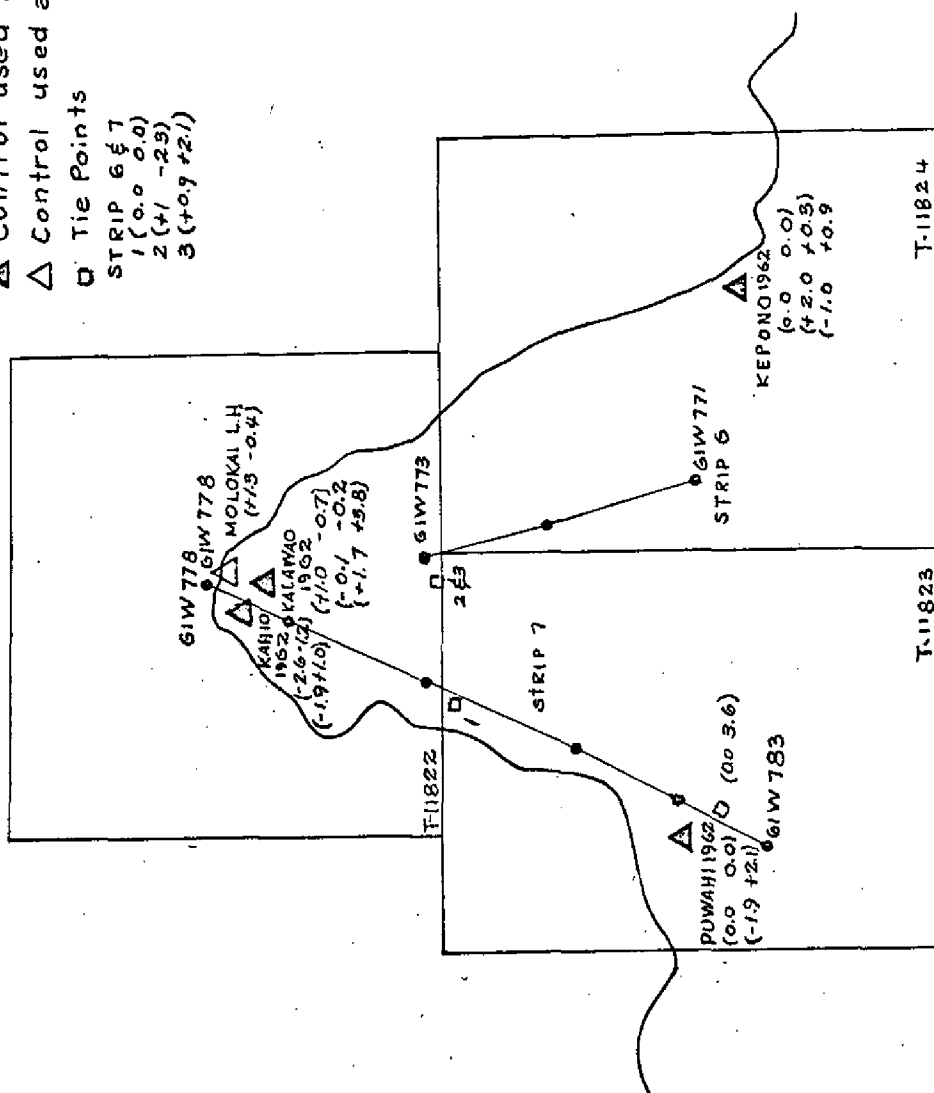
- (1) HANAUELA 2, 1962 Sub Pt. A (+0.3, +0.9) Sub Pt. B (+2.8, -1.1)
- (2) POHAKUNUI, 1888 (40.1, -1.2) Sub Pt. A (-2.8, +0.8) Sub Pt. B (-10.9, -3.2)
- (3) MOOMOMI, 1962 Sub Pt. A (-16.2, 7) Sub Pt. B (-10, -5.3)
- (4) LAINA (KAA) 1926 Sub Pt. A (0.0, 4.9)
- (5) PUU O KAIKA, 1915 Sub Pt. A (+1.2, -2.1) Sub Pt. B (-6.7, +0.1)
- (6) SAND 1950 (Sub Pt. A (+2.6, 17.9) Sub Pt. B (+2.0, 16.8)
- (7) KAO 1926 Sub Pt. A (+2.3, 9.1) Sub Pt. B (+0.7, +8.9)
- (8) PUU KAPELE, 1888 Sub Pt. A (+2.9, -1.2) Sub Pt. B (-1.4, -5.0)
- (9) POWAHI 1962 Sub Pt. A (+0.1, 20.0)

Sub. Pts. for SAND 1950 were considered poor at the time of plate measurement

Δ Control used in adjustment  
 Δ Control used as check

**□ Tie Points**

STRIP 647

$$\begin{matrix} 1(0.0 & 0.0) \\ 2(+1 & -25) \end{matrix}$$
 $3(+0.9 + 2.1)$ 

AEROTRIANGULATION SKETCH  
MOLOKAI ISLAND HAWAII  
PROJECT 21044

## DESCRIPTIVE REPORT CONTROL RECORD

SCALE FACTOR

[illegible]

COMPILATION REPORT  
MAP MANUSCRIPT T-11822  
PROJECT 21044

31. DELINEATION:

PLANIMETRY WAS COMPILED BY THE KELSH INSTRUMENT IN ACCORDANCE WITH FIELD INSPECTION.

32. CONTROL:

ADEQUATE SUPPLEMENTARY CONTROL, BASED ON IDENTIFIED HORIZONTAL CONTROL STATIONS, WAS ESTABLISHED BY AEROTRIANGULATION.

33. SUPPLEMENTAL DATA:

NONE.

34. CONTOURS AND DRAINAGE:

CONTOURS ARE NOT APPLICABLE.

NO DRAINAGE WAS APPARENT IN THE AREA.

35. SHORELINE AND ALONGSIDE DETAILS:

FIELD INSPECTION WAS ADEQUATE FOR THE DELINEATION OF THE MEAN HIGH WATER LINE. NO LOW WATER LINE IS SHOWN. APPROXIMATE LIMITS OF LEDGES ALONGSHORE WERE DELINEATED FROM OFFICE INTERPRETATION OF THE COLOR PHOTOGRAPHY WHERE AVAILABLE.

36. OFFSHORE DETAILS:

NONE.

37. LANDMARKS AND AIDS:

ONE AID TO NAVIGATION HAS BEEN SHOWN. FORM 567 IS SUBMITTED.

38. CONTROL FOR FUTURE SURVEYS:

NONE.

39. JUNCTIONS:

SATISFACTORY JUNCTIONS WERE MADE WITH T-11823 AND T-11824 TO THE SOUTH. THE PACIFIC OCEAN IS ON THE WEST, NORTH AND EAST.

40. HORIZONTAL AND VERTICAL ACCURACY:

46. COMPARISON WITH EXISTING MAPS:

COMPARISON WAS MADE WITH THE U.S.G.S. KAUNAKAKAI, HAWAII QUADRANGLE, SCALE 1:24,000, EDITION 1952.

47. COMPARISON WITH NAUTICAL CHARTS:

COMPARISON WAS MADE WITH:

NAUTICAL CHART 4120, SCALE 1:80,000 AT LAT. 21°01',  
1ST EDITION, REVISED 2/4/63

NAUTICAL CHART 4130, SCALE 1:80,000 AT LAT. 20°51',  
3RD EDITION, REVISED 4/23/62

ITEMS TO BE APPLIED TO NAUTICAL CHARTS IMMEDIATELY:

NONE.

ITEMS TO BE CARRIED FORWARD:

NONE.

APPROVED:

*for* *Leo F. Bengt*  
P. A. STARK, CDR, C&GS  
PORTLAND FIELD OFFICER

SUBMITTED:

*James L. Harris*  
JAMES L. HARRIS  
CARTOGRAPHER

## GEOGRAPHIC NAMES

## FINAL NAME SHEET

PH-6201

T-11822

HAWAII (title)

KAHILI

KAHIU POINT

KA LAEA

KA LAE MAU

KALAEMILO

KAUPIKIAWA

KIIKOLU

LAE HOOLEHUA

MAKANALUA PENINSULA

MOLOKAI

NAMOKU

PACIFIC OCEAN

PAPALOA

Approved by:

*A. J. Wraight*A. J. Wraight  
Chief Geographer

Prepared by:

*F. W. Pickett*F. W. Pickett  
Cartographic Technician

T-11822

49. NOTES FOR THE HYDROGRAPHER:

Refer to Field Edit Ozalid.

The following list of Hydro. Signal Sites with descriptions were furnished by the Field Inspector, dated August 30, 1962.

These are shown on the Manuscript and Cronapaque Ratio Prints for your use, if they are yet in existence.

- 2201 - NORTHEAST END, LOW STONE WALL
- 2202 - NORTHEAST GABLE, SMALL BEACH COTTAGE
- 2203 - PEAK GABLE, SMALL COTTAGE
- 2204 - SOUTHWEST GABLE, SMALL RED HOUSE
- 2205 - OLD SHIP ENGINE

## PHOTOGRAMMETRIC OFFICE REVIEW

T-11822

|                                                                                                                                                                           |                                                                                                  |                                                            |                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------|---------------------------------------------|
| 1. PROJECTION AND GRIDS<br>X                                                                                                                                              | 2. TITLE<br>X                                                                                    | 3. MANUSCRIPT NUMBERS<br>X                                 | 4. MANUSCRIPT SIZE<br>X                     |
| CONTROL STATIONS                                                                                                                                                          |                                                                                                  |                                                            |                                             |
| 5. HORIZONTAL CONTROL STATIONS OF THIRD-ORDER OR HIGHER ACCURACY<br>X                                                                                                     | 6. RECOVERABLE HORIZONTAL STATIONS OF LESS THAN THIRD-ORDER ACCURACY (Topographic stations)<br>X |                                                            | 7. PHOTO HYDRO STATIONS<br>NONE             |
| 8. BENCH MARKS<br>NONE                                                                                                                                                    | 9. PLOTTING OF SEXTANT FIXES<br>NONE                                                             | 10. PHOTOGRAMMETRIC PLOT REPORT<br>X                       | 11. DETAIL POINTS<br>NONE                   |
| ALONGSHORE AREAS (Nautical Chart Data)                                                                                                                                    |                                                                                                  |                                                            |                                             |
| 12. SHORELINE<br>X                                                                                                                                                        | 13. LOW-WATER LINE<br>NONE                                                                       | 14. ROCKS, SHOALS, ETC.<br>X                               | 15. BRIDGES<br>NONE                         |
| 16. AIDS TO NAVIGATION<br>X                                                                                                                                               | 17. LANDMARKS<br>NONE                                                                            | 18. OTHER ALONGSHORE PHYSICAL FEATURES<br>X                | 19. OTHER ALONGSHORE CULTURAL FEATURES<br>X |
| PHYSICAL FEATURES                                                                                                                                                         |                                                                                                  |                                                            |                                             |
| 20. WATER FEATURES<br>X                                                                                                                                                   | 21. NATURAL GROUND COVER<br>NOT APPLICABLE                                                       |                                                            | 22. PLANETABLE CONTOURS<br>NOT APPLICABLE   |
| 23. STEREOSCOPIC INSTRUMENT CONTOURS<br>NOT APPLICABLE                                                                                                                    | 24. CONTOURS IN GENERAL<br>NOT APPLIC.                                                           | 25. SPOT ELEVATIONS<br>NONE                                | 26. OTHER PHYSICAL FEATURES<br>X            |
| CULTURAL FEATURES                                                                                                                                                         |                                                                                                  |                                                            |                                             |
| 27. ROADS<br>X                                                                                                                                                            | 28. BUILDINGS<br>X                                                                               | 29. RAILROADS<br>NONE                                      | 30. OTHER CULTURAL FEATURES<br>X            |
| BOUNDARIES                                                                                                                                                                |                                                                                                  |                                                            |                                             |
| 31. BOUNDARY LINES<br>X                                                                                                                                                   |                                                                                                  | 32. PUBLIC LAND LINES<br>NONE                              |                                             |
| MISCELLANEOUS                                                                                                                                                             |                                                                                                  |                                                            |                                             |
| 33. GEOGRAPHIC NAMES<br>X                                                                                                                                                 | 34. JUNCTIONS<br>X                                                                               |                                                            | 35. LEGIBILITY OF THE MANUSCRIPT<br>X       |
| 36. DISCREPANCY OVERLAY<br>NONE                                                                                                                                           | 37. DESCRIPTIVE REPORT<br>X                                                                      | 38. FIELD INSPECTION PHOTOGRAPHS<br>X                      | 39. FORMS<br>X                              |
| 40. REVIEWER<br>James L. Harris                                                                                                                                           |                                                                                                  | SUPERVISOR, REVIEW SECTION OR UNIT                         |                                             |
| 41. REMARKS (See attached sheet)                                                                                                                                          |                                                                                                  |                                                            |                                             |
| FIELD COMPLETION ADDITIONS AND CORRECTIONS TO THE MANUSCRIPT                                                                                                              |                                                                                                  |                                                            |                                             |
| 42. Additions and corrections furnished by the field completion survey have been applied to the manuscript. The manuscript is now complete except as noted under item 43. |                                                                                                  |                                                            |                                             |
| COMPILER<br>A. L. Shands 7/9/69<br>Rev. by: R. E. Smith 10/19/69                                                                                                          |                                                                                                  | SUPERVISOR<br>Albert C. Rauck, Jr.<br>Albert C. Rauck, Jr. |                                             |
| 43. REMARKS<br>Field edit applied from:<br>Field edit ozalid & field photograph No. 61-W-779                                                                              |                                                                                                  |                                                            |                                             |

#0  
22

Field Edit Report  
To Accompany T 11822

USC&GSS McARTHUR

Ronald L. Newsom  
CDR, USESSA  
Commanding Officer

51 METHODS

Manuscript T 11822 was field edited by personnel aboard the USC&GSS McARTHUR in conjunction with the hydrography on boatsheets AR 10-2-68 (H 8975) and AR 5-1-68 (H 8976). Shoreline area inspection and all other acquisition of field edit material was accomplished from Launch AR 1. Heavy swell and an extremely rocky and jagged shoreline made delineation of the MLLW line impossible. Additions and corrections to the manuscript have been noted on the single field edit ozalid that was provided for T 11822 and then cross referenced and noted in violet ink on photo number 61W0779. No deletions on the field edit ozalid were necessary.

52 ADEQUACY OF COMPILATION

Manuscript T 11822 is complete and adequate for use in conjunction with this hydrographic survey. The area of this manuscript from the shoreline seaward was field edited.

54 RECOMMENDATIONS

It is recommended that the wreck shown on C&GS Chart #4116 be repositioned at the location as indicated on the photo and field edit ozalid accompanying this report.

## REVIEW REPORT T-11822

## SHORELINE

AUGUST 19, 1970

61. GENERAL STATEMENT

See Summary, which is page 6 of the Descriptive Report.

62. COMPARISON WITH REGISTERED SURVEYS

There was no prior registered survey available for comparison purposes at the time of final review.

63. COMPARISON WITH MAPS OF OTHER AGENCIES

Comparison was made with USGS KAUNAKAKAI, HAWAII, 9.5 to 7.5 minute quadrangle, 1:24,000 scale, edition of 1952. Because of the difference in scales of the two surveys, only a visual comparison was feasible. The surveys appear to be in good general agreement.

64. COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS

Comparison was made with copies of boat sheets H-8976, AR-5-1-68 and H-8975, AR-10-2-68. Three changes were made in the location of the mean high water line during final review. These extend from Lae Hoolehua near latitude  $21^{\circ}13'02''$ , longitude  $156^{\circ}58'06''$  southeastward to  $21^{\circ}12'48''$  -  $156^{\circ}57'57''$ . These changes and all differences between the surveys have been noted on the comparison print in purple.

65. COMPARISON WITH NAUTICAL CHARTS

A visual comparison was made with Chart 4120, 3rd edition, dated October 14, 1968. The chart shows no rocks with the exception of those located near latitude  $21^{\circ}12'36''$ , longitude  $156^{\circ}59'12''$ .

The reef shown on the chart, on the west side of Makanalua Peninsula, appears to include a large part of the submerged portion.

66. ADEQUACY OF RESULTS AND FUTURE SURVEYS

This survey complies with instructions and meets the National Standards of Map Accuracy.

Reviewed by:

*Leo F. Beugnet*  
Leo F. Beugnet  
Cartographer

Approved by:

*Allen L. Powell*  
Allen L. Powell, RADM, USESSA  
Director, Atlantic Marine Center

Approved by:

*Charles L. Lamm*  
Chief, Photogrammetric Branch, *phs*

*Jack E. Luth*  
Chief, Photogrammetry Division

(3)  
Namoku

Ka Laea

foul with rocks

Not visible on photographs

21° 12' 30"

Foul area on  
boat sheet

foul with  
rocks and  
coral

Wreck ht = 4ft

Cem

Kalaemilo

The rocks in this area are  
not on the boat sheet

foul with rocks

Papaloo

Cemetery

21° 12' 00"

x = 390,000 FT. 156° 59' 15"

x = 392,000 FT. 156° 59' 00" T-11822

$21^{\circ}13'15''$  $156^{\circ}58'45''$ 

Ka Lae Mau

(3)

foul with rocks

(2)

Kahili

Not visible on photographs

foul with rocks

Airport

 $21^{\circ}12'45''$ 

2204

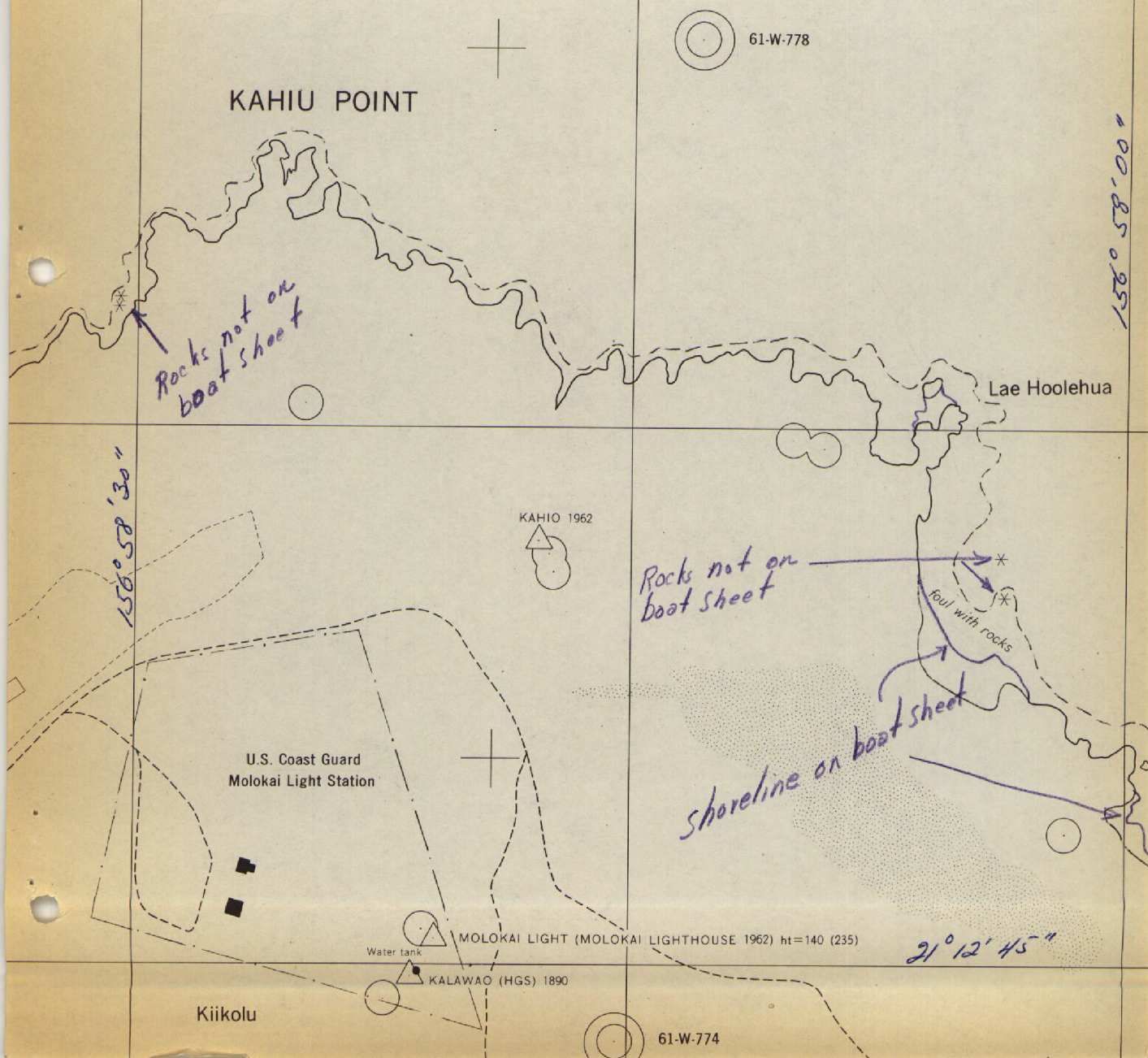
T-11822

## NOTE:

"The photogrammetric location and delineation of features offshore from the mean high-water line on this survey may not be complete or final. The contemporary reviewed hydrographic survey of the area where available, should be consulted for the final delineation."

21° 13' 15"

156° 58' 00"



Not visible on photographs

21° 13' 00"

158° 57' 45"

Not on boat sheet

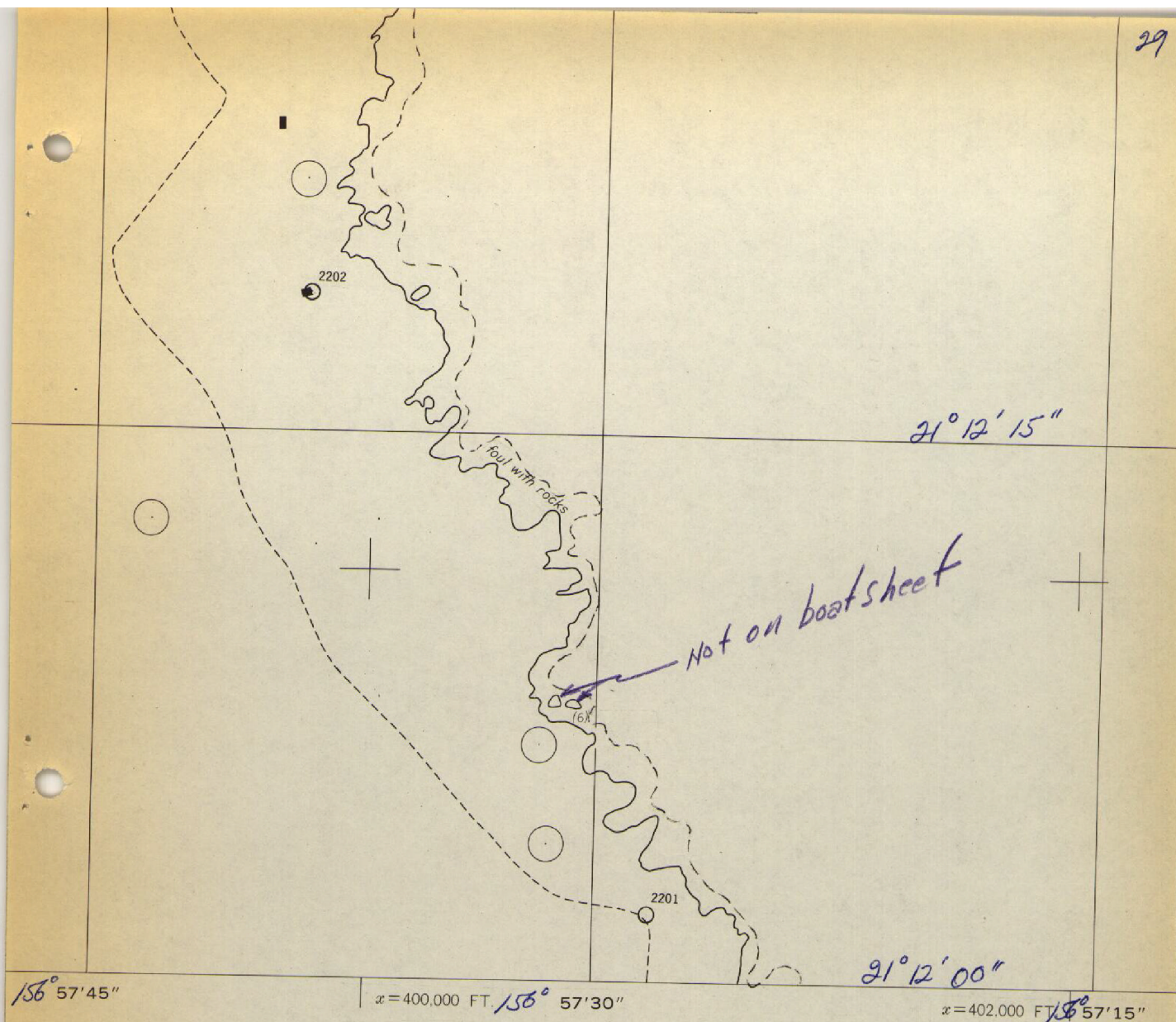
156° 57' 30"

Shoreline on  
boat sheet

21° 12' 30"

Kaupikiawa

T-11822



control station of third-order or higher accuracy  
 nes the approximate mean high water.  
 metric methods, from aerial photographs

Oct. 1960 Sept. 1961  
 Aug. 1962  
 Dec. 1968  
 Dec. 1969  
 Aug. 1970

2,000 fms

T-11822

## NONFLOATING AIDS OR LANDMARKS FOR CHARTS

TO BE CHARTED  
TO BE REVISED  
TO BE DELETED

STRIKE OUT TWO

I recommend that the following objects which have *(have not)* been inspected from seaward to determine their value as landmarks be charted on *(deleted from)* the charts indicated.

The positions given have been checked after listing by James L. Harris

Portland, Oregon

June 14, 1965

P.A. Stark

Chief of Party

[illegible]

This form shall be prepared in accordance with Hydrographic Manual, Publication 20.2, Sec. 1-55, 2-39, 6-36, 7-18 to 22 inclusive, and Fig. 79. Positions of charted landmarks and *nonfloating aids* to navigation, if redetermined, shall be reported on this form. Revisions shall show both the old and new positions. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.

### \* TABULATE SECONDS AND METERS