T-13316

NOAA FORM 76-35
(3-76)

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

DESCRIPTIVE REPORT

Map No.	*Edition No.*
T-13316	1

Job No. PH-6703

Map Classification Final
Field Edited Map

Type of Survey SHORELINE

LOCALITY

State Hawaii

General Locality Hilo Bay, Hawaii Island

Locality Honolii Cove

19 75 TO 19 76

REGISTRY IN ARCHIVES

DATE

*U.S. GOVERNMENT PRINTING OFFICE:1976-669-248

T-13316

NOAA FORM 76-36A (3-72) — U.S. DEPARTMENT OF COMMERCE, NATIONAL OCEANIC AND ATMOSPHERIC ADMIN.

DESCRIPTIVE REPORT - DATA RECORD

TYPE OF SURVEY
- [x] ORIGINAL
- [ ] RESURVEY
- [ ] REVISED

SURVEY TP- 13316
MAP EDITION NO. (1)
MAP CLASS Final
JOB PH- 6703

PHOTOGRAMMETRIC OFFICE
Coastal Mapping Division, AMC, Norfolk, VA

OFFICER-IN-CHARGE
Jeffrey G. Carlen, Cdr.

LAST PRECEEDING MAP EDITION
TYPE OF SURVEY
- [ ] ORIGINAL
- [ ] RESURVEY
- [ ] REVISED

JOB PH-
MAP CLASS
SURVEY DATES:
19__ TO 19__

I. INSTRUCTIONS DATED

1. OFFICE		2. FIELD	
Aerotriangulation	10/6/75	Premarking	1/15/69
Compilation	12/3/75	Premarking	6/13/72
		Premarking Supplement I	8/27/75

II. DATUMS

1. HORIZONTAL: [ ] 1927 NORTH AMERICAN
OTHER (Specify): Old Hawaiian Datum

2. VERTICAL:
- [x] MEAN HIGH-WATER
- [ ] MEAN LOW-WATER
- [x] MEAN LOWER LOW-WATER
- [ ] MEAN SEA LEVEL

OTHER (Specify):

3. MAP PROJECTION: Transverse Mercator

4. GRID(S)

STATE	ZONE
Hawaii	1

5. SCALE: 1:5,000

III. HISTORY OF OFFICE OPERATIONS

OPERATIONS		NAME	DATE
1. AEROTRIANGULATION	BY	B. Thornton	Nov 1975
METHOD: Analytic	LANDMARKS AND AIDS BY		
2. CONTROL AND BRIDGE POINTS	PLOTTED BY	Solbeck	Nov 1975
METHOD: Coradomat	CHECKED BY	Solbeck	Nov 1975
3. STEREOSCOPIC INSTRUMENT COMPILATION	PLANIMETRY BY	C. Blood	Jan 1976
	CHECKED BY	A. C. Rauck, Jr.	Jan 1976
INSTRUMENT: Wild B-8	CONTOURS BY	NA	
SCALE: 1:7,500	CHECKED BY	NA	
4. MANUSCRIPT DELINEATION	PLANIMETRY BY	I. Perkinson	Jan 1976
	CHECKED BY	F. Margiotta	Jan 1976
METHOD: Smooth draft	CONTOURS BY	NA	
	CHECKED BY	NA	
SCALE: 1:5,000	HYDRO SUPPORT DATA BY	I. Perkinson	Jan 1976
	CHECKED BY	F. Margiotta	Jan 1976
5. OFFICE INSPECTION PRIOR TO FIELD EDIT	BY	F. Margiotta	Jan 1976
6. APPLICATION OF FIELD EDIT DATA	BY	F. Mauldin	Oct 1976
	CHECKED BY	F. Margiotta	Nov 1976
7. COMPILATION SECTION REVIEW	BY	F. Margiotta	Nov 1976
8. FINAL REVIEW	BY	A. L. Shands	May 1978
9. DATA FORWARDED TO PHOTOGRAMMETRIC BRANCH	BY	A. L. Shands	May 1978
10. DATA EXAMINED IN PHOTOGRAMMETRIC BRANCH	BY	J. A. Wright	June 1978
11. MAP REGISTERED - COASTAL SURVEY SECTION	BY	R. T. Cator	Aug 1978

NOAA FORM 76-36A — SUPERSEDES FORM C&GS 181 SERIES

* U.S. G.P.O. 1972-769382/582 REG.#6

NOAA FORM 76-36B
(3-72)

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

T-13316

COMPILATION SOURCES

1. COMPILATION PHOTOGRAPHY

CAMERA(S)	TYPES OF PHOTOGRAPHY LEGEND	TIME REFERENCE
Wild RC-8	(C) COLOR (P) PANCHROMATIC (I) INFRARED	ZONE: Hawaii — [X] STANDARD MERIDIAN: 150th — [ ] DAYLIGHT

TIDE STAGE REFERENCE
- [X] PREDICTED TIDES
- [ ] REFERENCE STATION RECORDS
- [ ] TIDE CONTROLLED PHOTOGRAPHY

NUMBER AND TYPE	DATE	TIME	SCALE	STAGE OF TIDE
75TNHY(P) 4410-4413	2/21/75	10:52	1:15,000	1.0 ft. above MLLW

REMARKS

Mean high water at Hilo is 1.9 ft.

2. SOURCE OF MEAN HIGH-WATER LINE:

The mean high water line was delineated from the above listed photographs and notes given by the field editor.

3. SOURCE OF MEAN LOW-WATER OR MEAN LOWER LOW-WATER LINE:

None compiled.

4. CONTEMPORARY HYDROGRAPHIC SURVEYS *(List only those surveys that are sources for photogrammetric survey information.)*

SURVEY NUMBER	DATE(S)	SURVEY COPY USED	SURVEY NUMBER	DATE(S)	SURVEY COPY USED

5. FINAL JUNCTIONS

NORTH	EAST	SOUTH	WEST
None ~~T-13261~~	None ~~T-13261~~	T-13315	No Survey

REMARKS

This map is inscribed in and forms the southwest portion of TP-13261(1:10,000)

NOAA FORM 76-36C
(3-72)

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

HISTORY OF FIELD OPERATIONS

I. [X] FIELD INSPECTION OPERATION [ ] FIELD EDIT OPERATION

OPERATION		NAME	DATE
1. CHIEF OF FIELD PARTY		R. Melby	Sep 1975
2. HORIZONTAL CONTROL	RECOVERED BY	R. Melby	Sep 1975
	ESTABLISHED BY	R. Melby	Sep 1975
	PRE-MARKED OR IDENTIFIED BY	R. Melby	Sep 1975
3. VERTICAL CONTROL	RECOVERED BY	NA	
	ESTABLISHED BY	NA	
	PRE-MARKED OR IDENTIFIED BY	NA	
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED *(Triangulation Stations)* BY	R. Melby	Sep 1975
	LOCATED *(Field Methods)* BY	R. Melby	Sep 1975
	IDENTIFIED BY	R. Melby	Sep 1975
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION [ ] COMPLETE [ ] SPECIFIC NAMES ONLY [X] NO INVESTIGATION — BY		
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY	None	
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY	NA	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED

2. VERTICAL CONTROL IDENTIFIED: None

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION
75TNHY4413(P)	PAUKAA POINT LIGHT, 1975		

3. PHOTO NUMBERS *(Clarification of details)*

None

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME
75TNHY4413(P)	PAUKAA POINT LIGHT		

5. GEOGRAPHIC NAMES: [ ] REPORT [X] NONE

6. BOUNDARY AND LIMITS: [ ] REPORT [X] NONE

7. SUPPLEMENTAL MAPS AND PLANS

None

8. OTHER FIELD RECORDS *(Sketch books, etc.* **DO NOT** *list data submitted to the Geodesy Division)*

☆U.S. Government Printing Office: 1975 — 665-661/1110, Region No. 6

NOAA FORM 76-36C
(3-72)

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

HISTORY OF FIELD OPERATIONS

I. ☐ FIELD INSPECTION OPERATION ☒ FIELD EDIT OPERATION

OPERATION		NAME	DATE
1. CHIEF OF FIELD PARTY		R. Spears	Apr 1976
2. HORIZONTAL CONTROL	RECOVERED BY	None	
	ESTABLISHED BY	None	
	PRE-MARKED OR IDENTIFIED BY	None	
3. VERTICAL CONTROL	RECOVERED BY	NA	
	ESTABLISHED BY	NA	
	PRE-MARKED OR IDENTIFIED BY	NA	
4. LANDMARKS AND AIDS TO NAVIGATION	RECOVERED *(Triangulation Stations)* BY	J. C. Osborn, Jr.	Apr 1976
	LOCATED *(Field Methods)* BY	J. C. Osborn, Jr.	Apr 1976
	IDENTIFIED BY	J. C. Osborn, Jr.	Apr 1976
5. GEOGRAPHIC NAMES INVESTIGATION	TYPE OF INVESTIGATION ☐ COMPLETE ☐ SPECIFIC NAMES ONLY ☒ NO INVESTIGATION — BY		
6. PHOTO INSPECTION	CLARIFICATION OF DETAILS BY	J. C. Osborn, Jr.	Apr 1976
7. BOUNDARIES AND LIMITS	SURVEYED OR IDENTIFIED BY	NA	

II. SOURCE DATA

1. HORIZONTAL CONTROL IDENTIFIED: None

2. VERTICAL CONTROL IDENTIFIED: None

PHOTO NUMBER	STATION NAME	PHOTO NUMBER	STATION DESIGNATION

3. PHOTO NUMBERS *(Clarification of details)*

75TNHY 4410 thru 4413(P)

4. LANDMARKS AND AIDS TO NAVIGATION IDENTIFIED

PHOTO NUMBER	OBJECT NAME	PHOTO NUMBER	OBJECT NAME
75TNHY(P) 4412	PAUKAA POINT LIGHT		

5. GEOGRAPHIC NAMES: ☐ REPORT ☒ NONE

6. BOUNDARY AND LIMITS: ☐ REPORT ☒ NONE

7. SUPPLEMENTAL MAPS AND PLANS

None

8. OTHER FIELD RECORDS *(Sketch books, etc.* **DO NOT** *list data submitted to the Geodesy Division)*

2 Forms 76-40
1 Field Edit Report
1 Field Edit Ozalid

☆U.S. Government Printing Office: 1975 – 665-661/1110, Region No. 6

NOAA FORM 76-36D
(3-72)

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

RECORD OF SURVEY USE

I. MANUSCRIPT COPIES

COMPILATION STAGES			DATE MANUSCRIPT FORWARDED	
DATA COMPILED	DATE	REMARKS	MARINE CHARTS	HYDRO SUPPORT
Compilation complete, pending field edit.	Jan 1976	Class III Manuscript	1/30/76	1/30/76
Field edit applied, compilation complete	Oct 1976	Class I Manuscript	11/5/76	
Final Review	May 1978	Final	May 1978	

II. LANDMARKS AND AIDS TO NAVIGATION

1. REPORTS TO MARINE CHART DIVISION, NAUTICAL DATA BRANCH

NUMBER	CHART LETTER NUMBER ASSIGNED	DATE FORWARDED	REMARKS
1		11/8/76	Aids to be charted
1		11/8/76	Landmark to be charted

2. ☐ REPORT TO MARINE CHART DIVISION, COAST PILOT BRANCH. DATE FORWARDED: _____
3. ☐ REPORT TO AERONAUTICAL CHART DIVISION, AERONAUTICAL DATA SECTION. DATE FORWARDED: _____

III. FEDERAL RECORDS CENTER DATA

1. [X] BRIDGING PHOTOGRAPHS; [X] DUPLICATE BRIDGING REPORT; ☐ COMPUTER READOUTS.
2. [X] CONTROL STATION IDENTIFICATION CARDS; [X] FORM NOS 76-40 ~~562~~ SUBMITTED BY FIELD PARTIES.
3. [X] SOURCE DATA *(except for Geographic Names Report)* AS LISTED IN SECTION II, NOAA FORM 76-36C. ACCOUNT FOR EXCEPTIONS:

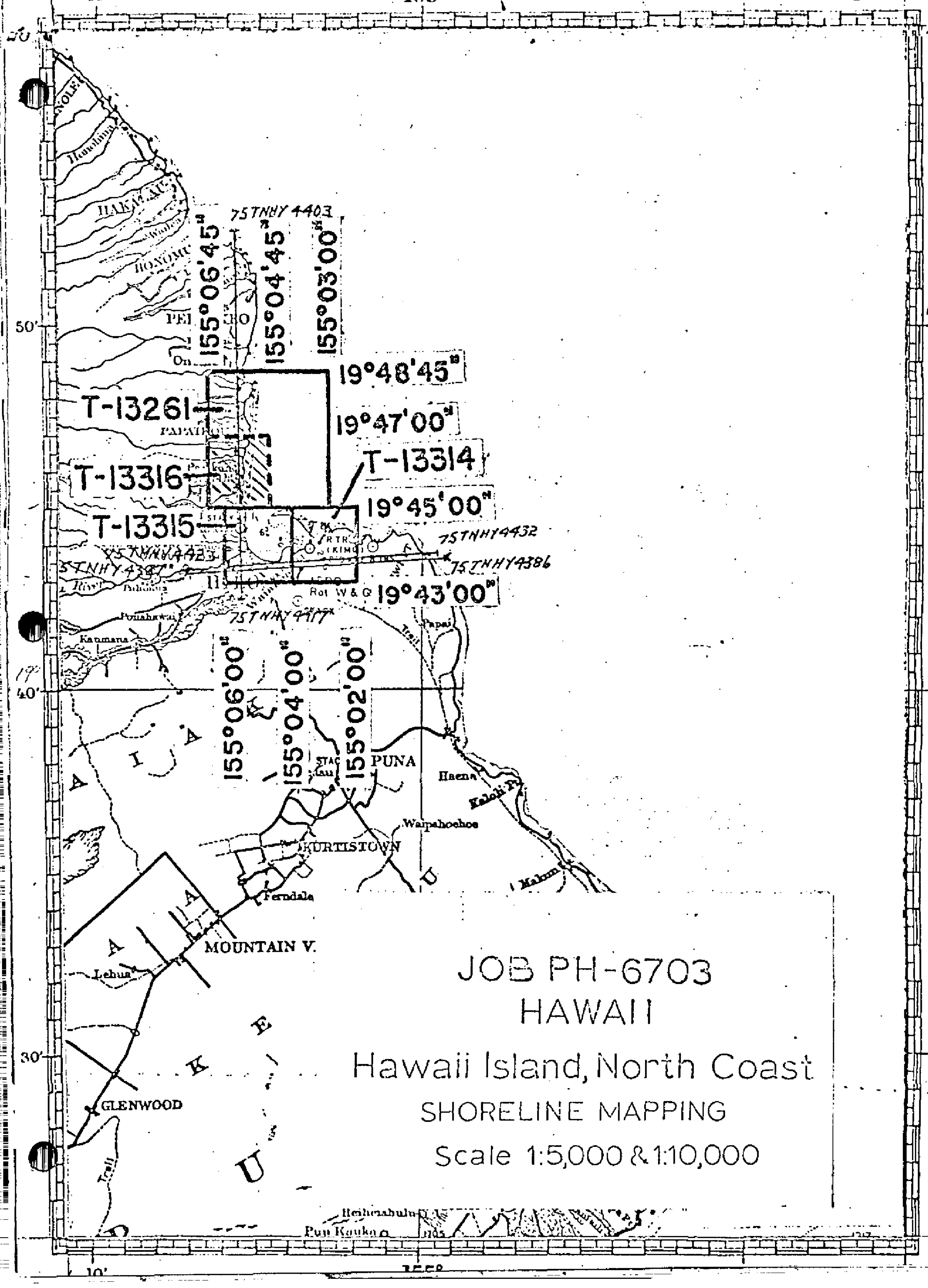
4. ☐ DATA TO FEDERAL RECORDS CENTER. DATE FORWARDED: _____

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

	SURVEY NUMBER	JOB NUMBER	TYPE OF SURVEY / MAP CLASS
SECOND EDITION	TP - _____ (2)	PH - _____	☐ REVISED ☐ RESURVEY ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
THIRD EDITION	TP - _____ (3)	PH- _____	☐ REVISED ☐ RESURVEY ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	
FOURTH EDITION	TP - _____ (4)	PH - _____	☐ REVISED ☐ RESURVEY ☐ II. ☐ III. ☐ IV. ☐ V. ☐ FINAL
	DATE OF PHOTOGRAPHY	DATE OF FIELD EDIT	

NOAA FORM 76-36D

☆U.S. Government Printing Office: 1975 – 665-661/1108, Region No. 6


155°
10'
50'
50'
40'
30'
155°06'45"
155°04'45"
155°03'00"
75TNHY4403
19°48'45"
19°47'00"
19°45'00"
19°43'00"
T-13261
T-13316
T-13314
T-13315
75TNHY4432
75TNHY4423
75TNHY4387
75TNHY4386
75TNHY4417
155°06'00"
155°04'00"
155°02'00"
PUNA
Haena
Waipahoehoe
KURTISTOWN
Ferndale
MOUNTAIN V.
Lehua
GLENWOOD
JOB PH-6703
HAWAII
Hawaii Island, North Coast
SHORELINE MAPPING
Scale 1:5,000 & 1:10,000

SUMMARY TO ACCOMPANY

DESCRIPTIVE REPORTS T-13314,
T-13315 and T-13316

This summary covers three of the four maps which comprise Project PH-6703. At this writing the other map in the Project, T-13261, has not been scheduled for compilation. It is anticipated that Map T-13261 will be compiled later in conjunction with Project CM-7712 which is planned to junction with this project. Maps T-13314, T-13315 and T-13316 are each 1:5,000 scale extending two minutes in latitude and two minutes in longitude.

Photography of the area was flown in February, 1975, by private contractor. Scale is 1:15,000 and 1:30,000. Panchromatic film was used with the RC-8 camera. Coverage and quality are adequate. The breakwater forming Hilo Bay was not covered entirely by the photography. Its position was determined by the field editor using field methods.

The area covered is that of Hilo Bay located on the northeast coast of the island of Hawaii. This project originally consisted of seventeen (17) maps at 1:10,000 scale and seven (7) maps at 1:5,000 scale covering the entire northeast coast of the island of Hawaii from Halaula on the north to Waiakahiula on the south. All but four of those maps were cancelled. ~~See correspondence dated April 29, 1977.~~

Field work prior to compilation was limited to the recovery and identification of horizontal control necessary for bridging.

Bridging was done by analytic methods at the Washington Science Center. The maps were compiled at the Atlantic Marine Center in January, 1976, by stereo instrument method.

Field edit was performed in April, 1976, concurrent with hydrography and applied to the maps at the Atlantic Marine Center in October, 1976.

All maps were final reviewed at the Atlantic Marine Center in May, 1978. Pertinent data was forwarded to the Washington Science Center for reproduction and final registration.

FIELD INSPECTION

T-13316

There was no field inspection prior to compilation. Field work accomplished was limited to the recovery and identification of horizontal control necessary for bridging.

PHOTOGRAMMETRIC PLOT REPORT
HILO BAY, HAWAII
Job PH-6703
November 14, 1975

Area Covered: The area covered in this project is the east coast area of the island Hawaii. This area is covered by four 1:10,000-scale sheets, T#-13259 thru T#-13262 and three 1:5,000-scale sheets, T#-13314 thru T#-13316. Note: T-13259, T-13260, & T-13262 are cancelled. A.L.S. 5/24/78

Method: Two strips of 1:15,000 scale black-and-white photography were bridged by analytic aerotriangulation methods. The two strips of bridging photography were controlled by field-identified control.

Common points were located on the bridging photography for ratio purposes. Tie points were used to insure an adequate junction of the strips during the adjustment.

All manuscripts were plotted on the Coradi and the photo requisition for the ratios has been submitted to the photo lab.

Adequacy of Control: The control checked well within map accuracy standards and is more than sufficient for its intended use. See attached sheet for accuracy of control in strip adjustment.

Supplemental Data: USGS quadrangles were used to provide vertical control for the adjustment.

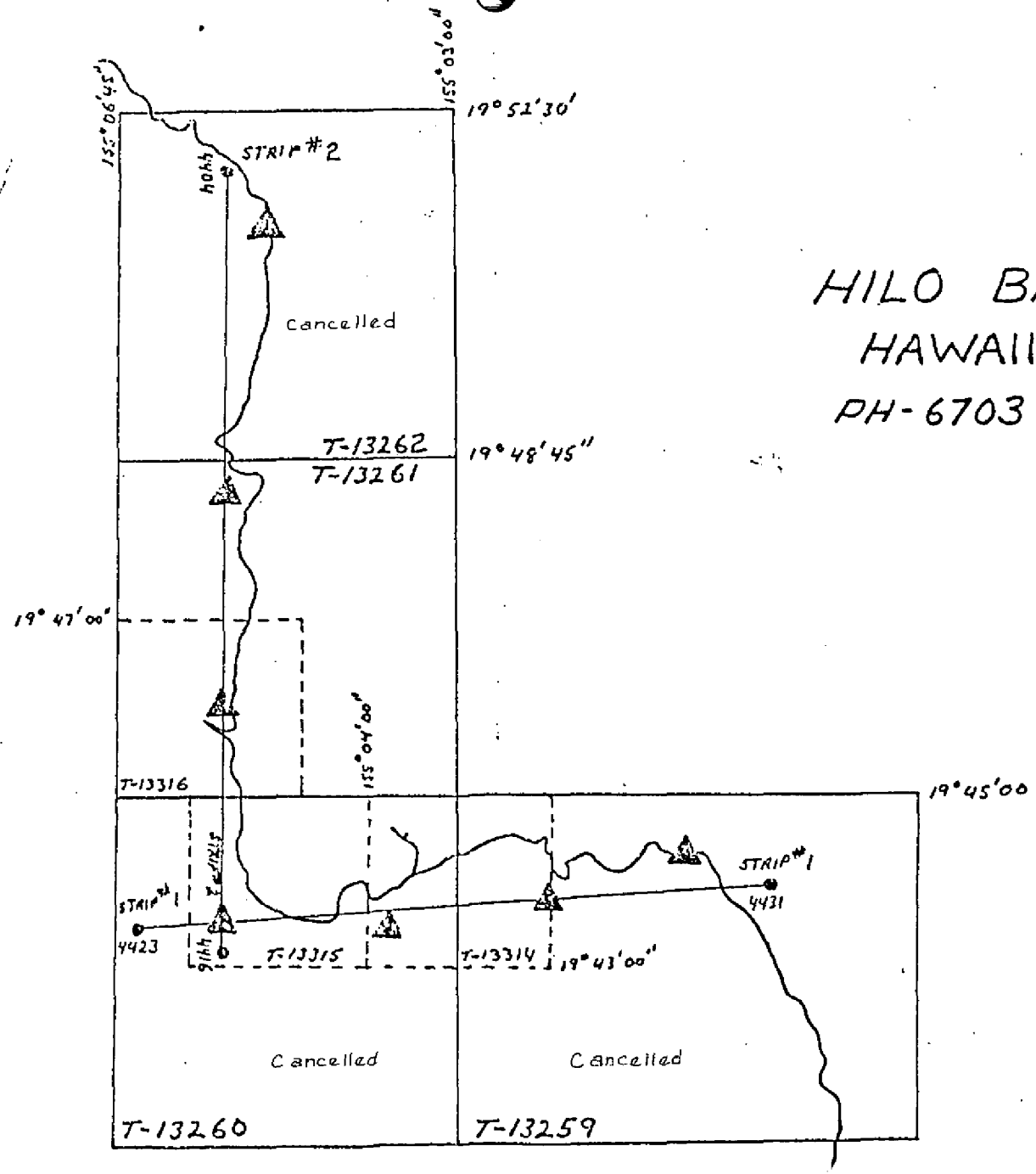
Photography: The coverage, overlap, and quality of the photography was adequate for the job.

Submitted by,

Brian Thornton

Approved and forwarded:

John D. Perrow, Jr.
Chief, Aerotriangulation Section



HILO BAY
HAWAII
PH-6703

List & Accuracy of Control Used In Strip Adjustment

	Point	X-error	Y-error
Strip #1	416101	-.153	.071
	416102	2.098	2.736
	426101	.476	.187
	426102	.419	-.749
	428110	-.772	-.898
	429101	-.695	.198
	431101	.372	-.082
	431102	.614	-.886
Strip #2	405100	-.259	-.589
	405101	.020	-.002
	409101	-.045	.007
	409102	.490	.093
	412100	-.325	.564
	412101	.035	-.008
	416101	-.031	.004
	416102	2.203	2.786

NOAA FORM 76-41
(6-75)

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

DESCRIPTIVE REPORT CONTROL RECORD

MAP NO.	JOB NO.	GEODETIC DATUM	ORIGINATING ACTIVITY
T-13316	PH-6703	Old Hawaiian	Coastal Mapping Division, AMC Norfolk, VA

STATION NAME	SOURCE OF INFORMATION (Index)	AEROTRIANGULATION POINT NUMBER	COORDINATES IN FEET STATE Hawaii ZONE One (1)	GEOGRAPHIC POSITION φ LATITUDE λ LONGITUDE	REMARKS
PAPAIKOU STACK (USGS) 1975	Field pos. Form 28D	30	x=	φ 19 46 53.945	1658.8 186.1
			y=	λ 155 05 31.442	915.2 831.9
PAUKAA POINT LIGHT, 1975	Bridge Form 76-41 Pg. 2 of 4	412100	x= 640 109.00	φ	109.00 1891.00
			y= 338 588.72	λ	588.72 1411.28
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	
			x=	φ	
			y=	λ	

COMPUTED BY	A. C. Rauck, Jr.	DATE	12/3/75	COMPUTATION CHECKED BY	F. Mauldin	DATE	12/8/75
LISTED BY	A. C. Rauck, Jr.	DATE	12/3/75	LISTING CHECKED BY	F. Mauldin	DATE	12/8/75
HAND PLOTTING BY	None	DATE		HAND PLOTTING CHECKED BY		DATE	

SUPERSEDES NOAA FORM 76-41, 2-71 EDITION WHICH IS OBSOLETE.

COMPILATION REPORT

T-13316

31. DELINEATION:

Delineation was by the Wild B-8 stereoplotter, using the 1:15,000 scale compilation photography. This was adequate for details and coverage.

32. CONTROL:

See Photogrammetric Plot Report, dated November 14, 1975.

33. SUPPLEMENTAL DATA:

None.

34. CONTOURS AND DRAINAGE:

Contours are not applicable to the project. Drainage was delineated by office interpretation of the photographs.

35. SHORELINE AND ALONGSHORE DETAILS:

The shoreline and all alongshore details were delineated by office interpretation of the photographs.

36. OFFSHORE DETAILS:

These consisted or rocks, and/or coral heads. A clarification and identification of these features must be made during the field edit.

37. LANDMARKS AND AIDS:

Appropriate copies of Forms 76-40, Landmarks and Non-floating Aids to Navigation, were forwarded to the field editor and/or hydrographer for further processing.

38. CONTROL FOR FUTURE SURVEYS:

None.

39. JUNCTIONS:

See Form 76-36B, Item #5 of this Descriptive Report concerning junctions.

40. HORIZONTAL AND VERTICAL ACCURACY:

No Statement.

46. COMPARISON WITH EXISTING MAPS:

A comparison has been made with USGS Quadrangle Papaikou, Hawaii, scale 1:24,000, dated 1966.

47. COMPARISON WITH NAUTICAL CHARTS:

A comparison has been made with National Ocean Survey Charts 19324, scale 1:10,000, 17th edition, dated August 30, 1975, and ~~HEC~~ 19040, scale 1:250,000, 10th edition, dated October 13, 1973.

ITEMS TO BE APPLIED TO NAUTICAL CHARTS IMMEDIATELY

None.

ITEMS TO BE CARRIED FORWARD

None.

Submitted by:

Irene Perkinson

Irene Perkinson
Cartographic Technician

Approved:

Albert C. Rauck, Jr.

Albert C. Rauck, Jr.
Chief, Coastal Mapping Section

April 18, 1978

GEOGRAPHIC NAMES

FINAL NAME SHEET

PH-6703 (Hilo, Hawaii)

T-13316

Hilo Bay

Honolii Cove

Honolii Stream

Kapue Stream

Lau Hue Point

Maili Stream

Maumau Point

Pacific Ocean

Pahoehoe Stream

Papaikou

Paukaa

Paukaa Point

Approved:

Charles E. Harrington, C3x8
Chief Geographer

NOAA FORM 75-74
(7-75)

U.S. DEPARTMENT OF COMMERCE
NOAA
NATIONAL OCEAN SURVEY

PHOTOGRAMMETRIC OFFICE REVIEW

TR - 13316

1. PROJECTION AND GRIDS	2. TITLE	3. MANUSCRIPT NUMBERS	4. MANUSCRIPT SIZE
FM	FM	FM	FM

CONTROL STATIONS

5. HORIZONTAL CONTROL STATIONS OF THIRD-ORDER OR HIGHER ACCURACY	6. RECOVERABLE HORIZONTAL STATIONS OF LESS THAN THIRD-ORDER ACCURACY *(Topographic stations)*	7. PHOTO HYDRO STATIONS
FM	NA	NA

8. BENCH MARKS	9. PLOTTING OF SEXTANT FIXES	10. PHOTOGRAMMETRIC PLOT REPORT	11. DETAIL POINTS
NA	FM	FM	FM

ALONGSHORE AREAS *(Nautical Chart Data)*

12. SHORELINE	13. LOW-WATER LINE	14. ROCKS, SHOALS, ETC.	15. BRIDGES
FM	FM	FM	FM

16. AIDS TO NAVIGATION	17. LANDMARKS	18. OTHER ALONGSHORE PHYSICAL FEATURES	19. OTHER ALONGSHORE CULTURAL FEATURES
FM	FM	FM	FM

PHYSICAL FEATURES

20. WATER FEATURES	21. NATURAL GROUND COVER	22. PLANETABLE CONTOURS
FM	FM	NA

23. STEREOSCOPIC INSTRUMENT CONTOURS	24. CONTOURS IN GENERAL	25. SPOT ELEVATIONS	26. OTHER PHYSICAL FEATURES
NA	NA	NA	FM

CULTURAL FEATURES

27. ROADS	28. BUILDINGS	29. RAILROADS	30. OTHER CULTURAL FEATURES
FM	FM	FM	FM

BOUNDARIES

31. BOUNDARY LINES	32. PUBLIC LAND LINES
NA	NA

MISCELLANEOUS

33. GEOGRAPHIC NAMES	34. JUNCTIONS	35. LEGIBILITY OF THE MANUSCRIPT
FM	FM	FM

36. DISCREPANCY OVERLAY	37. DESCRIPTIVE REPORT	38. FIELD INSPECTION PHOTOGRAPHS	39. FORMS
FM	FM	FM	FM

40. REVIEWER	SUPERVISOR, REVIEW SECTION OR UNIT
F. Margiotta F. MARGIOTTA L? 1/76	Albert C. Rauck Jr. Albert C. Rauck, Jr.

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	SUPERVISOR
~~F. Mauldin~~ Fay T. Mauldin 10/76 F. Margiotta 11/76	Albert C. Rauck Jr. Albert C. Rauck, Jr.

43. REMARKS F. Margiotta
See Form 76-36C, ~~Items 1, 4, and 8.~~ A.L.S.

NOAA FORM 75-74 (7-75)

FIELD EDIT: HILO HARBOR

JOB PH-6703

OPR-419-RA-76

MANUSCRIPT NO. TP-13314-13316

RAYMOND L. SPEER
CDR., NOAA

COMMANDING OFFICER

INTRODUCTION & METHODS

Field Edit for Hilo Harbor, JOB PH-6703, OPR-419-RA-76, commenced on April 22nd and was completed on May 18th. One field unit performed all the work. The majority of verification was accomplished by walking the shoreline, with the remainder being taken care of by driving rental vehicles, and RAINIER skiffs 556 and 557. Field edit is complete and thorough for the three 1:5000 scale manuscripts that cover Hilo Harbor.

Field Edit operations began first in the inner Hilo Harbor region near the port piers on T-Sheet TP-13315 in order to facilitate commencement of hydrographic survey operations on H-9612. Work on this sheet progressed westward and then north to its completion at the junction with T-Sheet TP-13316. Field work on TP-13316 then began at its northernmost limits and progressed south to the junction with TP-13315. TP-13316 was the second priority so survey operations could begin on H-9613. After completion of photogrammetric support for initial hydrography, field edit was accomplished for the Wailoa River, Pond, and Park area in order that survey work could be undertaken in this shallower region of H-9612. Finally, work began on T-Sheet TP-13314, at its junction with TP-13315, and progressed eastward to its completion at the manuscript limits. In conjunction with shoreline verification and location of aids, landmarks, and dangers to navigation, simultaneous photo signal inspection and location for visual hydrography on H-9612 was accomplished on TP-13314 and 13315. Questions from the Master Field Sheets requiring geodetic observations for locations were answered during the initial two weeks of RAINIER combined operations.

All deletions, additions, and corrections to the final shoreline appear on the Master Field Edit Sheets and on the processed cronapaque photographs. With the exception of photo-located signal work, the Master Field Edit Sheets are indices of all field edit work carried out. Numerous Field notes, all necessary for proper compilation, required that the photo signal location work be excessed as it would have excessively cluttered the Masters. Separate film ozalids are being submitted that contain the photo signal work with proper references. These separates will be discussed in greater detail later in the text. All discrepancies and questions listed on the Master Field Edit Sheets are completely and thoroughly answered on the Master. Proper references are included for each. Special violet ink field notes on the Master Field Sheets are items that have been verified by field edit. The photograph number for each particular item is given as a reference. Special red ink was used on the Masters to indicate changes or additions found during field edit. Position or location references are included. Finally, those field notes inked in green are deletions from the Manuscripts. References again are included. All notes on the Master Field Edit Sheets which are verified on the cronapaque photographs include the descriptions

or explanation of the feature verified and the photo number on which it was located. All Field Edit information on the smooth boatsheets for H-9612 and H-9613 which was verified by field edit was inked in black. Changes, which include deletions, and (or) additions were inked in special red. Blue, the smooth boatsheet color for unverified items, was not used due to the completeness of verification for all manuscripts.

For a reference of photograph numbers - T-Sheet Manuscripts, refer to "Separates Following the Text". Height data on rocks was estimated to plus or minus 1 foot and on the bluffs of T-Sheet TP-13316 to plus or minus 10 feet. All times are referenced to 0° Longitude.

ADEQUACY OF COMPILATION

The compilation of the Manuscripts for JOB PH-6703 were adequate in accuracy for most regions, and generally complete. Two regions, however, appeared to be inadequately compiled. The first is the region between the Hilo Sugar Mill Stack and the Wailuku River on T-Sheet TP-13315. Excessive distortion is viewed when the manuscript is overlaid with the appropriate photographs of that area (21 FEB 75, 4414, 4415, 4416, 4424, and 4425). Realignment of passpoints and subpoints must be carried out constantly, more than believed should be necessary, to maintain continuity between the shore line of the photographs and the compiled shoreline of the manuscript. This same excess distortion is noted in a second region surrounding the piers on T-Sheet TP-13314. Again, excessive alignment is required to maintain reasonable continuity between the manuscript and photographs (21 FEB 75, 4426 and 4427). It is believed that this lack of continuity is due to excessive compilation from the more distorted outer regions of the photographs. This could be caused by a lack of adequate overlap on the flight lines that cover these areas. This problem will be discussed in greater detail in the PHOTO SIGNALS, ADDITIONAL INFORMATION, and RECOMMENDATIONS sections of the text of this report. The inadequate compilation regions are not gross or in excess, however the reasons for this inadequacy warrant further explanation and discussion.

Compilation of the MHWL was adequate. Changes verified by Field Edit are noted on the Master and on the processed cronapaque photographs. The MLLWL was compiled, wherever physically possible, by Hydrographic Survey Operations. Heavy surf zones on T-Sheets TP-13314 and 13316, and shallow and foul regions on TP-13315 made this a difficult task. For further information on survey operations, Descriptive Reports, H-9612 and H-9613 should be consulted.

SHORELINE SUMMARIES

TP-13314: Field Edit commenced at the tip of Pier I at latitude 19°44' 12" N, longitude 155°03'20" W, and initially progressed south, then west to the manuscript's junction with TP-13315 at longitude 155°04' W. Photogrammetric support was given to this particular region so that survey operations could begin here with knowledge regarding dangers to navigation. Later in the project, field work on this manuscript resumed at Pier I, and continued east to the manuscript limits. Field Edit is complete and thorough for TP-13314.

The Hilo Harbor Breakwater has been geodetically located as per instructions. Geographic positions were determined using field survey methods (triangle computations with checks) for five stations. Four of the stations were located at the four bends in the breakwater's shape while the fifth was located at the tip. At each station, measurements were then taped to determine the breakwater's width at the MHWL and at the top, perpendicular to the edge to determine the width at the top. The measurements were taped in meters, and are accurate to one tenth of a meter. In addition, a measurement was taped from the station at the tip to the MHWL. The stations were plotted and distances were scaled. Fianlly the points were connected. The breakwater location is thorough. For further information, refer to the Master Field Edit Sheet and to the "Separates Following the Text", BREAKWATER STATION COMPUTATIONS AND MEASUREMENTS. For a further discussion of geodetic survey techniques used, refer to Horizontal Control Report: Hilo Harbor, OPR-419-RA-76.

All discrepancies, questions, and notes to the field editor on the Master, as well as all non-floating aids to navigation and landmarks for charts have been thoroughly researched and answered for this manuscript. Refer to the Master and "Separates" FORM 76-40's.

The shoreline compilation west of the harbor piers was generally very good, with only minor changes revised by field edit. The large spit, located on the Hotel Row waterfront at latitude 19°43'51" N, longitude 155°03'52" W is actually a smaller spit with an island off its tip. The region between the two is awash.

The three privately maintained daybeacons A, B, and C, in Reeds Bay, were located by 3 point sextant fix. Geographic Positions were then computed for each fix using the Ship PDP-8e computer and program RK-300, UTILITY COMPUTATIONS, VERSION 2/10/76. Printouts of those computations are being submitted. Refer to "Separates Following the Text".

The passage that opens into the small lagoon at latitude 19°43'37" N, longitude 155°03'54" W is extremely shallow and foul at low tide. Small skiffs were seen tied up in the lagoon, however none were seen making the transit. It did appear possible that at high tide a small craft could be poled or paddled, if not powered into the lagoon. Upon inspection from a distance, it appeared that the inlets on the northeast corner of the lagoon extend further under the growth than could be compiled. Due to physical limitations, the area was inaccessible and the recommendation is for retention of the shoreline as compiled on the Master.

The questionable wreck at T-Sheet position 19°43'54" N, 155°03' 36" W, was dove on by the RAINIER diving officer and found to be nonexistent. Instead, rocks were discovered that are submerged from 4 to 6 feet. The recommendation is for deletion of the wreck and substitution of the hydrographic data. Reference the Master Field Edit Sheet and Descriptive Report, H-9613 for further information.

The pier region, as has been previously mentioned, shows excess distortion when the appropriate photographs and the manuscript are overlaid. The general shapes are correct. In photographic processing of this area, a more than reasonable number of passpoint and subpoint realignments between photograph and T-Sheet were required to maintain acceptable continuity between the photograph and manuscript shoreline. A rushed compilation and lack of sufficient overlap in photographs on the flight line that covered this area is a possible explanation for the distortion viewed. The recommendation is for acceptance of the compiled shoreline unless more detailed examination of the photographs and field notes produces any changes to the MHWL compiled in the field. More discussion on this subject will be forthcoming in a later section of the text.

The tank fields along Kalanianaole Drive contain both fences and walls for security. The outer perimeter is surrounded by mesh wire fence approximately 10 feet in height. Individual tanks or clusters of tanks, however, are surrounded by gray brick fire retaining walls that are 10 feet in height and 1 to 2 feet in thickness. Reference the Master for further information.

The shoreline east of the breakwater to the manuscript limits shows numerous minor revisions to the compiled shoreline. They are too great in number to mention individually. Generally the MHWL is more seaward than was compiled and there are numerous rock spits, ledges, ridges, and clusters awash. The shoreline is lava rock that is being constantly pounded by surf and is highly intricate. Reference the Master and the field notes on the cronapaque photographs for a more

complete understanding. All shoreline for this region, whether from the original compilation or newly compiled, is inked in red for ease in interpretation.

TP-13315: Shoreline verification for this manuscript began its junction with TP-13314 at longitude 155°04' W, and progressed west then north to the manuscript's junction with TP-13316 at latitude 15°45' N. Here again, this was done to give the necessary photogrammetric support for hydrographic survey operations on H-9612. At a later date, field work on this manuscript was carried out in the Wailuku and Wailoa Rivers, and in Waiakea Pond. Field Edit is complete and thorough for for TP-13315.

All non-floating aids to navigation and landmarks for charts have been thoroughly researched and discussed. Questions, discrepancies, and notes to the field editor have been completely answered. Refer to the Master Field Edit Sheet and "Separates"; FORM 76-40's for the manuscript for further information.

The region between Cocoanut Island and the Hotel Row, in the vicinity of the footbridge, is extremely shallow and foul in nature. Passage at low tide is next to impossible due to the twisted nature of the small passage, the numerous ledges awash and submerged, and the lack of visibility in milky brown waters.

Waiakea Creek Daybeacon has been located by 3 point sextant fix as per instructions. A Geographic Position was computed using RK-300 UTILITY COMPUTATIONS, as previously discussed. A printout of the computation is being submitted. Refer to the "Separates Following the Text".

Waiakea Pond is fresh water in nature although there is inflow from the Wailoa River and it is affected by the tides. The pond is restricted to public fishing use only and is used by local inhabitants. No motors are allowed south of the island in the center of the channel at latitude 19°43'18" N, longitude 155°04'37" W. The waters are generally very shallow in nature. The earthen spits protruding into the center are accurate.

As has been previously discussed, the Wailuku River shows excessive distortion between photograph and manuscript. The general contours of the MHWL are accurate but they require constant readjustment of successive passpoints to maintain a continuous nature to the shoreline and to evenly distribute the excess in distortion to the shoreline of the surrounding area. Here too the error is not gross, and the general shoreline contours are correct as noted on the manuscript. The reasons for this distortion are discussed later in the text. Two changes to the

shoreline were observed in this region. One change is that the river region extends further inland than is shown, and second is the narrow channel that passes underneath the tree growth. This channel was not previously compiled on the manuscript nor was it shown on the chart. Refer to the Master for further information.

The bluffs that cover the entire western shore of Hilo Harbor begin at approximate position 19°44'02" N X 155°05'26" W. In general the bluffs are delineated correctly on this manuscript. They are, however, quite steep and should not be set back as far as previously compiled. The base of the bluffs is in most cases the MHWL.

There is a massive bulkhead located just south of Alealea Point at Latitude 19°44'25" N, longitude 155°05'35" W. It is approximately 30 feet in height and is of definite landmark value. It is recommended that it be charted as a 30 foot high bulkhead.

The hydrographic investigation of the region centered around position 19°44'57" N X 155°05'16" W is complete. For results and discussion, refer to Descriptive Report H-9613.

TP-13316: Shoreline verification for this manuscript commenced at its northern limits at latitude 19°47' N and progressed south to its junction with TP-13315 at latitude 19°45' N. Field Edit is complete and thorough for this manuscript.

The MHWL does carry up into Honolii Stream and portions of the stream are navigable, but not from seaward. The entrance from sea is dangerous due to extensive and heavy surf at the mouth of the stream. This area appears to be a very popular beach for local surfers.

Bluffs cover the entire expanse of this manuscript. The delineation appears correct. They should, however, be shifted seaward due to their high vertical nature and the fact that in most cases the bluffs' base is the MHWL. Bluff heights were verified for the entire length of the manuscript. In general, heights compiled averaged approximately 10 feet greater than those estimated by the field editor. Refer to the Master Field Edit Sheet for further information.

The MHWL carries up into the limits of Kapue Stream. There is an extensive sand bar that covers 90% of the stream's mouth, and navigation, except at high tide, is doubtful.

All non-floating aids to navigation and landmarks for charts as well as questions and discrepancies on TP-13316 not previously mentioned in the text have been thoroughly researched and discussed on the Master Field Edit Sheet and in "Separates" (FORM 76-40's) which

can be referenced for further information.

DATA PROCESSING

With the exception of the Geographic Position computations for Daybeacon locations using RK-300, UTILITY COMPUTATIONS, VERSION 2/10/76, no other computer programs were used for automated or non-automated processing of field edit data. For further information on WANG, SERIES 700 and PDP-8e programs used for geodetic location computation and processing, Horizontal Control Report: Hilo Harbor, OPR-419-RA-76, can be referenced.

Some location of rocks submerged and awash that are dangers to navigation was done during the course of hydrographic survey operations. They will not be discussed in this text. For information on hydrographic surveying techniques, data processing, and results, reference Descriptive Reports H-9612 and H9613, and the accompanying smooth boatsheets.

PHOTO-IDENTIFIED SIGNALS

Photo-identified signal inspection and location was a highly integral part of the Hilo Harbor portion of OPR-419-RA-76, H-9612, which was run as a visual survey using digital sextants. Photo identification was also important in regions too shallow for survey launches where whalers and skiffs ran standard visual hydrography and obtained detached positions with 3 point sextant fixes. Separate film ozalids for photogrammetrically located signals are being submitted for T-Sheets TP-13314 and 13315. They are the manuscripts whose shoreline covers H-9612. Information contained on the ozalids are: the number of the signal on the master list, the photograph number used for each ray transferred, and a reference to the "Separates Following the Text", PHOTO SIGNAL COMPUTATIONS. Under the corresponding Master Signal List number will be found the field computations such as: the meters forward and backward that were scaled, conversion to seconds, and latitude and longitude computations. Signal locations are not noted on the Master Field Edit Sheet. The numerous notes necessary for proper field compilation made the addition of Photo Signal notes excess. The Photo Signal Film Ozalids contain all necessary information, with proper references, for the verification of Photogrammetrically located signals.

Individual photograph quality was generally good. There did seem to be more than usual distortion around the perimeters of the photograph.

The clarity and contrast in the central regions facilitated adequate photo identification of objects for signals. Coverage was lacking in some areas, however, most noticeably the upper Wailoa River area of TP-13315, and the Reeds Bay region of TP-13314. Lack of sufficient number of photographs in flight lines, and lack in adequate overlaps forces numerous visual signals to be located with only two positioning rays and others with the third ray being in the excessive distortion regions of the photograph perimeter. Further, the lack of coverage was so evident in the previously mentioned areas that some of the intersections for two rays were less than 10°. These, as well as all other two ray signal locations were made by choosing signals that were easily identifiable on the manuscript and could be located even with poor intersection. It is the belief of the field editor that the Geographic Positions for all photo-identified signals are accurate to the scale of the survey. The lack of adequate photographic coverage is believed to be one of the reasons for the poor compilation noted in the Wailuku River and Hilo Harbor Piers region.

ADDITIONAL INFORMATION AND DISCUSSION

A lack of sufficient overlap in photographic coverage appears to be the most striking direct or indirect reason for the four photogrammetric problem areas previously discussed.

In the first case, this lack directly leads to problems in locating photogrametrically recoverable points for visual hydrographic signals. With only two photographs to cover a region like the Upper Wailoa River and Reeds Bay, two ray intersection coupled with positive identification on the manuscript was required for photo picking of visual hydrographic signals. Refer to the Photo Signal Film Ozalids, TP-13314 and 13315 for examples of signals with only 2 positioning rays and weak intersection.

Secondly, the lack of complete coverage and efficient photograph overlap is one of the reasons for the less adequate shoreline compilation in the Wailuku River and Hilo Harbor Piers region as mentioned earlier in the text. By forcing compilation to extend out of the central regions of the photographs and in to the perimeter areas, the general shape of the shoreline may be adequate but the photographic distortion remains mirrored in the manuscript. With adequate overlap between photographs, compilation can always remain in the central photograph regions.

The horizontal control work and initial photo location by the compilers was excellent because there was a sufficient number of pass-points and subpoints, as well as the photograph centers, for adequate realignment when the distortion was in excess.

Three other topics are worthy of discussion here. The first is that no flight line manuscript was submitted to the RAINIER as a part of the field edit package. This prevented us from making more definitive statements as to the adequacy of flight lines and photographic coverage.

Secondly, another possible reason for the less than adequate compilation in the Wailuku River and Harbor Piers area could be explained by rushing the compilation. Because this was a critical job, in terms of time, RAINIER is most appreciative of having received both the Hilo Harbor JOB PH-6703, as well as JOB CM-7215 for Kaneohe Bay, early. However, we believe that it was known far enough in advance that the RAINIER's approved schedule called for her to go to Kaneohe first, and then to move on to Hilo Harbor and yet RAINIER received the Hilo data two weeks before the Kaneohe data. Transmittal letters show both jobs as being transmitted on January 30, 1976. With complete knowledge of our schedule of operations perhaps the Hilo Harbor field edit package could have been held for a less hurried compilation, and mailed to the RAINIER in Hawaii.

Finally, another possible reason for the difficulty in locating visual hydrographic signals by photogrammetric techniques was that all photographs taken for JOB PH-6703 may not have been submitted to the field editor. It is our belief that this is not a good policy, especially where visual hydrography will be undertaken as a part of combined operations.

RECOMMENDATIONS

Specific recommendations for shoreline features have been either stated previously in the text or can be referenced on the Master Field Edit Sheet. General recommendations are as follows:

A) Closer supervision of private photogrammetric contracts and/or more specific instructions for future jobs to insure complete coverage. The cost and results of contracts to private firms should continue to be weighed critically against the cost and results of having NOAA fly the photographic jobs themselves. JOB PH-6703 showed a definite lack of complete photographic coverage. Nowhere in the photographs received was there the two thirds photographic overlap that is deemed necessary by our operations.

B) All photographs that are taken in the job should be submitted as a part of the package for the field editor. This is especially necessary where visual hydrography will be undertaken.

C) Closer communication between Coastal Mapping Division and PMC on matters of ship's schedules, the nature of surveying operations and in the long run, for better standardization of field edit data. Improvements have already been observed in new Instructions for Data Requirements, 1976, and the continual updating of the Provisional Photogrammetry Instructions.

D) Submission of Flight Line information in manuscript form so judgements can be made by the field editor in his Recommendations as to the adequacy of coverage.

E) A method of notation on the compiled manuscript is needed to inform the field editor which photograph was used to compile a certain section of the shoreline. It is believed that this might increase the continuity between office compilation and field edit verification.

Respectfully submitted,

John C. Osborn, Jr.

John C. Osborn, Jr.
ENS, NOAA

To charts 10/5/76

NOAA FORM 76-40
(8-74)
Replaces C&GS Form 567.

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

NONFLOATING AIDS ~~OR LANDMARKS~~ FOR CHARTS

ORIGINATING ACTIVITY
- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

[XX] TO BE CHARTED
[ ] TO BE REVISED
[ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office)	STATE	LOCALITY	DATE
Coastal Mapping Div. A.M.C.- Norfolk,Va.	Hawaii	Hawaii Island- North Coast	Oct.1976

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
419	Ph-6703	T-13316	Old Hawaiian

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE // D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE // D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
LIGHT	(Paukaa Point Light,1975)	19 45	54.93 1689.0	155 05	33.04 962.0	75TNHY4412(P) Feb.21,1975	F-V-Vis. May,1976	19040 19324

14a

To charts 10/5/76

NOAA FORM 76-40
(8-74)

Replaces C&GS Form 567.

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

[redacted] LANDMARKS FOR CHARTS

ORIGINATING ACTIVITY
- [ ] HYDROGRAPHIC PARTY
- [ ] GEODETIC PARTY
- [ ] PHOTO FIELD PARTY
- [X] COMPILATION ACTIVITY
- [ ] FINAL REVIEWER
- [ ] QUALITY CONTROL & REVIEW GRP.
- [ ] COAST PILOT BRANCH

(See reverse for responsible personnel)

- [X] TO BE CHARTED
- [ ] TO BE REVISED
- [ ] TO BE DELETED

REPORTING UNIT (Field Party, Ship or Office): Coastal Mapping Div. A.M.C.-Norfolk,Va.

STATE: Hawaii

LOCALITY: Hawaii Island-North Coast

DATE: Oct.1976

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

OPR PROJECT NO.	JOB NUMBER	SURVEY NUMBER	DATUM
419	Ph-6703	T-13316	Old Hawaiian

CHARTING NAME	DESCRIPTION (Record reason for deletion of landmark or aid to navigation. Show triangulation station names, where applicable, in parentheses)	POSITION LATITUDE ° ′	LATITUDE ″ D.M. Meters	POSITION LONGITUDE ° ′	LONGITUDE ″ D.P. Meters	METHOD AND DATE OF LOCATION (See instructions on reverse side) OFFICE	FIELD	CHARTS AFFECTED
STACK	(Papaikou Stack(USGS),1975)	19 46	53.945 1658.8	155 05	31.442 915.2	75TNHY4411(P) Feb.21,1975	F-V-Vis. May,1976	19040

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REVIEW REPORT
T-13316

SHORELINE

May 23, 1978

61. GENERAL STATEMENT:

See Summary, page 6 of this Descriptive Report.

62. COMPARISON WITH REGISTERED TOPOGRAPHIC SURVEYS:

No comparison was made.

63. COMPARISON WITH MAPS OF OTHER AGENCIES:

No detailed comparison was made.

64. COMPARISON WITH CONTEMPORARY HYDROGRAPHIC SURVEYS:

Comparison was made with a copy of Final Verified Smoothsheet H-9613 (RA-5-2-76). There are no significant differences. Inshore hydrography was limited apparently by rough water. Breakers are labeled along the shoreline on the smoothsheet. Hiathuses of more than 300 ft. exist between the most shoreward sounding line and the outer limit of the foul line given by the field editor.

65. COMPARISON WITH NAUTICAL CHARTS:

Comparison was made with Charts 19324, 1:10,000 scale, 18th edition, dated May 7, 1977 and 19040, 10th edition, dated October 13, 1973. There are no significant differences.

66. ADEQUACY OF RESULTS AND FUTURE SURVEYS:

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

Submitted by:

A. L. Shands

A. L. Shands
Final Reviewer

Approved for forwarding:

Roy K. Matsushige
for Jeffrey G. Carlen
Chief, Coastal Mapping Division

Approved:

John D Perrow Jr
Chief, Photogrammetric Branch

Chief, Coastal Mapping Division