

4740

U. S. COAST & GEODETIC SURVEY
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DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY
R. S. Patton *Director*

State: Hawaiian Is.

DESCRIPTIVE REPORT

Topographic } Sheet No. CC 4740
Hydrographic }

LOCALITY

North Coast of Oahu, Hawaii

Waimea Bay to Waialeale

1932

CHIEF OF PARTY

Hubert A. Paton

U. S. GOVERNMENT PRINTING OFFICE: 1928

DECLASSIFICATION BY NOAA
PURSUANT TO DOC SYSTEMATIC REVIEW
GUIDELINES AS DESCRIBED IN SECTION
3.3 (a), EXECUTIVE ORDER 12356

DESCRIPTIVE REPORT

to accompany.

SHEET CC

NORTH COAST OF OAHU, T. H.

WAIIMEA BAY TO WAIALEE

INSTRUCTIONS:

The work on this sheet was done under instructions dated July 14, 1931, from the Director, U. S. Coast and Geodetic Survey, and verbal instructions from the Chief of Engineers, U. S. Army, and his representatives. The purpose of the survey was to develop possible landing sites for troops and on account of the scarcity of funds it was desired to expedite the work as much as possible. Accordingly, the topographic work was restricted to rapid location of the hydrographic signals and the shore line, with such additional development as could be obtained without delaying the progress of the party.

METHODS:

See Descriptive Report for Sheet "L" for a detailed account of methods used. In general standard practices recommended by the Coast and Geodetic Survey were employed. Most of the work on this sheet was executed by John A. McCormick, Corporal, U. S. Army, who had had considerable experience in the U. S. Coast and Geodetic Survey. He was relieved before the sheet was completed, so it was necessary for the undersigned to finish the work.

CONTROL:

Five triangulation stations, well distributed, furnished the basic control for the sheet. Stations Pupukea and Waialeale were located back from the edge of the cliff and did not show to the shore line. Accordingly, short traverses were run with steel tape and theodolite to locate Signals PUP and LEE. In addition, cuts were taken with the theodolite to five signals on the shore which were plotted graphically on the sheet. In this way, sufficient control was available to make it unnecessary to run long plane table traverses. All closing errors were nil.

At the southwest end of the sheet a junction was made with previous work as shown on Sheet #4446. There was apparently a discrepancy here of about 10 meters which could not be explained satisfactory.

4108

Respectfully submitted,

Hubert A. Paton

Hubert A. Paton,
Lieutenant,
Chief of Party.

PLANE TABLE POSITIONS

SHEET "CC"

Object and Description	Lat.	D.M.	Long.	D.P.	Height
ROT, square tower, red roof	21°38'	1482m	158°03'	1665m	120 ft.
GUN, west gable, grey, rock crusher	21°38'	1689	158°03'	1659	80 "
TAN, water tank, railroad	21°39'	178	158°03'	1588	20 "
MOP, n.w.gable, red & green roof, bathhouse	21°39'	1737	158°03'	640	12 "
DOG, center of pyramidal roof.	21°40'	503	158°03'	32	12 "
POL, radio pole near yellow house, black roof	21°40'	775	158°02'	1544	20 "
DID, n.w. corner, green house	21°40'	990	158°02'	1250	12 "
VER, R.R. crossing sign	21°40'	1071	158°02'	1065	10 "
HER, Shear leg crane	21°40'	1154	158°02'	964	20 "
GAB, s.w. gable, large grey house	21°40'	1730	158°02'	858	20 "
HIT, middle one of three palm trees	21°41'	96	158°02'	290	20 "
RUNT, whistle post	21°41'	208	158°02'	199	6 "
TANK, wooden water tank, grey with red roof	21°41'	225	158°01'	1530	20 "
TAG, telegraph, first one with two cross arms	21°41'	426	158°02'	26	15 "
EVE, whistle post	21°41'	341	158°02'	86	6 "
RAD, radio pole, center of house	21°41'	698	158°01'	1652	30 "
RUM, center of s.w. one of four houses	21°41'	762	158°01'	1588	15 "
OKE, " " n.e. " " " "	21°41'	828	158°01'	1454	15 "
Oil tank	21°41'	1016	158°01'	1047	5 "
NEB, U.S.C. & G.S., -B.M. "N4"	21°41'	1307	158°01'	768	1 "
TUT, water tank, Waialeale Ind. Sch. stack	21°41'	639	158°01'	868	20 "
	21°41'	742	158°01'	976	30 "

checked by HOP 12-7-33

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

LANDMARKS FOR CHARTS

Honolulu, Port Shafter, T. H.

February 16th _____, 193 3

DIRECTOR, U. S. COAST AND GEODETIC SURVEY:

The following determined objects are prominent, can be readily distinguished from seaward from the description given below, and should be charted.

Hubert A. Paton

Chief of Party.

[illegible]

A list of objects which are of sufficient prominence for use on the charts, together with a description of the same, must be furnished in a special report on this form, and a copy of such report must be attached by the Chief of Party to his descriptive report. The selection, determination, and description of these points are of primary importance.

The description of each object should be short, but such as will identify it; for example, standpipe, water tower, church spire, tank, tall stack, red chimney, radio mast, etc. Generally, flagstaffs and like objects are not sufficiently permanent to chart.

U. S. GOVERNMENT PRINTING OFFICE: 1901

REVIEW OF TOPOGRAPHIC SURVEY No. 4740

Title (Par. 56) *Waimaea Bay to Waialeale, N. Coast Oahu, Hawaiian Is.*Chief of Party *H.A. Paton* Surveyed by *J.A. Mc. Cormick* Inked by *H.A. Paton**Party*
~~Ship~~ *Inshore Hyd. Surv.* Instructions dated *July 14, 1931* Surveyed in *June, 1932*
of Oahu

1. The survey and preparation for it conform to the requirements of the Topographic Manual. (Par. 7, 8, 9, 13, 16.) ✓
2. The character and scope of the survey satisfy the instructions. ✓
3. The control and closures of traverses were adequate. (Par. 12, 29.) ✓
4. The amount of vertical control that the Manual specifies for -contours-formlines- was accomplished. (Par. 18, 19, 20, 21, 22, 23.)
Not needed
5. The delineation of -contours-formlines- is satisfactory. (Par. 49, 50.) *No contours or form lines required.*
6. There is sufficient control on maps from other sources that were transmitted by the field party to enable their application to the charts. (Par. 28.) *No other maps submitted.*
7. High water line on marshy and mangrove coast is clear and adequate for chart compilation. (Par. 16a, 43, 44.)
8. The representation of low water lines, reefs, coral reefs and rocks, and legends pertaining to them is satisfactory. (Par. 36, 37, 38, 39, 40, 41.) ✓
9. Rocks and other important details shown on previous surveys and on the chart were verified. (Par. 25, 26, 27.) ✓
10. The span, draw and clearance of bridges are shown. (Par. 16c.) *None*
11. Locations and elevations of summits are given. (Par. 19, 51.) *None*
12. The tree line was shown on mountains. (Par. 16g.) *None*

NOTE: Strike out paragraphs, words or phrases not applicable and modify those requiring it. Paragraph numbers refer to those in the Topographic Manual. Use reverse side for extending remarks.

13. The descriptive report covers all details listed in the Manual, in so far as they apply to this survey. (Par. 64, 65, 66, 67.) ✓
14. The descriptive report also contains additional information required in aero-topography relative to type of photographs, method of compilation and type of ground control. *Not needed*
15. The descriptions of recoverable stations and references to shore line were accomplished on Form 524. (Par. 29, 30, 57, 67 except scaling of IMs and DPs, 68.) ✓
16. A list of landmarks for charts was furnished on Form 567 and plotting checked. (Par. 16d, e, 60.) ✓
17. The magnetic meridian was shown and declination was checked. (Par. 17, 52.) ✓
18. The geographic datum of the sheet is old Hawaiian and the reference station is correctly noted. (Par. 34.) ✓
19. Junctions with contemporary surveys are adequate. *See back of this page overlap. Junction with 4108 is out 20m. Careful check failed to reveal cause. Recommend one-half of error be put on each sheet. Δ Wainia was recovered by both surveys, but it had been re-marked by Territorial Surveyor probably in 1929. Personally, I do not think error could be in erroneous recovery of this station.*
20. Geographic names are shown on the sheet and are covered by the Descriptive report. (Par. 64, 66k.) *Not mentioned in report.*
21. The quality of the drafting is good. (Par. 31, 32, 33, 35, 36, 37, 38, 39, 40, 41, 42, 45, 46, 47, 48, 49, 50.) ✓
22. No additional surveying is recommended. ✓
23. The Chief of Party inspected and approved the sheet and the descriptive report after review by him. ✓
24. Remarks:

Reviewed in office by *H. A. Paton*
inspected by A. L. Shalansky
 Examined and approved:

E. J. Green
 Chief, Section of Field Records
L. O. Lobnitz
 Chief, Division of Charts

F. P. Borden
 Chief, Section of Field Work
G. H. Hilde
 Chief, Division of Hyd. and Top.

The discrepancy (approximately 15 meters) at the junction with T-4108(1924) was investigated by Lieut. Commander J. H. Peters in 1934. His work which is attached to this descriptive report, checked the position of the most southerly signals, Boy and End, which are adjacent to the shoreline on the present survey, T-4740(1932). It is therefore reasonable to assume the shoreline and rocks are correct as shown on T-4740(1932) and that the northern part of the shoreline and adjacent rocks on T-4108(1924) are in error.

The topography on T-4108(1924) has been adjusted to fit T-4740(1932) and is shown on the latter sheet in red.

R. L. Johnston

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO. 4740

TOPOGRAPHIC TITLE SHEET

CONFIDENTIAL

The Topographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

Field No. CC

REGISTER NO. 4740

State Hawaiian Islands

General locality North Coast of Oahu

Locality Waimea Bay to Waialeale

Scale 1:5000 Date of survey June, 1932

Vessel Inshore Hydrographic Survey of Oahu

Chief of Party Hubert A. Paton, Lieut.

Surveyed by John A. McCormick, Cpl. U.S.A. and H.A.P.

Inked by H.A.P.

Heights in feet above H.W. to ground ~~to tops of trees~~

Contour, Approximate contour, Form line interval feet

Instructions dated July 14th, 1932

Remarks: Surveyed in cooperation with the U. S. Army

POST-OFFICE ADDRESS: Fifth Floor Aloha Tower, Honolulu, T. H.

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

9 April 1934.

To: The Director.
From: Officer in Charge,
Honolulu Field Station.
Subject: Field Work.

1. Referring to your letter of 3 January 1934, 22-MEN 1975 HO 4, I was unable to make ready identification of the "single offshore rock" mentioned in paragraph two, but the whitewashed hydrographic signals are still available and it was thought they would furnish a better check. Signals GUN and ROT are also available.

2. GUN and ROT were cut in from WAIAMEA and ENA, giving a triangulation location for them. WAIAMEA, GUN, and ROT give a strong three point fix to get the positions of the whitewashed rocks BOY and END. Angles were taken at BOY and END with a theodolite, so that the matter of differences in elevation does not enter. Angles were also taken at another whitewashed rock around the point an hundred meters or so to the eastward of END. It probably comes on the next sheet to the westward. I do not know the name.

3. The positions by myself check those by Lieut. Paton. Please examine publication No. 156 for an error regarding WAIAMEA or ENA. My computation of the positions of GUN and ROT from WAIAMEA and ENA do not check in latitude by about .020 sec. I do not believe the published positions of WAIAMEA and ENA agree with the azimuth and distance between them. A hurried computation by myself indicated as much.

4. A sketch and recovery notes will be sent later. I wish to mail this on a vessel sailing at once.

J. H. Peters

Charts -

This refers to Topographic Sheet No. 4740. The
additions were suggested by Field Memo Book.
Attention Mr. Shalowitz.

JHP.

LIST OF DIRECTIONS

State:

Station ENA 1927

Computed by

Station WAMEA

Computed b

Observer

Checked by

Observer

Checked by

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT	FINAL SECONDS	STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT	FINAL SECONDS
	" "	" "		" "	" "
A HAIMEA 1910	0 0 00		AENA 1927 (Paton 1910)	0 0 00	
Stack at Kawaihoa	30 49 19		O Rot (Paton 1932)	81 05 30	
A MAILI (CHECK)	124 41 34		O Gun (Paton 1932)	107 11 30	
Stack at Wailua Mill	164 08 11		Stack at Kawaihoa	350 00 45	
O Gun (Paton 1932)	356 44 41		Stack at Wailua Mill	364 03 45	
O Rot (Paton 1932)	358 01 04				

State: *Kansas.*

Station Chase

Computed by A. T. M.

Observer A. T. M.

Checked by A. R. L.

This form, properly filled out and checked, must be furnished by field parties. *To be acceptable it must contain every direction observed.*

It is to be used for observations with repeating theodolites, as well as direction theodolites.

Start each new station at the head of a new column.

If a repeating theodolite is used, do not abstract the angles in tertiary triangulation. The local adjustment corrections (to close horizon only) are to be written in the Horizontal Angle Record, and the List of Directions is to be made from that record directly.

Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial $0^{\circ} 00' 00''.00$, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

If a station has been occupied eccentrically, reduce to the center and enter in this form, in ink, the resulting directions at the center. If the reduction is not made for some directions, they should be entered in pencil, with a footnote to that effect.

Directions in the main scheme should be entered to hundredths of seconds in primary triangulation; otherwise, to tenths only. Points observed upon but once, direct and reverse, should be carried to tenths in primary and secondary triangulation, and in tertiary triangulation to even seconds only. In general, but two uncertain figures should be given.

It is recommended that the following simple plan of observing be used with a repeating instrument: Measure each single angle in the scheme at each station and the outside angle necessary to close the horizon. Measure no sum angles. Follow each measurement of every angle immediately by a measurement of its explement. Six repetitions are to constitute a measurement. The local adjustment will consist simply of the distribution of the error of closure of the horizon.

GOVERNMENT PRINTING OFFICE

STATIONS OBSERVED	DIRECTIONS AFTER LOCAL ADJUSTMENT	FINAL SECONDS
Central	0 00 00.00	Do not write in this column. It is for Office computation only.
White church spire, 8 miles	6 28 56.4	
Chase M. E. church, white spire	18 10 11.9	
Little River	18 20 10.78	
Lyons, salt works, center hoist	24 33 53.0	
Lyons, white spire, short	27 19 39.7	
Lyons, courthouse	27 55 34.2	
Lyons, white spire, slim	28 02 54.2	
Gilmore	53 32 33.44	
Savage	83 59 57.32	
Reference mark distant 66.65 meters.	171 34	
Section 3, T. 20, R. 10 W., NW. cor- ner stone, distant 252.6 meters.	290 37 36	
Boeing	314 52 23.61	

LIST OF DIRECTIONS

State:

Station

Computed by

Station

Computed by

Observer

Checked by

Observer

Checked by

[illegible]

State: Kansas.

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Computed by A. T. M.

Observer A. T. M.

Checked by A. R. L.

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Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial $0^{\circ} 00' 00''.00$, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

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Section 3, T. 20, R. 10 W., NW. cor- ner stone, distant 252.6 meters.	290 37 36	
Bossing	314 52 23.61	

LIST OF DIRECTIONS

State: TX

Station W.W.T.

Computed by J.H.P.

Station _____

Computed by _____

Observer J.H.P.

Checked by J.H.P.

Observer _____

Checked by _____

STATIONS OBSERVED

DIRECTIONS AFTER
LOCAL ADJUSTMENT

FINAL
SECONDS

STATIONS OBSERVED

DIRECTIONS AFTER
LOCAL ADJUSTMENT

FINAL
SECONDS

W.F.M.E.A. 1900

0 Ehd

0 Rot

0 0 00

186 08 -

315 35 -

Do not write in this margin.

State: *Kansas.*

Station Chase

Computed by A. T. M.

Observer A. T. M.

Checked by A. R. L.

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Choose as an initial for Form 24A some station involved in the local adjustment, and preferably one which has been used as an initial for a round of directions on objects not in the main scheme. Use but one initial at a station. Call the direction of the initial $0^{\circ} 00' 00''.00$, and by applying the corrected angles to this, fill in opposite each station its direction reckoned *clockwise* around the whole circumference regardless of the direction of graduation of the instrument. The clockwise reckoning is necessary for uniformity and to make the directions comparable with azimuths.

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GOVERNMENT PRINTING OFFICE

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Savage	83 59 57.32	
Reference mark distant 66.65 meters.	171 34	
Section 3, T. 20, R. 10 W., NW. cor- ner stone, distant 252.6 meters.	290 37 36	
Bossing	314 52 23.61	

TH

COMPUTATION OF TRIANGLES

State: *TH*

NO.	STATION	OBSERVED ANGLE	CORR'N	SPHER'L ANGLE	SPHER'L EXCESS	PLANE ANGLE AND DISTANCE	LOGARITHM
	2-3						3802381
1	OGUN 1932	(69 33 11)					0.028262
2	NAIMEA 1910	107 11 30					9.980150
3	ENA 1927	13 15 19					8.754232
1-3		180 00 00					3.810793
1-2							7.584875
	2-3						3.802381
1	OGUN 1932	(96 51 24)					0.003181
2	NAIMEA 1910	81 05 30					9.994729
3	ENA 1927	1 18 56					8.538943
1-3		180 00 00					3.800291
1-2							7.344505
	2-3						
1							
2							
3							
1-3							
1-2							
	2-3						
1							
2							
3							
1-3							
1-2							

Do not write in this margin

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

α	2	to 3	46	48	40	α	3	to 2	74C	47	"
$2^d \angle$		&	+107	11	30	$3^d \angle$			-3	15	19
α	2	to 1	154	00	10	α	3	to 1	723	37	72-
$\Delta \alpha$				-	02	$\Delta \alpha$			+	00	57
			180	00	00.0				180	00	00.0
α'	1	to 2	334	00	08	α'	1	to 3	43	33	19

FIRST ANGLE OF TRIANGLE 69° 33' 11"											
ϕ	71	38	4375	2	1917	EA 1910	λ	158	03	51.824	"
$\Delta \phi$	+	0	11436				$\Delta \lambda$	+	00	02.861	"
ϕ'	71	38	55191	1	0547	1932	λ'	158	03	54.685	"

Logarithms				Values in seconds				Logarithms				Values in seconds			
s	7.584875			1st term	-11.736			s	9.810793			1st term	157.456		
$\cos \alpha$	9.950671							$\cos \alpha$	9.860978						
B	8.512076							B	8.512078						
h	5.1698-							h	2.183149						
s^2	1.050671							s^2	7.6416						
$\sin^2 \alpha$	1.2836-							$\sin^2 \alpha$	9.6763						
C	1.0048-							C	1.0079						
	5.5582-								8.3018						
h^2	7.101-							h^2	4.2661						
D	7.7777							D	2.7771						
	4.3278								6.593						
				2d term	+							2d term	+	020	
				3d term	+							3d term	+		
				$-\Delta \phi$		-11.736						$-\Delta \phi$		-157.456	

POSITION COMPUTATION, THIRD-ORDER TRIANGULATION

		° ' "		° ' "		° ' "	
α	2	to 3		α	3	to 2	
2α		&		3α		&	
α	2	to 1		α	3	to 1	
$\Delta\alpha$				$\Delta\alpha$			
α'	1	to 2		α'	1	to 3	
FIRST ANGLE OF TRIANGLE							
ϕ	41	38	43.75	λ	18	03	58.24
$\Delta\phi$		+	04.15	$\Delta\lambda$		+	00
ϕ'	41	38	48.10	λ'	18	03	58.90
VALUES IN SECONDS							
s	2344505		1481846646	s	3800291		3800291
$\cos\alpha$	9788397		3685	$\sin\alpha$	9848059		9848059
B	8.512076			A'	8.509126		8.509126
h	0.644478		04415	$\sec\phi'$	0.031762		0.031762
s^2	4.5890			$\Delta\lambda$	2.189638		2.189638
$\sin^2\alpha$	97942			$\sin\frac{1}{2}(\phi+\phi')$	9.166501		9.166501
C	1.0048			$-\Delta\alpha$	1756139		1756139
h^2	5.4880						
D							
VALUES IN SECONDS				VALUES IN SECONDS			
1st term	04415			1st term	45631		
2d term	+			2d term	+	020	
3d term	+			3d term	+		
$-\Delta\phi$	04.15			$-\Delta\phi$	145611		

UNION PACIFIC LOCATION

Accession No. of Computation: _____

Locality *Okla. St.*

Date *Old Hawaiian*

State *T.H.*

STATION.	LATITUDE AND LONGITUDE.	SECONDS IN METERS.	AZIMUTH	BACK AZIMUTH.	TO STATION.	DISTANCE.	
						LOCARITHM (METERS).	METERS.
<i>0 Gun 1932</i>	<i>41 38 55.00</i>	<i>1641.6</i>	<i>334 00 08</i>	<i>154 00 10</i>	<i>HEIMER 1910</i>	<i>2.584875</i>	
	<i>158 03 17.69</i>	<i>1618.9</i>	<i>43 33 19</i>	<i>213 32 22</i>	<i>HEIMER 1927</i>	<i>3.810793</i>	
<i>0 Pot 1932</i>	<i>21 38 48.8</i>	<i>1481.8</i>	<i>307 54 08</i>	<i>177 17 10</i>	<i>HEIMER 1910</i>	<i>2.344105</i>	
	<i>158 03 17.69</i>	<i>1644.6</i>	<i>44 49 42</i>	<i>212 48 45</i>	<i>HEIMER 1927</i>	<i>3.800841</i>	

to H. & T. Div. for filing

22-MEN

1975 HO 4

Under

January 3, 1934.

To: Lieutenant Commander J. H. Peters,
U. S. Coast and Geodetic Survey,
5th Floor, Aloha Tower,
Honolulu, T. H.

From: The Director,
U. S. Coast and Geodetic Survey.

Subject: Field Work.

In reviewing Topographic sheet No. 4740 a considerable discrepancy has been found where this sheet joins sheet No. 4108.

It is desired that as soon as you can conveniently do so, you check the position of the single offshore rock lying approximately 387 meters 294° true from triangulation station "Waimea".

Under separate cover there is being forwarded to you a photostatic copy of a section of sheet T 4740; a memorandum furnished by Lieutenant Paton and the descriptions of stations in that locality.

(Signed) J. H. ELAWLEY
Acting Director.