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Diag. Cht. No. 4116

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey *Hydrographic*

Field No. Office No. *3518-3519*

LOCALITY

State *Hawaiian Islands*

General locality *East & West*

Locality *Mauri Island*

1943

CHIEF OF PARTY

J. B. Miller

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State:

DESCRIPTIVE REPORT.

And
Positions for sheets #'s
Wyd. Sheet No. 3418
3419.

LOCALITY:

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DEPARTMENT OF COMMERCE

Coast and Geodetic Survey

O. H. Tittmann, Superintendent

HAWAIIAN ISLANDS

Maui Island, North Coast

Original Hydrographic Sheet "B"

KEKAA POINT TO NAHIKU

Surveyed in January, February and March, 1913 by the party on the

C. & G. S. Steamer PATTERSON

James B. Miller, Assistant, C. & G. S., Chief of Party and in charge of hydrographic party.

John W. Maupin, Assistant, C. & G. S., also in charge of hydrographic party.

Scale: 1: 60 000

Positions plotted by O. W. Swainson, Aid

checked by G. C. Mattison, Aid

*Verified by J.B. Shklee Aug. 24 - 1914.
In the original work of 3574 + 3578 see tracing 3574.*

3519

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DEPARTMENT OF COMMERCE
Coast and Geodetic Survey
O. H. Tittmann, Superintendent

HAWAIIAN ISLANDS
Maui Island, East Coast

Original hydrographic Sheet "A"
NAHIKU TO LA PEROUSE BAY

Surveyed in January, February and March, 1913 by the party on the

C. & G. S. Steamer PATTERSON

James B. Miller, Assistant, C. & G. S., Chief of Party and in charge
of hydrographic Party.

John W. Maupin, Assistant, C. & G. S., also in charge of hydrographic
party.

Scale: 1: 60 000

Positions plotted by O. W. Swainson, Aid.

checked by G. C. Mattison, Aid.

Verified by J. B. S.

3518 & 3519

DEPARTMENT OF COMMERCE AND LABOR
COAST AND GEODETIC SURVEY.

O. H. Tittmann, Supt.

C. & G. SURVEY,
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Acc. No. _____

HAWAIIAN ISLANDS

A DESCRIPTIVE REPORT ON HYDROGRAPHIC SHEETS ~~A AND B~~ 3418 + 3419.

Ed. 3419 SHEET A. - EAST MAUI, KEANAE TO LA PEROUSE BAY - SCALE, 1:60000
" 3418 SHEET B. - WEST MAUI, KEKAA POINT TO KEANAE - SCALE, 1:60000

Surveyed in January, February and March, 1913 by the Steamer " PATTERSON".

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- Page 1, part 1. Report, Limits.
" 2, " 2. Methods, Intervals.
3. General Form of the Sea Bottom.
4. Shoals.
5. Courses, Aids to Navigation.
" 3, " 6. Anchorages.
7. Tides and Currents.
8. Trade and Commerce.
" 4, " 9. Previous Chart and Sailing Directions.
10. Geographic Positions, Names, Magnetic Variation.
11. Records.

1. REPORTS, LIMITS.

I have the honor to report as follows on the hydrography of Maui Island, in the Hawaiian Group, as shown on sheets A and B, executed in January, February, and March, 1913, by the Steamer PATTERSON. Sheet B connects at Kekaa Point, West Maui, with the work of another party in 1900, and extends around the northwest point of Maui and along the north and northeast coasts to Keanae, where it connects with sheet A. From Keanae Sheet A extends around the east end of Maui and along the southeast and south coasts to La Perouse or Keoneoio Bay, where it connects with ^{the work of} another party in 1905. The sounding on sheets A and B connects with the inshore work by the launch in 25 fathoms, which is 1/3 to 1 mile offshore, and extends from there a distance of 6 to 11 miles offshore. Between Maui and Molokai Islands the sounding extends within 2 miles of the Molokai Coast. On sheet A a small portion remains unfinished, from Nuu to La Perouse Bay: only a few sounding lines were run in this vicinity, which give a general idea of the bottom; and there was not sufficient time remaining to complete the work.

2. METHODS AND INTERVALS.

The soundings shown on sheets A and B were made with the ship; using a hand lead on shoals; the Bassnett and the Tanner-Blish pressure tubes to depths of 50 to 70 fathoms; and vertical casts with a Cosmos and a Sigsbee machine with a registering sheave in greater depths. In making soundings with the pressure tubes, especial care was taken to secure accuracy, and the tubes were read by an officer in charge of the machine; a vertical cast was taken at each tenth sounding to verify the tube. The record books show this in all cases, as well as the correction to be added to the tube reading for the length of the stray line. The performance of the tubes was highly satisfactory. Sounding lines were run at the following intervals, and soundings were spaced at the same or closer intervals along the lines: 20 to 30 fathoms, 1/6 mile or closer; 30 to 100 fathoms, 1/3 mile; 100 to 300 fathoms, 1 mile; 300 fathoms and upwards, 2 miles; on shoals, special development and detached soundings. Lines were run parallel to the shore, as this proved to be the only possible way of handling the ship under the conditions encountered.

3. GENERAL FORM OF THE SEA BOTTOM.

The coast of Maui Island is steep and abrupt; much of it is bordered by cliffs 100 to 400 feet high, and only in a few places is there a coral reef. The sea breaks directly on the face of the cliff or on the rocks and debris at its base, all round the northwest point of Maui, from Hawea Point to Waihee, and from near Paia eastward to Nahiku, and also along most of the east and south coasts of Maui. Thus the 100 fathom curve is usually found within 1 1/2 miles of shore, and often much closer: the exceptions are as follows: off Kekaa Point, where comparatively shallow water extends across to Lanai Island: off Kahului, where there is a shore reef extending from Kahului to Paia, and comparatively shallow water entirely across the bight between Kahakuloa and Pauwela Points; and at the eastern side of La Perouse Bay, where there is shallow water and coral bottom. The slope of the bottom is generally less than 400 fathoms per mile, but at one place 2 miles northeast of Hana a slope of 700 fathoms per mile was found. Off Hana the 1000 fathom line was found 7 to 10 miles offshore. The bottom is uniformly coarse and fine sand mixed with fine shells and bits of brown lava; in one or two cases mud was found at depths of 300 fathoms or more.

4. SHOALS.

There are no detached shoals or dangers which are not included on the inshore sheets, with the following exceptions: the 9 fathom spot 1.7 miles north of Kahului, which is also plotted on sheet 70; Cameron Rock, off Alau Island, which is also shown on sheet 74; and the 14 fathom spot 1 mile off Hamoa.

5. COURSES: AIDS TO NAVIGATION.

All courses for navigating these waters are best measured from the chart, as there are no fine courses to be recommended, and one should only keep a reasonable distance offshore. There are several small lights, which are very reliable, and often show much farther and brighter than would be expected, on account of the clear air. On Hawea Point is a white flashing light; on Nakalele Point is a white fixed light; on Pauwela Point is a white fixed light; on Pauwalu Point, near Keanae, is a white flashing light; and on Kauiki Head, Hana Cove, is a red fixed light. Off Kahului there is a red whistling buoy, and a black bell buoy, and a flashing white light on the breakwater about half way between the shore and the end of the breakwater; there is also a range of beacons consisting of red and white diamonds on high tripods, which are very difficult to pick up, which carries one clear of the

reef northward and eastward of the breakwater; and there is a lighted range, ^{red and green, which leads from this outer range} into the harbor and behind the breakwater. Neither of these ranges is of any assistance until one is within a mile of the breakwater. The courses for passing Cameron Rock, off Alau Island, are given also in the report on sheet 74; the rock is 2.2 miles S 14° E (true) from the red light on Kauiki Head, and 0.6 mile S 47° E (true) from the peak of Alau Island: the light in range with the high cliffs along the shore northward of Hana Cove, (near Pukaulua Point) clears the rock. One may also pass between it and Alau Island, but this is not recommended; the rock itself consists of five coral heads, scattered over an area about 250 yards square, and the least depth over it is 9 1/2 feet.

6. ANCHORAGES.

There are no ^{safe} anchorages or harbors any where around Maui Island, and one must constantly observe weather conditions and remain ready to put to sea. There are many places where a vessel can lie to an anchor off the coast in moderate weather, and this is constantly done by small vessels taking cargo at various places, at the risk of injuring the ship or losing ground ^{to} as the bottom is foul and irregular. Kahului Harbor and Hana Cove are both too small for maneuvering a vessel, although in moderate weather ships may be handled by means of their anchors and the mooring buoys.

7. TIDES AND CURRENTS.

Tides were observed at Kahului with a marigraph during the entire season, and at Hana Cove for one week for comparison. The range and time were found to differ only slightly between the two and reducers for soundings on either sheet are obtained from Kahului when needed. ^{Begin} Currents were observed at various stations along the coast; there are no tidal currents, but a strong steady current was found, of 1 to 1 3/4 knots, which at this season of the year, at least, strikes on the southeast point of Maui, at Hamoa, causing moderate tide rips there, and divides; the two parts follow the two coasts and unite again off the northwest point of Maui, and a branch of the southwestern stream also divides around Molokai Island similarly. Thus off Hana there is a strong northerly set, which is strongest at high water and weakest at low water; and a strong eddy between Alau Island and Kauiki Head. Off all the points along the northern coast of Maui there is a similar westerly and west-northwesterly current. Along the south coast there is likewise a westerly and west-northwesterly current, and off Lahaina there is a strong northwest current, strongest at high water and weakest at low water. From Lahaina to Honolulu the current follows the coast northerly. Along the east coast of Molokai Island the current follows the coast northerly, and along the south coast of Molokai there is a strong westerly current, which doubles round Ka Lae o Ka Laau Point and forms a strong tide rip with breakers six feet high when the wind is northerly.

8. TRADE AND COMMERCE.

The small Inter-Island steamers are seen constantly around the coasts of Maui, and occasional sailing vessels from the Pacific Coast; and at Kahului there are almost always one or more large oversea steamers or ships discharging supplies for the four large plantations at Puu Nene, Paia, Wailuku and Waihee. Oversea vessels also moor at Kaanapali Landing, Kekaa Point, to discharge and load for the Lahaina district. Beginning at Kaanapali Landing, the smaller landings are as follows:

Honolua: boat wharf, occasional Inter-Island steamers.
 Honokahau: no wharf, rarely " " "
 Kahakuloa: no wharf, " " "
 Paia : no wharf } {no landing made here since the Kahului Railroad
 Maliko : no wharf } {was extended.
 Honopou (Huelo Landing) boat wharf, occasional Inter-Island steamers.
 Keanae : no wharf, regular Inter-Island steamers twice a week.
 Nahiku : " " " " " " " " "
 Hana (Hana Cove), wharf for lighters; regular Inter-Island steamers twice
 a week and occasional oversea vessels.
 Hamoa : no wharf, occasional Inter-Island Steamers.
 Kipahulu : " " , regular Inter-Island steamers, twice a week.
 Kaupo : " " , occasional Inter-Island steamers.
 Nuu : boat wharf, rarely Inter-Island steamers.

9. PREVIOUS CHART AND SAILING DIRECTIONS.

The present work consists wholly of additions to the previous chart and sailing directions, there are no corrections or revisions, and whatever information had been shown by either was found correct as far as it extends. The one exception is in the plan of Hana Cove, compiled from old sources, where an average of 2 fathoms more water was found than had been shown, in certain places; this is described in the report on sheet No. 74.

10. GEOGRAPHIC POSITIONS: NAMES, MAGNETIC VARIATION.

No original work was done for locating signals for the hydrography, as many excellent points had been determined by the topography done by another party recently; the geographic positions used will thus be found on topographic sheets Reg. No. 3269, 3270, 3271, 3272, 3273, 3274, 3275 and 3276; and in the records of triangulation done by previous parties. No original work was done, likewise, in ascertaining geographic names, as the existing information is both highly accurate and abundant; Cameron Rock is named from a former island navigator who is said to have placed a buoy on it at one time. No observations of magnetic elements was made, as there is likewise abundant information available on this subject.

11. RECORDS.

Sounding records for sheets A and B are found in Vols. 1 - 4 sheet A, and 1 - 6 sheet B; two ship boat sheets also accompanying the records.

Respectfully submitted,

*To the Superintendent of the Coast and Geodetic Survey,
 Washington.*

J. B. Miller,
 Assistant, C. & G. Survey,

Chief of Party.

At Sea,
 March 19, 1913.

Hyd. 3518

The work on this sheet shows the offshore hydrography from Kekaa Pt. to Keanae - West Maui, H. I.

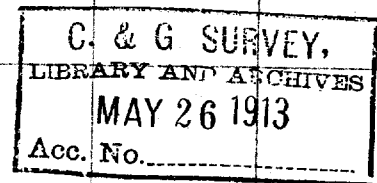
Soundings were plotted in the field, verified and inked in the office.

Soundings were run parallel to the shore and no cross lines taken for reasons given in the descriptive report of the chief of the party.

J. B. Shreve

Soundings plotted in fathoms.

Aug. 24-14.



Department of Commerce and Labor.
Coast and Geodetic Survey.

Hawaiian Islands - Maui Island

Plane Table Positions
Scaled from Brouide Prints

of

Sheets 3274, 3273, 3275, 3272, 3276, 3269, 3271, 3270.

Scaled in 1912-13 for Hydrographic Use on the
Steamer Patterson

by

J. B. M., O. U. S.

Assistant, C and G. S.,
Chief of Party.

(Fair copy)

Sheet 3274 - Kaniki Head.

Point	Latitude		Longitude		Remarks
	°	' <u>Meters</u> <u>Scaled</u> <u>Adj.</u>	°	' <u>Meters</u> <u>Scaled</u> <u>Adj.</u>	
<u>Pohakuloa Pt.</u>					
Servish	20	42 1057 788	155	59 1412 324	
M.P. 63		42 1153 692		59 1478 258	
?		42 1253 582		59 989 747	
Oven		42 1672 173		59 865 871	
Tomb (100)		43 559 1286		59 854 882	
M.P. 62		43 832 1013		59 1349 387	
2 Tombs		43 1115 730		59 373 1363	
Tomb		43 1508 337		59 329 1407	
Pohuana (895)		44 593 1257	156	00 397 1339	
House ?		44 304 1541	155	59 505 1231	
Water Troughs		44 1833 12		59 287 1449	
Stacks		45 486 1439		59 706 1030	
Leath. Ch. Sp.		45 611 1234		59 681 1055	
Prot. Ch. Sp.		45 604 1241		59 614 1122	
392		45 841 1004		59 88 1648	
O- Kakaia (545) (Haula Hill)		45 935 910		59 1534 202	
Hana L. St. (109)		45 1159 686	155	58 1612 124	
Flagstaff		45 1074 771		59 507 1229	
Ch. Cupola		45 1245 600		59 549 1187	
Ch. Cupola (N.)		45 1524 321		59 945 791	
Outer Turret		45 1329 516		58 1370 366	
Pinnacle		45 1069 776		58 1247 489	

Sheet 3274 (cont'd)

Point	Latitude			Longitude			Remarks
	°	'	Meters Scaled Adj.	°	'	Meters Scaled Adj.	
<u>Naunalele Pt.</u>							
Pt. a	20	46	1137 708	155	59	441 1295	
Pt. b		46	1359 486		59	605 1131	
Tomb (S)		46	14 1831		59	675 1061	
Tomb (M)		46	40 1805		59	671 1065	
Tomb (N)		46	70 1775		59	712 1024	
Iwi o Pele		44	125 1720		59	832 904	
Keakaamau		43	1432	156	00	1078	
Pt. c		47	270 1575		59	1382 404	
Pt. d		47	560 1285		59	1716 20	
Pt. e		47	870 975	156	00	424 1312	
Pt. f		47	1358 487		00	383 1353	
M.P. 57		47	202 1643		00	927 809	
Sugar House, Kaleku		47	320 1525		01	742 994	
Pt. g		47	1522 323		00	633 1103	
Pt. h		48	22 1823		00	1175 581	
Pt. eye		48	69 1776		01	6 1730	
Olopawa		46	524		02	169	
<u>Ka Laku Pt.</u>							
Pt. jay		48	762 1103		01	1270 466	
Pt. k		48	1155 690		02	821 915	
Pt. l		48	1077 768		02	1470 266	
Pt. m		48	1302 543		03	142 1594	

Sheet 2274 (Contd.)

Point	Latitude		Longitude		Remarks
	°	'	°	'	
Pt. u	20	48	1305	156 03	709
			540		1027
Pt. o		48	1169		03 977
			676		759
Pt. p		49	312		04 115
			1533		1621
Pt. cue		49	1007		04 1331
			838		405
<u>Nahiku</u>					
Bolt		49	1251		05 227
			594		1498
Opikoula		49	1506		05 402
Cath. Ch. Sp.		49	1324		05 1130
			521		605
Prot. Ch. Sp.		49	1285		05 1140
			560		595
School Flagstaff		49	1235		05 1060
			610		675
Pt. v		49	1568		05 1153
			276		582
Derrick (e)		49	1541		05 1470
			304		265
" (w)		49	1364		05 1632
			482		103
Pt. s		49	1296		06 348
			549		1387
Hawawi		49	854		06 394.9
Pt. t		49	1440		06 625
			405		1110
Pt. u		49	1280		06 1232
			565		573
Pt. v		49	1446		07 47
			400		1688
Pt. w		50	282		07 349
			1563		1286
Peak (105)		50	945		07 700
			900		1035
Pt. x		50	727		07 1141
			1098		594
Tomb		50	1207		07 1553
			638		182
Cath. Ch. Sp. (174)		50	1824		08 766
			21		1469

Point	Latitude		Longitude		Remarks
	0	Meters Scaled Adj.	0	Meters Scaled Adj.	
<u>Keanae</u>					
Peak	20	51 1337	156	08 302	
		508		1433	
(Pt.) a		51 1307		08 786	
		538		949	
E. Gable School Ho.		51 529		08 797	
		1317		938	
Prot. Ch. Sp.		51 1811		08 1471	
		34		266	
Cocconut		52 159		08 1616	
		1686		119	
Serrick		51 1689		09 77	
		156		1658	
Keanae (433) (Triang.)		51 1160		09 345	
<u>Kaupuka Pt</u>					
Makai Peak (141)		52 1426		10 830	
		419		904	
Okahola (844) (Triang.)		51 1813		10 1099	
(Pt.) c		52 73		10 312	
		1772		1422	
Puu Kukai (Triang.)		53 1582		12 659	
		263		1075	
Huelo		54 1709		13 509	
		136		1225	

Point	Latitude		Longitude		Remarks
	°	'	°	'	
	Meters		Meters		
	Scaled	Adj.	Scaled	Adj.	
Cath. Ch. Sp.	20	42	603	156 00	149
			1242		1587
Puuiki	42		576	00	75
			1269		1661
House (1)	41		1701	00	194
			1444		1542
House (2)	41		1511	00	513
			334		1223
Makahakana	42		788	01	555
Point a	41		581	00	1173
			1264		563
Point b	41		261	00	1640
			1584		96
Point c (56)	41		301	01	120
			1544		1616
M.P. 65	41		736	01	318
			1109		1418
Pt. D (120)	41		130	01	715
			1715		1021
M.P. 66	41		141	01	1117
			1704		619
Makaliikanau	41		1055	01	584
Cross	41		271	01	1439
			1574		297
M.P. 67	40		1682	01	1674
			163		62
House	40		1374	02	413
			471		1323
Mopua	40		1739	02	682
Pt. e	40		767	02	705
			1078		1032
House	40		138	02	1347
			1707		390
Point x	40		43	02	1040
			1802		697
?	40		1090	02	1475
			755		262
Kieiki (990)	40		335	03	1173
			1510		564
Pt. f	39		1280	02	1409
			565		328
Cath. Ch. Sta.	39		977	03	199
			868		1538

Sheet 3275 (Cont'd)

Point	Latitude		Longitude		Remarks
	°	'	°	'	
Cath. Ch. Spire	20	39	978	156 03	229 1508
<u>Wailauea Pt.</u>			867		
Cau	39		1288	03	897
Protestant Ch. Sta.	39		607	03	840
Protestant Ch. Sp.	39		454	03	807
2 Mill Stacks	39		1491	03	931
Pt. g	39		512	03	809
<u>Kipahulu Landing</u>			1333		928
	39		766	03	866
	39		1079	03	871
	39		65	03	1300
			1780		437
Serrick	39		15	04	466
M.P. 46	39		1830	04	1271
Pt. h	38		499	04	1307
Pt. i	38		1346	05	430
M.P. 44 (425)	38		1757	05	324
Kalepo	38		88	05	1413
Mokuaia	38		1759	05	417
Protestant Ch. Sp.	38		86	05	1320
Pt. k	38		44	05	783
Pt. l	38		1801	05	954
Pt. m	38		1634	05	717
Catholic Ch. Sp.	38		211	05	1020
Pt. n	38		1316	05	1514
Pt. o	38		529	06	221
Pt. p	38		819	06	1809
Pt. q	38		1026	07	228
Pt. r	38		335	07	114
Pt. s	38		1510	07	1623
Pt. t	38		47	07	477
Pt. u	37		1798	07	1260
Pt. v	37		1603	07	1194
Pt. w	37		242	07	543
Pt. x	37		1092	07	1500
Pt. y	37		753	08	237
Pt. z	37		559	08	944
Catholic Ch. Sp.	38		425	08	832
			1470		905

Sheet 3275, (Cont'd)

Point	Latitude		Longitude		Remarks		
	°	'	°	'			
Pt. o	20	37	1389	156	09	372	
Pt. p	37	1181	664	09	1179	558	
Quins	37	1005	840	10	62	1675	
Pt. n	37	1158	687	10	331	1406	
Pt. s	37	892	953	10	677	1060	
Pt. t	37	838	1007	10	738	999	
Puu Manoueo	37	1454	391	10	453	1284	

0110

✓

Point	Latitude		Longitude		Remarks
	°	'	°	'	
Prominent Hummock					
H. Red Gable (⊙ Bag)	20	53	156	11	
Puu Kakaia		53		12	
Pt a		54		12	
Pinnacle		54		12	
Cath. Ch. Sp.		54		13	
Barrel		54		13	
x		54		12	
Prot. Ch. Sp. (⊙ Rot)		54		13	
Huelo (New)		54		13	
y		55		13	
Pt. b		55		13	
Houokala (420)		55		14	
Top Pine Roof (⊙ Hip)		55		14	
Pt. c		55		13	
<u>Houopou</u>					
Serrick		56		14	
Pt. e		56		14	
Cocconut Tree		56		15	
Pt. f		56		15	
E. Red Gable		56		15	
S. E. Gable (⊙ Seg)		56		15	

Sheet 3272 (Cont'd)

Point	Latitude			Longitude			Remarks
	0	'	<u>Meters</u> <u>Scaled Adj.</u>	0	'	<u>Meters</u> <u>Scaled Adj.</u>	
Pt. g	20	56	683	156	16	165	
E. Gable House (363)			1162			1569	
		56	44		16	643	
			1801			1091	
E. Gable shed		56	509		16	992	
			1336			742	
Kapuai		54	708		16	1299	
Tree (860)		55	411		17	242	
			1434			1492	
Kuloli (O Ole)		55	382		17	224	
			1463			1510	
Concrete		56	1516		17	68	
			329			1116	
E. Gable Ruins		56	1081		19	181	
			764			1553	
Coath. lab. Sp. (O Eel)		55	1760		19	313	
			85			1421	
E. Gable Ram		56	1078		19	856	
			767			878	
Pipe		56	1619		19	640	
			226			1094	
Panwela Light House		56	1773		19	802	
			72			982	
Pt. i		56	1377		20	283	
			468			1451	
Signboard		56	246		19	1703	
			1899			31	
Haiku		55	725		20	69	

Point	Latitude		Longitude		Remarks
	0	1	0	1	
	Meters		Meters		
	Scaled Adj.		Scaled Adj.		
a	20	37	845 1000	156 10	— 1005
b		37	1048 797	10	— 402
c		37	1535 290	11	630 1107
M.O. 36		38	24 1821	11	1276 461
d		37	1647 198	11	1398 339
e		37	1286 559	12	887 850
Point		37	945 900	12	1637 100
f		37	62 1783	13	1440 297
g		36	1584 261	14	469 1268
Walk		36	1099 746	14	1660 77
h		36	352 1493	15	1187 550
i		35	1650 195	16	999 739
k		35	1800 345	16	1417 321
W. Gable House		37	783 1062	16	574 1224
l		35	725 1120	17	892 846
<u>We Kea Pt.</u>					
Shore D		35	376	18	114
m		35	321 1524	18	581 1157
Well		35	425 1420	18	1347 391
n		35	475 1370	19	39 1699
o		35	478 1366	19	1160 578
Lualaba		36	1811	18	1056

Sheet 3276 (Cont'd)

Point	Latitude		Longitude		Remarks
	°	'	°	'	
Hokukano	20	36	156	19	1076 769 136
					1812 867
					871
					273
					1465
p	35	33	20		867
					871
g	35	192	21		273
					1465
N	34	1595	21		1140
					598
S	34	1295	22		768
					970
<u>Pohaku Eaea Pt.</u>					
t	34	1322	22		1263
					475
u	34	1615	23		13
					1705
v	34	1742	23		1084
					654
<u>Kanamauna Pt.</u>					
w	34	1814	24		518
					1220
x	35	343	24		1521
					217
Pinoe	36	1519	22		729
Kanaloa	36	655	25		433

Point	Latitude		Longitude		Remarks		
	°	'	Meters				
			Scaled	Adj.			
Kahakuloa	21	00	481	156	32	1574	
			1364			219	
?	20	59	561		31	1365	
			1284			368	
Olaia		58	1510		32	375	
Ely Gable School	21	00	53		33	340	
			1792			1393	
Cairn 1		00	1254		33	767	
			591			966	
Chimney Rock		00	1758		33	1309	
			87			424	
Sta. R		01	99		34	1201	
Cairn 2		01	919		35	394	
			926			1339	
Kakalele Pt. Lt.		01	1651		35	977	
			194			756	
3" Pipe		01	1733		35	1700	
			112			33	
Highest Pt.		02	320		36	726	
			1525			1007	
Cairn 3		01	1187		36	1218	
			658			515	
N. Gable School Ho.		01	776		36	1231	
			1069			502	
Cairn 4		01	1252		37	222	
			593			1511	
? Boulder		01	1089		37	1167	
			756			566	
Wind Mill		01	875		37	1250	
			970			483	
Malo		01	986		38	788	
Cairn 5		01	415		38	870	
			1430			863	
End of Wharf		01	00		38	747	
						986	
Cairn 6		01	28		38	1079	
			1817			654	
M.P. 33		00	1524		38	1456	
			321			277	
Wind Mill		00	743		39	428	
			1102			1305	

Sheet 3269 (cont'd)

Point	Latitude		Longitude		Remarks	
	0	1	0	1		
					<u>Meters Scaled Adj.</u>	
Claim 7	21	00	1191	156	39	929
			654			804
Haweia Pt. Lt.		00	685		40	243
			1160			1490
Haweia		00	713		40	215
Derrick		00	652		40	267
			1193			1466
N.W. ^{1/2} Gable		00	74		40	220
			1771			1513
M.P. 31	20	59	1622		40	104
			223			1629
Large lone date palm		59	1193		40	418
			652			1315
Lone Coco		59	866		40	564
			979			1169
W. Gable		59	344		40	964
			1500			769
M.W. 29		58	847		40	1669
			998			64
Outer end stone fence		57	1684		41	349
			161			1384
Outer fence post		57	774		41	590
			871			1143
Ch. Spire		57	666		41	594
			1179			1139
End of old wharf		57	295		41	1094
			1550			639
Outer fence post 1		56	1716		41	1202
			129			531
" " " 2		56	1019		41	1236
			826			497
" " " 3		56	117		41	1303
			1728			430
N. end of ?		55	1762		41	1358
			83			375
Derrick		55	1684		41	1543
			161			190
Kekaa		55	1532		41	1557

Sheet 3271 - Scale 1/10,000

Point	Latitude			Longitude			Remarks
	°	'	Meters Scaled Adj.	°	'	Meters Scaled Adj.	
Waikapu Ch. Sp.	20	51	826	156	30	754	
Kahului		52½	813 110		28½	485 382	
Puu Nene Mill Cupola (O Ney)	52		461		27	569	
Stack	52		1676		26	1664	
Stack A	53		837		27	79	
N. Base			87 00			788 1658	
Tank	53½		804 119		28	29 838	
New Flag	53½		776 147		28	51 816	
Kirk	53½		557 366		28	17 850	
Flagstaff	53½		365 558		28	506 361	
	53½		76 837		28	00	
Luke	53		25		29	1612	
Yellow Spire (O Esp.)	53		660 264		30	804 63	
C	53		905 18		29½	791 76	
Red Spire	53½		480 443		29½	839 28	
Wailuku Stack (O Stack)	53		1633		30	124	
Wailuku	53½		890 33		29½	139 728	
Electric Stack (O Burg)	54		566		29	206	
Front Range (O Front)	54		566		29	426	
Pipe	54		849 74		29	38 829	
Light House	54		200 723		28	385 487	
Hen	54		1187		29	714	

Sheet 3271 (Cont'd) - Scale 1/10,000.

Point	Latitude			Longitude			Remarks
	0	1	Meters	0	1	Meters	
			Scaled			Adj.	
Old Works Stack	20	54	541 382	156	29	775 92	
Buff Spire		55	312		30	1157	
Hay		55	890		29	1611	
Fug		55	1429		29	1495	
Rear Range (O Rear)		54	241 582		29	732 135	
Waihee Ely (O Lee)		56	74		30	1331	
Yellow Spire (O Lo)		56	383		30	1678	
Pond (O Pond)		56	1840		30	1228	

✓

Sheet 3270.

Point		Latitude			Longitude			Remarks
		0	1	Meters Scaled Adj.	0	1	Meters Scaled Adj.	
Haiku	(O Ake)	20	55	725	156	20	69	
Mill Gables	(O Hike)		55	612		20	1577	
Cairn			56	1233		21	157	
Signboard			56	1540		21	366	
Cath. Ch. Sp.	(O Cruz)		55	135		21	1545	
Stack B			54	1710		22	189	
Stack a			54	1503		22	375	
Paia	(O Paia)		54	342		23	1359	
Line			55	1729		23	382	
Red Sandhill			54	116		23	1352	
Puu Nene			54	1540		23	257	
Pump			54	305		22	1477	
Camp 1			54	1086		22	1222	
Bank			55	759		23	512	
Post			54	195		23	1051	
Front Range Ru	(O Front)		54	1650		23	683	
E. Gable White Ho.			54	1780		24	679	
E. Gable			54	65		23	1055	
3" Pipe (1)			54	209		23	1602	
" " (2)			54	468		24	1206	
High Pt.			54	1377		25	528	
			54	513		25	134	
			54	1332		25	1600	
			54	775		25	597	
			54	1070		25	1137	
			54	1409		25	755	
			54	436		29	979	
			55	566		29	426	
			55	599		29	1289	
			56	1246		30	445	
			56	514		30	852	
			57	1331		31	882	
			57	1158		31	461	
			57	687		31	1272	
			57	1515		31	720	
			58	330		31	1013	
			58	1013		31	1235	
				832			498	

Sheet 3270, (cont'd)

Point	Latitude			Longitude			Remarks
	°	'	Meters Scaled Adj.	°	'	Meters Scaled Adj.	
Low loco (O Nut)	20	58	1351 494	156	31	1324 409	
3" Pipe (3)		58	1348 497		31	1580 153	
Conspicuous Red Top (O Lip)		59	768 1077		31	1157 576	
3" ?		59	721 1124		32	945 788	
Highest Pt.		59	1718 127		32	1080 653	
Kahakuloa (O Kul)	21	00	482		32	1517	
Church Sp.		00	31 ?		33	393 1340	

Copied from original -

A. L. S.

Compared with original -

G. C. M.

A. L. S.

Table of Position corrections

C. & G. SURVEY,
LIBRARY AND ARCHIVES
MAY 26 1913
Acc. No. _____

Corrected Tube

Fath- oms	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80									
10	39																							
15	59	39																						
20	71	63	39																					
25	81	76	67	39																				
30	91	87	80	69	39																			
35		97	91	84	72	39																		
40		107	102	96	88	75	39																	
45			113	108	100	91	77	39																
50			123	119	112	104	94	79	39															
55				129	123	117	108	97	81	39														
60				139	134	128	122	112	100	83	39													
65					145	139	133	125	115	103	85	39												
70					155	149	144	137	129	118	105	87	39											
75					165	161	155	149	142	132	121	108	89	39										
80						170	166	160	154	146	136	124	110	90	39									
85							180	177	171	165	158	149	139	127	112	91								
90							190	187	182	176	169	162	153	143	130	114								
95								197	193	187	180	174	166	158	146	132								
100									207	203	198	192	185	177	169	160	149							
105									217	213	208	203	197	189	182	173	164							
110										222	218	213	208	201	194	186	177							
115										232	228	223	219	213	206	198	190							
120										242	238	233	229	224	218	210	202							
125											248	243	239	235	229	222	214							
130											258	254	249	245	240	233	226							
135											268	264	260	255	250	244	238							
140												274	270	265	261	255	249							
145												284	280	276	271	266	260							
150												294	290	286	282	277	271							
155													300	296	292	287	282							
160														310	306	302	297	292						
165															320	316	312	307	303					
170																326	322	317	313					
175																	336	332	328	323				
180																		346	342	338	333			
185																			352	348	343			
190																				362	358	353		
195																					372	368	364	
200																						382	378	374

Meters

Wire run out

OFFSETS FOR POSITIONS OF SOUNDINGS

Distance from bridge to stern of ship, (39 meters), plus horizontal offset from stern of ship to the lead at the bottom on an inclined cast. Computed from the right triangle uncorrected for catenary

Date	Boat	Letter	Vol.	Hours	Positions	Sdgs	Miles
(1912)							
Dec. 30	PATTERSON	A	1	1	9	9	2.0
(1913)							
Jan. 27	"	B	1	4.5	34	65	21.4
" 28	"	C	1	4.5	24	43	16.4
Feb. 11	"	D	1	3.0	18	55	14.4
" 12	"	E	1	11.0	87	247	58.3
" 13	"	F	2	11.0	39	108	29.3
" 19	"	G	2	9.5	48	177	30.0
" 20	"	H	2	9.5	31	105	31.6
" 21	"	I	2&3	10.5	75	228	45.0
" 24	"	J	3	11.0	33	66	44.1
" 25	"	K	3	10.5	43	171	35.2
" 26	"	L	3	10.5	19	19	31.0
" 27	"	M	3	2.5	4	4	5.7
Mar. 5	"	N	3&4	11.0	58	167	47.1
" 6	"	O	4	4.0	24	64	7.4
" 7	"	P	4	2.5	5	5	9.6
				116.5	551	1533	408.5

Square Miles (Statute) 319

MAY 22 1913

Acc. No.

Date	Boat	Letter	Vol.	Hours	Positions	Sdgs.	Miles(stat.)
(1913)							
Jan. 21	PATTERSON	A	1	9.5	60	130	46.2
" 22	"	B	1	5.0	57	138	17.4
" 23	"	C	1	10.5	114	327	45.2
" 24	"	D	2	10.0	121	403	31.9
" 25	"	E	2	4.5	56	166	19.5
" 27	"	F	2&3	4.5	31	87	26.4
" 28	"	G	3	6.0	57	117	32.9
" 29	"	H	3	9.0	61	159	28.7
" 30	"	I	3&4	10.0	87	278	32.0
" 31	"	J	4	7.5	52	173	29.4
Feb. 5	"	K	4	11.0	76	112	58.1
" 6	"	L	4	4.5	39	49	17.3
" 7	"	M	4&5	10.5	93	146	38.7
" 8	"	N	5	8.0	55	180	21.4
" 10	"	O	5	10.0	78	172	46.9
" 11	"	P	5	2.5	23	83	12.6
" 14	"	Q	6	11.0	70	81	55.6
" 18	"	R	6	10.5	33	41	20.8
" 19	"	S	6	0.5	5	23	2.2
" 28	"	T	6	11.0	83	83	54.1
Mar. 7	"	U	6	5.0	15	15	25.5
" 8	"	V	6	4.0	11	11	21.9
				165.0	1277	2974	684.7

Square Miles (Statute) 488

3518

HHF
July 11, 1913.

HYDROGRAPHIC SHEET 3518.

Coast of Maui Island, Hawaiian Islands, by
Assistant J. B. Miller in 1913.

TIDES.

Kahului
Maui Island.

ft.

Mean lower low water, or plane of reference on staff,	3.0
Lowest tide observed " "	2.0
Highest " " " "	6.3
Mean range of tide,	1.6

July 11, 1913.

HYDROGRAPHIC SHEET 3519.

East Coast of Maui Island, Hawaiian Islands, by
Assistant J. B. Miller in 1913.

TIDES.

	Kahului ft.	Hana ft.
Mean lower low water, or plane of reference on staff	3.0	5.1
Lowest tide observed " "	2.0	5.2
Highest " " " "	6.3	7.8
Mean range of tide	1.6	1.8

Hyd @ 3519.

The work on this sheet shows the offshore hydrography between Keenau and La Perouse Bay, East Maui, H. I.

Soundings were plotted in the field, verified and inked in the office.

Sounding lines were run parallel to the shore and no cross-lines taken for reasons given in the descriptive report of the chief of the party.

The records throughout the work were kept in good order

J. B. Shkew

Soundings plotted in fathoms.

Sept. 8-1914.

