

6754

Diag. Cht. No. 4000

Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Hydrographic

Field No. 0641 Office No. H-6754

LOCALITY

State Territory of Hawaii

General locality Midway Islands

Locality Ship Channel

194 1

CHIEF OF PARTY

F. B. T. Siems

LIBRARY & ARCHIVES

DATE October 17, 1940

B-1870-1-11

6754

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. H6754

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

Field No. 0641

REGISTER NO. H6754

State Territory of Hawaii

General locality Midway Islands

Locality Ship Channel

Scale 1:6000 Date of survey Nov. 10 - Dec. 4, 1941

Vessel EXPLORER'S motorsailer, motor whaleboat & skiff

Chief of Party E. B. T. Siema

Surveyed by E. R. McCarthy, C. J. Wagner, E. B. Brown, Jr.

Protracted by F. X. Popper, C. J. Wagner, J. T. Guthrie

Soundings penciled by F. X. Popper

Soundings in ~~fathoms~~ feet feet

Plane of reference MLLW

Subdivision of wire dragged areas by

Inked by G. B. LITTLEPAGE

Verified by G. B. LITTLEPAGE

Instructions dated September 24, 1941

Remarks: See sheet field No. 1041-a enlarged plan of soundings at wharf. (Accompanies sheet 1041) H-6755 (1941)

H6754

TIDAL NOTE

Sheet (field number) 0641

The Navy staff at the tanker pier, Midway Islands, T. H., was used for the tide reducers for the Midway hydrographic sheets. This staff was connected by levels with the new staff installed in connection with the establishment of a standard gage.

The mean lower low water value on the staff was determined in the field from a series of observations on a portable gage maintained by the U. S. Navy. Though this series covered several months, there were breaks in the continuity of the series and no continuous record of a month was obtained. The computations of the value of MLLW for different series varied from -0.22 to -0.44 on the staff. A mean value of -0.35 on the staff was used for the reduction of soundings.

The highest tide observed in November was 1.4 ft. on Nov. 19, 1941.

The lowest tide observed in November was -1.6 ft. on the staff on November 20, 1941.

The sheets of cross-section paper showing the curves and reducers used in the field are transmitted as part of the report of sheet (field number) 1041, Midway Islands, T. H.

The record for the gage for November 24 and 25, 1941, did not check the staff readings. As the reducers from the gage would have given consistently bad crossings, and the staff readings gave very good crossings, the error appeared to be in the setting of the gage, and the reducers for these two days entered from the staff readings. On all other days, the reducers from the gage were entered.

H6754

DESCRIPTIVE REPORT

to accompany

Hydrographic Sheet 0641 (field number)

Midway Islands, T. H., 1941

U.S.C. & G.S. Ship EXPLORER

F. B. T. Siems, Comdg.

Project CS-270

INSTRUCTIONS

September 24, 1941.

LIMITS

This sheet, scale 1:6,000, comprises the hydrography of the ship channel extending from seaward through a dredged cut in the outer reef on the south side of the Midway atoll to the deep water basin of the lagoon and to the vicinity of the wharf on the northeast end of Sand Island. Adjacent areas are included; the northern, eastern and western limits of which form a junction with sheet (field number) 1041, scale 1:10,000. ^{14-6755 (1941)}

In conjunction with the hydrography, a special survey controlled by three-point sextant fixes was made to determine the limits of a section of the outer reef extending from the vicinity near the southeast side of Sand Island to the channel cut through this reef. Breakers and the general submerged condition precluded the use of the plane table. The Navy proposes to construct a sea wall along the axis of this section of the outer reef. A plan of soundings taken in the vicinity of the wharf accompanies sheet 1041 (field number). Tracings of the boat sheet 0641, the special survey of the reef and the plan of wharf and soundings were furnished the Resident Officer of Construction, USN, at Midway Islands. ^{14-6755 (1941)}

It is recommended that the Navy be furnished with photostats of the smooth sheets after they have been verified by the Washington Office.

Unfavorable weather and sea conditions obtaining for a period of several days at the close of the field season prevented hydrography and delineation of the reef line in the exposed area eastward of the channel entrance.

CONTROL

The boat sheet was plotted on the Plane Coordinate system in use by the Navy. A polyconic projection as related to the rectangular grid is shown on the smooth sheet. Most of the stations of triangulation previously executed by the U. S. Engineers and U. S. Navy are included in the triangulation established by the EXPLORER. There was good agreement in the two schemes mainly in common with each other. See Appendix (separate) to this report, entitled "Computations of Plane Coordinates of Triangulation Stations (C. & G.S.)" ✓ X acc'S 2061

A plat giving the plane coordinates, distances and directions between stations, resulting from the previous control, was furnished the EXPLORER and accompanies the triangulation records and report. The blue triangles on the smooth sheet represent those stations located by the U. S. Engineers and the U. S. Navy but not relocated by the EXPLORER. In general, these stations were used by the topographer and no discrepancy in position with relation to the other nearby stations was noted.

SURVEY METHODS

One of the EXPLORER'S motorsailers equipped with 808 Recording Fathometer was mainly employed in the hydrography including the sounding work in the vicinity of the wharf. A skiff was used in connection with the work of determining the limits of a section of the outer reef referred to above and also for obtaining shallow soundings with a pole. The skiff positions are shown in green and purple ink. A section of hydrography southeastward of Sand Island and just inside the reef was accomplished by a party using a motor whaleboat and sounding with lead line.

With the 808 Recorder, soundings were recorded in feet. Bar checks were made three times daily. The salinity and temperature corrections were entered to the nearest half foot. (See curve of launch fathometer corrections attached to Descriptive Report 1041 field number). The lead line was compared to a standard and found correct.

The coral areas are shown on the sheet by the conventional symbols approved by the Federal Board of Surveys and Maps. The limits of the visible coral was sketched on the boat sheets during the progress of the hydrography and noted in the sounding record. This information in turn has been shown on the smooth sheet in pencil.

*Symbol used for reef bearing or awash
sounding with Co. fld. used for submerged coral heads.*

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PREVIOUS SURVEYS



* Blue Print

Accompanying the sheet are prints ^{*}MF Nos. *150, *199, *238, *261, 267 and 281, showing hydrography accomplished by the Contractor engaged in dredging operations at Midway. Those marked by an asterisk (*) pertain to the area covered by sheet 0641 (present survey) (field number). An index sheet ^{*}(MF No. 154) is included. Included further is a print of Midway Islands General Layout (14th Naval District Drawing *MID-NI-106, showing soundings in the ship channel area. The sources of the latter soundings are probably the Contractor's surveys ^{*}MF Nos. 150 and 238 and a survey made by the U. S. Engineers. (Engineers survey not available)

The contractor's survey in general indicates depths considerably greater than those of surveys 0641 and 1041 (field numbers) accomplished by the party of the EXPLORER. ^{In deeper areas differences are as much as 10 ft}

Dredging operations were in progress (at the time of closing field work) to remove shoal spots found by the EXPLORER's party in the channel and in the area just northward of the east-west stretch of the channel. The Navy proposes to clear out the area to the northward to provide more room for large vessels maneuvering in negotiating the turns of the channel.

A tracing covering the channel area and showing a comparison of depths obtained in the present and previous surveys is forwarded herewith. During the latter part of the field season some of the buoys marking the upper end of the channel were shifted by the Coast Guard Tender and lighted buoys were established at channel entrance. These were located on December 2, as recorded and plotted. ^{* bp. 36723 not important}

DANGERS

Numerous coral reefs exist in this area. Some of these lie close to the edges of the dredged ship channel. The channel being comparatively narrow makes it necessary for a vessel to navigate with great care, particularly with an athwartship wind. Vessels cannot afford to proceed at a slow speed for fear of bringing the bow or stern near the channel edge in correcting the vessel's head for leeway. A sensitive range marks the north-south channel reach; the two sets (one on either side) of beacons marking this reach may also be used as a range by bringing in view the distant set between the beacons of the near set. The beacons, however, are in shallow water and the channel lies midway between the two beacons of each set.

A line of coral heads extending in a north-south direction lie 0.13 mile westward of a pile called "White". The northern and outermost coral head has a depth of 8 feet and its location is Latitude 28° 12.67', Longitude 177° 21.01'. This area is passed to the northward by local craft plying between the wharf (Sand Island) and the landing on Eastern Island.

A coral reef having a depth of 6 feet lies in Latitude 28° 13.10', Longitude 177° 22.13', or 0.2 mile 347° true from the face of the wharf (Sand Island). This reef is of importance to vessels (moderate size) that may anchor just outside the northwest limits of the turning basin off the wharf.

A coral head having a depth of 8 feet and surrounded by general depths of 19 feet or more lies 0.32 mile 88° true from the face of the wharf (Sand Island). ϕ 28° 12.92' λ 177° 21.71'

A depth of 7 feet on a small shoal of 12 to 14 feet lies 0.5 mile 331° true from the face of the wharf. ϕ 28° 13.34' λ 177° 22.34'

A coral head having a depth of ¹⁸ 8 feet and surrounded by depths of 21 to 40 feet lies 0.66 mile 25° true from the face of the wharf. ϕ 28° 13.5' λ 177° 21.75'

A depth of 9 feet, part of a 10-foot shoal, lies 1.04 miles 53° true from the face of the wharf. The shoal is surrounded by depths of 26 to 34 feet. ϕ 28° 13.53' λ 177° 21.14'

ANCHORAGES

Small craft find anchorage north or south of the breakwater extending from the east end of Sand Island depending on the direction of the wind. There is at present no anchorage with protection from all directions.

Moderate size vessels may anchor just outside the northwestern limit of the turning basin. After the area to the northward is dredged, anchorage may be afforded for large vessels. This would be desirable as considerable sea during fall and winter storms may make it untenable to remain at the wharf.

DISCREPANCIES

The length of the wharf as scaled from the topographic sheet is 162 meters whereas the actual length is 167 meters (550 feet). This would indicate that the topographic locations of "A" and "L" at the respective ends of the wharf are in error one with respect to the other. The following adjustment was made on the smooth sheet: "A" as located by the topographer and the direction from "A" to "L" (topographic location) were held, and "L" was plotted according to the latter's correct distance for "A". *reported distance H-6755*

The hydrography pos. 1 to 5h of this sheet, eastward of the wharf, was transferred to sheet 1041-a, (Plan of soundings at the wharf) indicating that the deeper soundings (21 feet) obtained along the sounding line pos. 19 to 20k of sheet 1041a are incorrect. The sounding lines 10 to 11k and 22 to 23k, paralleling the questionable line, more or less indicate the same thing. Although no reason for faulty recording from an examination of the fathogram could be determined, the external evidence seems sufficient for rejecting the 21-foot soundings on the questionable line. *Discrepancy to be considered in verification of H-6755*

Handled edge (21 ft) probably recorded from in error 2/20/43 21 ft sdg accepted as OK RHC

H6754


STATISTICS

Statute miles of sounding lines	206.4
Number of soundings9783
Number of positions2111
Area in square statute miles.	9.5

Descriptive Report compiled in Seattle Processing Office.

H6754

TIDAL NOTE

Sheet (field number) 0641

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POST-OFFICE ADDRESS: 1500 Westlake Avenue North, Seattle, Wash.

TELEGRAPH ADDRESS:

EXPRESS ADDRESS:
pf

H6754


DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

June 29, 1942

CONFIDENTIAL

To: The Director
U. S. Coast and Geodetic Survey
Washington, D. C.

From: F. B. T. Siems
Officer in Charge
Seattle Processing Office

Subject: Hydrographic Surveys, Midway Islands

As mentioned on page 1 of Descriptive Report for sheet
(field number) 0641, Midway Islands, T. H., it is recommended that
photostats of Midway Islands smooth sheets be furnished to the
Public Works Officer, 14th Naval District, Honolulu, T. H., after
the sheets have been verified by the Washington Office.

F. B. T. Siems
Officer in Charge

H6754

APPROVAL NOTE

Sheet (field number) 0641, Midway Islands, T. H., has been
examined by me and ^{is} approved.



F. B. T. Siems,
Comdg., Ship EXPLORER

Remarks

Decisions

1		280770
2		280770 U.S.G.B.
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GEOGRAPHIC NAMES

Survey No.

H6754 [REDACTED]

Name on Survey

On Chart No. A
 On previous survey No. B
 On U. S. Quadrangle Maps C
 From local information D
 On local Maps E
 P. O. Guide or Map F
 Rand McNally Atlas G
 U. S. Light List H
 K

Name on Survey	A	B	C	D	E	F	G	H	K
<u>Eastern Island</u>									1
<u>Midway Islands</u>									2
<u>Pacific Ocean</u>									3
<u>Sand Island</u>									4
<u>Ship Channel</u>									5
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Names underlined in red approved
 by W. Heck on 12/30/47

Surveys Section (Chart Division)

HYDROGRAPHIC SURVEY NO. **H6754** XXXXXXXXXX

Records accompanying survey:

Boat sheets ^{three} ~~two~~...; sounding vols. (11)...; wire drag vols.; bomb vols.; graphic recorder rolls (9)...; special reports, etc.

The following statistics will be submitted with the cartographer's report on the sheet:

Number of positions on sheet	2111.
Number of positions checked	354
Number of positions revised	23.
Number of soundings recorded	978.3
Number of soundings revised (refers to depth only)	<i>Fathograms rescaled in office revision of soundings too numerous to record</i>
Number of soundings erroneously spaced
Number of signals erroneously plotted or transferred	..1..
Topographic details	Time 29..
Junctions	Time
Verification of soundings from graphic record	Time 35 GBL. 25 P. ETHRIDGE

Verification by *G.B. LITTLEPAGE*.. Total time 239. Date 12/4/42.

Review by *R.H. Carstewa*.. Time 33.1. Date 12/18/42.

MEMORANDUM

IMMEDIATE ATTENTION

SURVEY
 DESCRIPTIVE REPORT
~~PHOTOSTATIC~~


 No. H **H6754**
~~XXXX~~

received July 6, 1942
 registered Oct. 17, 1942
 verified
 reviewed
 approved

This is forwarded in order that your attention may be directed to the matters as indicated below. Please initial in column 3 as an acknowledgement that your attention has been thus directed. The complete original records are available if desired. If you cannot give this your immediate attention, please initial, note, and forward to the next section marked, calling for the records at your convenience.

ROUTE	Initial	Attention called to
20		
22		
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62		
63		
82		
83		
88		
90		

RETURN TO

82	R. W. Knox
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RWK

TIDE NOTE FOR HYDROGRAPHIC SHEET

October 21, 1942.

~~Division of Hydrography and Topography~~

✓ Division of Charts: Attention: Mr. H. R. Edmonston

Plane of reference approved in
11 volumes of sounding records for

HYDROGRAPHIC SHEET 6754

Locality Ship Channel, Midway Islands, T. H.

Chief of Party: F. B. T. Siems in 1941
Plane of reference is mean lower low water reading
-0.35 ft. on tide staff at Navy tanker pier
9.10 ft. below B. M. 1

Height of mean high water above plane of reference is 1.1 feet.

Note: The record for the gage for November 24 and 25, 1941, did not check the staff readings. As the reducers from the gage would have given consistently bad crossings, and the staff readings gave very good crossings, the error appeared to be in the setting of the gage, and the reducers for these two days entered from the staff readings. On all other days, the reducers from the gage were entered.

Condition of records satisfactory except as noted below:

C. H. Green

Chief, Division of Tides and Currents.

DIVISION OF CHARTS

SURVEYS SECTION

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. 6754
Field No. 641

Territory of Hawaii; Midway Islands; Ship Channel
Surveyed in November - December 1941; Scale 1:6,000
Instructions dated September 24, 1941

Soundings:

Depth Recorder 808
Handlead
Sounding Pole

Control:

Sextant Fixes on Shore Signals

Chief of Party - F. B. T. Siems
Surveyed by - Ship's Officers
Protracted by - F. X. Popper; C. J. Wagner; J. T. Guthrie
Soundings plotted by - F. X. Popper
Verified and inked by - G. B. Littlepage
Reviewed by - R. H. Carstens
Inspected by - H. R. Edmonston

1. Shoreline and Signals

The shoreline and signals originate with T-6827 (1941), sextant fixes of the present survey, and triangulation of the U. S. Engineers and the U. S. Navy, which is filed with the triangulation of the present survey under Accession No. 4999 and S-2061.

2. Sounding Line Crossings

Satisfactory.

3. Depth Curves

Satisfactory for charting. Curves delineating certain coral features in the northwest part of the survey are somewhat indefinite.

4. Junctions with Contemporary Surveys

The junction with H-6755 (1941) on the north will be considered in the review of that survey. There are no contemporary offshore surveys joining this area.

5. Comparison with Prior Surveys

No prior surveys of the area have been made by this Bureau. The blueprints 36726-36731 (1941) of soundings taken by contractors engaged in dredging operations for the U. S. Navy are in fairly good agreement with the present survey. There are differences in depths of as much as 10 feet in certain deep spots and a number of coral heads were found on the larger scale survey of the blueprints that are not revealed by the present survey. If this area should be charted by this Bureau these blueprints should be used in conjunction with the present survey for charting purposes.

6. Comparison with H. O. Chart 1952 (latest print date December 1941)

The U. S. Coast and Geodetic Survey publishes no large scale chart of the area under consideration. The present survey is in general agreement with the Hydrographic Office chart but reveals many more of the coral heads, a characteristic of this area.

7. Condition of Survey

Satisfactory except that insufficient soundings were scaled from the fathograms to satisfactorily delineate the irregular bottom, and numerous corrections were necessary for those already scaled. All fathograms except those for A-day were completely rescaled.

The sounding lines falling within the dredged channel and submitted on an overlay, were plotted on the smooth sheet by the verifier. It is felt that whenever possible all soundings covering an area should be plotted on the smooth sheet by the field party or processing office. The soundings in this channel were not unduly congested.

8. Compliance with Instructions for the Project

Satisfactory.

9. Additional Field Work Recommended

A portion of the survey in Lat. 28°11.9'; Long. 177°21.1' is still incomplete.

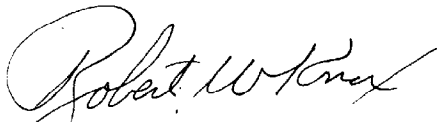
~~Except in the dredged areas,~~ Certainty that all coral heads have been found can be had only after a wire

drag survey of the area has been made. Therefore, though some of the lines are spaced as much as 90 meters apart (Lat. $28^{\circ}13.4'$; Long. $177^{\circ}22.4'$) no additional split lines are recommended.

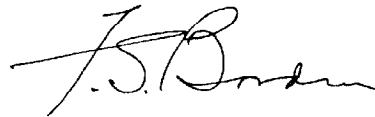
10. Superseded Surveys

None.

Examined and approved:



Chief, Surveys Section



Chief, Division of Charts



Chief, Section of Hydrography



Chief, Division of Coastal Surveys

The compiler attention is called to § 3, page 3 of
Description Report re: shoal spots in dredged channel.

Applied to compilation new Chart 4188. Aug. 26, 1943 G.H.S.
" .. Chk. 4000 12/29/44 R

Applied to ~~new~~ compilation of ^{new} Chart 4176
4 April 1946 R.