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Form 504
Rev. Dec. 1933
DEPARTMENT OF COMMERCE
U.S. COAST AND GEODETIC SURVEY
R. S. PATTON, DIRECTOR

DESCRIPTIVE REPORT

~~Topographic~~ } Sheet No. 2 (Field)
Hydrographic }

State Bahamas

LOCALITY

Mayaguana Island

Abraham Bay, East Section

1941

CHIEF OF PARTY

G.C. Mattison

DESCRIPTIVE REPORT

to accompany

HYDROGRAPHIC SHEET FIELD NO. 2

ABRAHAM BAY

MAYAGUANA ISLAND

BAHAMA ISLANDS

U. S. C. & G. S. S. HYDROGRAPHER

G. C. MATTISON, COMDG.

PROJECT HT-258

INSTRUCTIONS

This survey was executed in accordance with the Director's Instructions dated November 9, 1940 supplemented by radiogram dated December 3, 1940.

EXTENT

The survey covers the eastern half of Abraham Bay, Mayaguana Island, and the approaches to the small channel through the outer reef lying just west of Guano Point, offshore to the ten fathom curve.

CONTROL

Triangulation stations located with third order accuracy, and topographic stations from 1:4800 scale aluminum mounted topographic sheets furnished control for the survey.

DEPARTMENT OF COMMERCE
U. S. COAST AND GEODETIC SURVEY

REG. NO.

HYDROGRAPHIC TITLE SHEET

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. 2

REGISTER NO. **H6626**

State Bahama Islands

General locality Nassau Island

Locality Abraham Bay - East section

Scale 1:4800 Date of survey December & January 19 40 & 41

Vessel U. S. C. & G. S. S. HYDROGRAPHER

Chief of Party G. C. Mattison

Surveyed by James C. Tison, Jr.

Protracted by W. B. Page, M. J. Timmerman and L. S. Roberson

Soundings penciled by L. S. Roberson

Soundings scaled from Pathometer record by W. B. Page

Soundings in fathoms feet

Plane of reference M. L. W.

Subdivision of wire dragged areas by None

Inked by W. B. Page

Verified by W. B. Page

Instructions dated November 9th and December 3rd, 19 40

Remarks: Confidential Survey

METHODS

Standard Coast and Geodetic Survey hydrographic methods were used in executing the survey.

One of the Ship HYDROGRAPHER's launches was used for sounding in open water in depths greater than four feet, while a flat bottomed skiff with outboard motor was used in shoaler depths, and in areas made foul by coral heads.

Sounding lines are controlled by sextant fixes, obtained in so far as possible at minute and a half intervals, or less, along the lines.

Inside Abraham Bay all launch sounding lines running in a general northeast and southwest direction were steered by running ranges on shore objects. In many instances it was extremely difficult to identify such objects properly, and as a result, many sounding lines are crooked. Every attempt was made to change direction of such lines only at times of sextant positions and consequently it is believed that soundings between positions are well located in spite of meandering lines.

Launch cross lines inside the Bay, launch lines off the Guano Point entrance to the Bay, and all skiff lines were steered by means of a boat compass. The compass was found very erratic on the launch, and at times so in the skiff. Under such conditions it proved impossible to steer straight lines, the general heading of the boat being maintained at times largely by reference to direction of wind and sea. Abrupt changes in direction of compass lines were limited to positions, and intermediate soundings should be well located as a result.

On "a", "b", and "c" days soundings from the launch were obtained with a hand lead. Thereafter, all launch soundings are from the recorded bottom profile of the 808A automatic recording fathometer. All soundings from the skiff were secured with a sounding pole graduated in feet and half feet.

Least depths on coral heads are pole soundings, to the nearest half foot. Each head was inspected thoroughly through a water glass and there can be no question but that the shoalest sounding was obtained in each case. Air photographs of Abraham Bay were used freely in "spotting" coral heads preparatory to locating same by sextant fix. It was found that use of the photographs in this respect was far more reliable than trying to "spot" the heads while on sounding lines. Frequently a patch of grass or seaweed was mistaken for a coral head and its existence later disproved by a field inspection of photographs. Such a field inspection included investigation of all dark areas appearing on the prints, and the checking off of coral heads as they were located.

Limits of coral reefs shown in pencil on the smooth sheet were transferred from the air photographs by means of proportional dividers, using identifiable points for control which had been located by sextant fix or planetable. A field inspection of such areas was made by the hydrographer from a small boat, and interpretation of the prints should be accurate enough for all practical purposes.

FATHOMETER SOUNDINGS

Operation of the portable depth recorder was entirely satisfactory throughout the execution of this survey. The fish was installed so that the face plates were 2 feet and 2 inches below the water surface with the launch on an even keel in still water. The initial was set on the record so that actual depths were recorded.

Bar checks were made at the beginning of each sounding day and once thereafter during the day. In addition, frequent comparisons were made each day between recorded depths and depths measured simultaneously by sounding pole alongside the fish. Inside Abraham Bay a perfect comparison was always obtained and as a consequence it was not deemed necessary to abstract bar checks.

Bar checks made in deep water outside the Guano Point entrance to the Bay showed a rather erratic variation in the correction to depths greater than 12 feet - the correction to recorded depths varying from -0.7 to -0.3 feet. In scaling depths from the profile in this area a straight correction of -0.5 feet was applied to all soundings of 12 feet or over.

Much of the fathometer sounding was accomplished in choppy water, and the effect of rolling of the launch was noted carefully on the recorded profile. A pronounced "saw-tooth" effect resulted, with actual depths being registered about 0.2 feet below the peaks of such teeth rather than midway between the peaks and valleys as would be expected.

No attempt was made to record fathometer soundings in a record book. Instead, soundings were scaled directly from the recorded profile by means of a celluloid template, correcting for tide reducer as scaled. The scaling was done by a field officer and the soundings plotted simultaneously on the sheet by a draftsman. In areas of smooth bottom soundings were plotted every ten seconds along the sounding line, and where irregular bottom existed the interval was shortened as necessary.

DISCREPANCIES

The soundings between positions "1r" and "13r" - a section of a cross line - appear to be too deep by 0.5 and 1.0 feet in places. This is due to variable speed of the fathometer along this section of line - the recorder having experienced temporary difficulty in keeping the center reed vibrating. These soundings were plotted without adjusting for the variable speed since the small difference was not deemed important. ✓

At other places on the sheet differences of as much as 1 foot were noted at crossings, but they are easily explainable due to small wave like ripples which exist generally in the surface of the otherwise smooth sand bottom. By dragging a sounding pole slowly along the bottom such small irregularities were readily ascertained. ✓

No other discrepancies were noted.

DANGERS

Inside Abraham Bay coral heads constitute numerous dangers to navigation. Rather than list the position of each head separately with its corresponding least depth, an overlay tracing was made to accompany the smooth sheet on which is shown in green the true position of each head, its shape and size as true to scale as possible, and the least depth. The latter is inked in green beside the head to which it applies. The crystal clear water of the Bay renders these coral heads visible for several hundred meters distant, dependent upon conditions of light. In bright sunshine, they appear black from a distance and in cloudy weather a dark brown color. ✓

Essential information applied to smooth sheet, tracing destroyed.

The shoreline of the Bay is ringed by a flat coral reef from the western limits of this sheet eastward to vicinity of 3 "Fan". Its outer edge is very ragged and lies from 300 to 400 meters off the beach - approaching the shoreline in vicinity of △ "Village" and disappearing entirely in vicinity of 6 "Fan". Along its outer edge it is awash in places at M. L. W., sloping downward very slightly toward the beach until it disappears entirely under the white sand which covers a wide but shallow area next the shore. The outer limits are very distinct and plainly visible from offshore - rising vertically from the white sand bottom of the Bay in depths of from three to five feet of water. The outer edge is shown on the smooth sheet by a dashed pencil line, which was transferred from the air photographs by means of a pantograph. ✓

↑ filed with T-6791

The barrier coral reef forming the southern limit of Abraham Bay is generally from 200 to 300 meters wide, being very rough on top and ragged along its outer and inner edges. Throughout its length the center portion is largely awash at M. L. W., baring in spots from 1/2 to 1 foot. It consists largely of dead coral and appears almost white on the air photographs. Its outer edge is represented on the smooth sheet by the reef symbol and was transferred from the photographs by proportional dividers. Breakers delineate this edge at all stages of tide and it effectively blocks all swell action from entering the waters of the Bay. Both the inner and outer edges of the reef are submerged. The inner is covered by from 1/2 to 6 feet of water at M. L. W. and in places is fringed by a band of small coral patches and coral heads, many being practically awash at M. L. W. The inner edge is shown on the smooth sheet by a dashed pencil line which was transferred by proportional dividers from the air photographs, and many of the coral heads immediately adjacent to the reef were transferred in like manner. The inner edge should not be approached too closely by a boat unless visibility is very good. The outer submerged edge slopes downward gradually toward the south and is foul throughout its width with innumerable coral projections, many of which are awash at M. L. W. Much of the growth is "tree" coral, "antler" coral and live heads, and the area was not sounded. The outer limits of this submerged area are shown on the smooth sheet by a dashed line transferred from the air photographs. Outside this line lies a fringe of submerged coral heads which are generalized on the smooth sheet with the sunken rock symbol.

x line removed,
delimitation indicated
4/11/44

At coordinates N5500 and E19500, has been outlined a group of dangerous coral heads, about 300 meters long in a NW-SE direction and 200 meters wide in a NE-SW direction. Near its center are two large heads baring 1/2 foot at M. L. W. which were located by sextant fix. Least depths are shown on heads around the edges of the group which were likewise located by sextant fix. The bottom here is rocky.

At coordinates N5200 and E19750 is a detached coral reef about 150 meters in diameter which is awash at M. L. W. It is marked by heavy breakers at all stages of tide and is ringed by a narrow band of coral heads. The limits of this reef are shown on the smooth sheet by a dashed line and the adjacent coral heads are generalized by the sunken rock symbol.

Extending 500 meters southwest from Guano Point is a large area of coral reef which bares in spots from 1/2 to 1 foot at M. L. W. Along its southwestern and southern edges the transition from deep to shoal water is very abrupt. That part of the reef awash or bare at M. L. W. is shown on the smooth sheet by means of the reef symbol, and its limits were transferred from the air photographs by proportional dividers. Breakers are heavy

on this high portion of the reef at all stages of tide. A strip of submerged reef with many projections almost awash at M. L. W., surrounds the high portion, and its limits are shown by a dashed line on the smooth sheet. A band of submerged coral heads, generalized with sunken rock symbols, lies just outside the submerged portion.

Along the southeast shore of Guano Point extends a very ragged band of coral reefs, generally awash at M. L. W., the limits of which are shown by a dashed line on the smooth sheet. These limits were also transferred from the air photographs with proportional dividers. Outside the indicated limits is a band of dangerous coral heads and small sections of submerged reef, which are generalized by use of the sunken rock symbol.

West of Guano Point, in the area north of the coral reefs and south of coordinate N5500, the bottom is smooth rock with innumerable small live coral heads. The heads were deemed too numerous to locate individually, but those which could be identified on the air photographs were transferred to the smooth sheet as sunken rocks and circled with a ^{dashed} dotted line. This area should be entered only by a skiff or similar small boat.

CHANNELS

At the eastern end of the main barrier reef, between it and the reefs off Guano Point, a narrow entrance channel to Abraham Bay extends in a northwest and southeast direction. It is 150 meters wide at its narrowest point, and seven feet of water may be carried into the Bay by avoiding coral heads located near its center and towards its northwestern end (see overlay sheet). The channel should not be attempted without good visibility. The reef bordering it on its southwest side is steep-to and easily identifiable under such conditions, and this side should be favored by users in order to avoid the dangerous heads which lie to the northeast. The channel bottom consists of alternate rock and sand areas, presenting a generally smooth appearance when viewed through a water glass except for the coral heads shown on the sheet.

ANCHORAGES

Off the Guano Point entrance channel to Abraham Bay and westward to Δ "Coral", just inside and along the 10 fathom curve, are large areas of white sand bottom where ships may anchor in suitable weather. Good visibility is necessary in anchoring so that the sand areas are discernible from the ship's bridge. The HYDROGRAPHER anchored in such an area along the 10 fathom curve to southeast of Δ "Coral", and in northwesterly weather.

*dashed line omitted, of little value.

COMPARISON WITH PREVIOUS SURVEYS

No previous surveys are available for comparison.

BOTTOM CHARACTERISTICS

Bottom characteristics were recorded only when using leadline and sounding pole for soundings. All others are from a field inspection of air photographs. Characteristics for the area surveyed are shown only on the overlay sheet, in black ink.

The grass which grows over large areas inside the Bay and shows black on the photographs is actually of a black color, is very short and extends only a few inches above the bottom surface.

GEOGRAPHIC NAMES

Abraham Bay, Mayaguana Island, and Guano Point are from the U. S. Navy Hydrographic chart of the area.

California Rock is a very well established local name applying to the sandstone rock ridge at Δ "Cal", and is in general use by natives of the island.

STATISTICS

| | |
|---|-------|
| Area in square statute miles: | 5.4 |
| Statute miles of sounding lines: | 288.0 |
| Number of positions: | 3650 |
| Number of soundings (hand lead and pole): | 9878 |

NOTE: No record made of soundings scaled from recorded profile of bottom.

Respectfully submitted,

James C. Tison, Jr.
James C. Tison, Jr.,
Jr. H. & G. Engineer.

Approved and forwarded:

G. C. Mattison
G. C. Mattison,
H. & G. Engineer,
Chief of Party.

TIDE NOTE FOR HYDROGRAPHIC SHEET

March 20, 1941

Division of Hydrography and Topography:

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

Tide Reducers are approved in
13 volumes of sounding records for

HYDROGRAPHIC SHEET 6626

Locality Abraham Bay, Mayaguana Id., Bahama Ids.

Chief of Party: G. C. Mattison in 1940-1941
Plane of reference is mean low water reading
3.2 ft. on tide staff at Abraham Bay
16.1 ft. below B.M. Triangulation Station C. A. L.

Height of mean high water above plane of reference is 2.0 feet.

Condition of records satisfactory except as noted below:



Chief, Division of Tides and Currents.

LIST OF SIGNALS

to accompany

H6626

Descriptive Report for Hydrographic Sheet Field #2

1. Triangulation Stations:

| | |
|----------------|-------------------------|
| MAY 1940 | HAM 1940 |
| ABE 1940 | GUANO 1940 |
| CAL 1940 | Guano Point Light, 1940 |
| Tide Gage 1940 | CORAL 1940 |
| CREEK 1940 | REEF 1940 |
| VILLAGE 1940 | |

2. Topographic Stations:

From Topographic Sheet Field No. 2-A T-6788 (1940)

| | | | | | | |
|-----|-----|-----|-----|-----|----|-----|
| Woo | Yo | Zog | Bit | Cow | Et | Fu |
| Gas | Hot | It | Jet | Kil | Lo | Not |
| Ox | Fal | Rex | Sis | Top | Us | We |
| Ax | By | Cut | Dot | For | He | Il |
| Ket | Mil | Nix | Owl | | | |

From Topographic Sheet Field No. 2-B T-6788 (1940)

| | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|
| Pot | An | Kit | Wop | Rob | Pen | Lux |
| Yel | Sop | Cop | Nel | Tut | Dog | Off |
| Zip | Um | Eve | Pip | Vox | Fix | Run |
| Wax | Get | Sit | Hum | Tim | Yep | Izy |
| Uto | | | | | | |

From Topographic Sheet Field No. 3 T-6789 (1940)

| | | | | | |
|------|------|------|------|-----|------|
| Ada | Jill | Tex | Dol | Jak | Bet |
| Kill | Ugly | Ep | Kep | Cox | Lam |
| Vim | Fox | Lamp | Del | Mas | Wink |
| Goat | Noon | Eva | Net | Fan | Ora |
| Yum | Out | Gal | Pot | All | Hun |
| Mer | Ru | Bud | Ibex | Ice | Sal |
| Cad | Pug | | | | |

H6626

TIDAL NOTE TO ACCOMPANY SHEET NO. 2

Portable automatic gage established by the party
in Abraham Bay.

Approximate position 22-22 N 73-00 W

Mean low water on staff 3.2 (field determinations)

Highest tide observed 6.2 on staff January 16, 1941

Lowest tide observed 2.4 on staff November 29, 1940

DIVISION OF CHARTS

Surveys Section

REVIEW OF HYDROGRAPHIC SURVEY NO. 6626 (1940-41) FIELD NO. 2

Bahama Islands, Mayaguana Island, Abraham Bay - East Section
Surveyed in December 1940 - January 1941, Scale 1:4,800
Instructions dated November 9 and December 3, 1940

Soundings: Handlead, Pole
and Portable Depth Recorder

Control: Three-point Fixes on
Shore Signals

Chief of Party - G. C. Mattison
Surveyed by - James C. Tison, Jr.
Protracted by - W. B. Page, M. J. Timmerman and L. S. Roberson
Soundings plotted by - L. S. Roberson and W. B. Page
Verified and inked by - G. B. Littlepage
Reviewed by - Harold W. Murray, May 1, 1941
Inspected by - H. R. Edmonston

1. Shoreline and Signals

The shoreline and signals originate with 1940 plane table surveys T-6788a and b and T-6789.

2. Sounding Line Crossings

Agreement of sounding line crossings is very good. Some additional comments are included in the Descriptive Report, page 4.

3. Depth Curves

The usual depth curves may be satisfactorily drawn.

4. Junctions with Contemporary Surveys

a. The junctions along the south with H-6628 (1940-41) and on the west with H-6625 (1940-41) are satisfactory.

b. There are no contemporary surveys to the south-eastward of the present survey limits.

5. Comparison with Prior Surveys

No prior surveys have been made by this Bureau in this area.

6. Comparison with H. O. Chart 2805 (New Print date July 1938)

Charted information on this small scale chart is very meager and of a purely reconnaissance nature. No comparison with the present survey is necessary.

7. Compliance with Instructions for the Project

The plan, character, and extent of the survey satisfy the instructions for the project.

8. Condition of Survey

- a. The sounding records are neat and legible.
- b. The field protracting and plotting were very good.
- c. The Descriptive Report is clear and very comprehensive and satisfactorily covers all matters of importance.

9. Additional Field Work Recommended

This is a very carefully executed survey and no additional field work is necessary.

10. Superseded Surveys

There are no prior surveys by this Bureau in this area.

Examined and approved:

Thos. B. Reed

Thos. B. Reed,
Chief, Surveys Section

J. B. Borden

Chief, Division of Charts

E. R. Green

Chief, Section of Hydrography

G. H. Hude

Chief, Division of Coastal
Surveys