

# 4806

Diag. Cht. Nos. 1019 & 954.

Form 504

**DEPARTMENT OF COMMERCE**  
U. S. COAST AND GEODETIC SURVEY

..... Director

State: Canal Zone

**DESCRIPTIVE REPORT**

*Topographic* } Sheet No. **4806**  
*Hydrographic* }

**LOCALITY**

Pacific Entrance to Panama Canal

Dumping Ground Area south of

Naos Island.

1928

**CHIEF OF PARTY**

J. Senior

GOVERNMENT PRINTING OFFICE

B. & C. ...  
L. & A.  
OCT 2 4 1928  
Acc. No.

# 4806

DESCRIPTIVE REPORT TO ACCOMPANY HYDROGRAPHIC SHEET No. 1. 4806

PACIFIC ENTRANCE, PANAMA CANAL.

1. Instructions:-

This sheet was surveyed in accordance with Instructions dated March 24, 1928.

2. Survey methods:-

This hydrographic survey was controlled entirely by triangulation signals, which triangulation scheme was put through in advance of the hydrography. The scale of the sheet is 1 : 10,000. The limits of the survey include the dumping ground area and adjoining waters subject to possible changes, with proper junction with unchangeable areas. The motor vessel NATOMA and the launch Taboguilla were used in executing the hydrography. The sounding lines were spaced 50 meters apart. All soundings were taken with the hand lead. The automatic tide gauge at Balboa, maintained by the Panama Canal, was used in the reduction of soundings.

3. Discrepancies:-

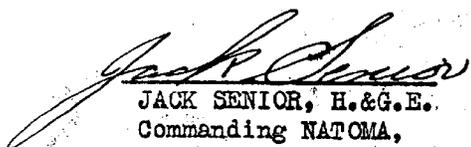
No marked discrepancies from the general trend of charted soundings were noted. Difference of a few feet in spots were found, which changes must be expected from dumping going on.

4. Dangers:-

The area of this survey includes the dumping ground for the Panama Canal. Navigation should keep clear of this entire area. The bottom is foul and quite uneven. No further development other than fifty meter spacing of lines was deemed necessary. The special buoys marking the limits of the dumping area are shifted further south from time to time.

5. Statistics for this sheet:-

Statute miles of sounding.....245.6  
Soundings.....8044 - ?  
Positions.....2141

  
JACK SENIOR, H.&G.E.  
Commanding NATOMA,  
Chief of Party, C.&G.S.

*See descriptive report of H. 4807  
for approval sheet by chief of party  
E. P. S.*

**TIDAL DATA**

**TO ACCOMPANY HYDROGRAPHIC SHEETS NOS. 1 and 2.**

Location of tide gauge :-	Balboa pier, C.Z.
Plane of reference :-	7.6 ft.
Highest tide observed :-	+ 10.0 "
Lowest tide observed :-	- 8.1 "

Division of Hydrography and Topography:

Division of Charts:

Tide reducers are approved in  
volumes of sounding records for

9

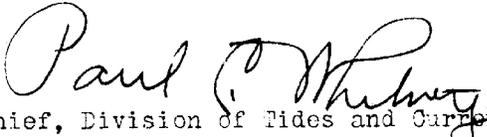
HYDROGRAPHIC SHEET **4806**

Locality: **PACIFIC ENTRANCE TO PANAMA CANAL, C. Z.**

Chief of Party: **Jack Senior in 1928.**  
Plane of reference is **Mean low water springs**  
**7.6** ft. on tide staff at **Pier 18, Balboa.**

Condition of records satisfactory except as checked below:

1. Locality and sublocality of survey omitted.
2. Month and day of month omitted.
3. Time meridian not given at beginning of day's work.
4. Time (whether A.M. or P.M.) not given at beginning of day's work.
5. Soundings (whether in feet or fathoms) not clearly shown in record.
6. Leadline correction entered in wrong column.
7. Field reductions entered in "Office" column.
8. Location of tide gauge not given at beginning of each day's work.
9. Leadline corrections not clearly stated.
10. Kind of sounding tube used not stated.
11. Sounding tube No. entered in column of "Soundings" instead of "Remarks".
12. Legibility of record could be improved.
13. Remarks.

  
Chief, Division of Tides and Currents.

Section of Field Records.

Report on Hyd. Sheet 4806.

Pacific Coast Entrance to Panama Canal.

Surveyed in 1928.

Instructions dated March 24, 1928.

Chief of Party, Jack Senior

Surveyed by Jack Senior, J. C. Bose

Contracted ~~and~~ <sup>Plotted</sup> by W. J. Chovan, J. N. Jones

Plotted by J. N. Jones

Verified + Indexed by S. Ruzgari

(1.) The records conform to and the character of development fulfill the requirements of the Genl. Instructions.

(2.) The plan and extent of development satisfy the specific instructions, exceptions:—

a.

240 m S of Lat.  $8^{\circ} 55' 2''$

220 m W Long  $79^{\circ} 33'$  } shows 3 foot soundings on

Hyd. 3368 which apparently were not picked up by this survey. In view of the fact that no development of this area was made for their disapproval and that the bottom shows <sup>only</sup> slight changes, it is recommended that the soundings be retained.

b. 170 m S of Lat.  $8^{\circ} 55'$  } shows a 2 foot sounding on  
60 m W Long.  $79^{\circ} 33'$

chart 952. This sounding was taken from work done by the Hyd. Office. A 1 foot sounding <sup>is located</sup> about 170 meters ~~off~~ south and it may be possible that the 2 foot sounding is misplaced. In view of the fact that no information on

2 cont.

hand can disprove its existence it is recommended that it be retained.

c.

260 m. W of Long.  $79^{\circ}33'$ , 440 m. N of Lat.  $8^{\circ}54'$ , shows a 5 foot sounding on Chart 952. Investigation shows that two 5 foot soundings exist in this area on Hyd. Sheet 3368.

The work on H. 4806 has failed to pick them up inasmuch as three sounding lines were run right in the midst of them. In view of the fact that the bottom is recorded as rocky in H. 3368, it is very probable that these depths still exist and therefore it is recommended that they be retained.

d. 740 m S of Lat.  $8^{\circ}54'$  m Long  $79^{\circ}33'$ , a 3 foot sounding appears on chart 952. Hyd. sheet 3368 shows three 3 foot <sup>soundings</sup> in this area and the bottom is recorded as rocky. There appears to be no way to disprove the existence of these soundings by the available information on hand which <sup>soundings appear</sup> ~~is~~ ~~or~~ ~~has~~ ~~compared~~ erroneous on the latest survey (H. 4806) by one fathom.

The records of both sheets were studied in view of locating arithmetical errors or other uncertainties but no reason for making any changes could be found. The records of H. 3368 show the bottom as rocky and it is ~~very probable~~ <sup>recommended</sup> that the 3 foot ~~sounding~~ <sup>soundings</sup> be retained.

Report on Hyd. 4806 (cont.)

③ The development was adequate to enable the drawing of the curves.

④ An unusual number of positions of on "a" day (blue) had to be retracted, due to either the protractor was out of adjustment or due to carelessness. The errors were persistent throughout, diminishing upon nearing <sup>the</sup> signals used, which are evidences indicating that the field protractor may have been out of adjustment for this day's work.

The retracting of the remaining <sup>days</sup> was satisfactory.

The field plotting was not strictly in accordance with the usual practice for the compass bearings apparently were ignored throughout. Though in some instances the soundings positions were not affected, but ~~in~~ <sup>there were</sup> a number of cases the consideration of the bearings improved the curves considerably.

The verifier, however, found it necessary to consume extra time to study and relocate the soundings affected by the courses.

⑤ There are no adjacent sheets.

⑥ Character and scope of the surveying - good.  
Field drafting - good.

Reviewed by S. Prigari Nov. 30, 1928

DEPARTMENT OF COMMERCE

AND REFER TO No. 11-DRM

U. S. COAST AND GEODETIC SURVEY

WASHINGTON

December 6, 1928.

Supplemental Notes on H. 4806

By A. L. Shalowitz

1. A comparison has been made of all the sources that were used in the compilation of Chart 952 to the westward of the dredged channel and a study made of the changes that have taken place in this area since 1900. (See photostat of H. O. chart 1950 of Panama Road.) Bearing in mind the relative importance of the area surveyed, the fact that dredging has been done in the channel, and that the area has been used as a dumping ground leaving lumps at first, but which the action of the water has probably leveled to some extent, it is recommended that the new survey supersede all information used heretofore for the compilation of chart 952 within the limits covered by this survey.
2. The following charted shoals, which are included in the above blanket statement, will be mentioned specifically for the purpose of showing the reasoning in each case which led to the above conclusion:

a. The 3-foot sounding about 220 meters southeast of Changarmi Island in lat.  $8^{\circ} 53' 1150$  m., long.  $79^{\circ} 33' 10$  m. (referred to in paragraph 2, d of review) is one of a group of three 3-foot soundings obtained on the 1912 survey (H. 3368, pos. 58-59 W, blue). In the sounding records for this survey there is a note in the remarks column that the launch was "bucking wind and heavy chop". On a later day (46-47 m', blue) 11 feet was obtained at practically the same spot as the southernmost 3-foot sounding. The group of 3-foot soundings being the first ones taken on the line, it is possible that owing to the adverse conditions the leadsman made an error of 1 fathom in reading the leadline. The present survey (H. 4806) shows a line of 10 and 11 foot soundings directly over the 3-foot soundings. Since the original shoal was 150 meters in extent and not a shoal of very small dimensions, it seems hardly likely that the new survey would not have contained some indication of it if it still existed, and it is therefore reasonable to assume that either the shoal has disappeared or the original soundings were in error for the reason mentioned above.

It should be mentioned here that the present edition of chart 952 for the area covered by this survey represents a compilation from H. O. chart 5001 (see drawing of chart 952, Feb. 12, 1915) on which the soundings added are shown in red) which in turn represented a survey made subsequent to this Bureau's survey

of 1912. The above mentioned 3-foot sounding was one of the few soundings retained on the new compilation for the 1912 survey and is shown on the drawing (referred to above) in black. The original H. O. chart 5001 from which the compilation was made is no longer available and it cannot be determined what depth was shown on this particular spot.

While a closer examination should have been made over this area, yet taking everything into consideration it would appear safe to remove this from the chart, and it is so recommended.

- b. The charted 5-foot sounding in lat.  $8^{\circ} 54' 450$  m., long.  $79^{\circ} 33' 270$  m. is the westernmost of two 5-foot soundings found on the 1912 survey (H. 3368, pos. 164-165 k', blue). The sounding is marked rocky in the records. The surrounding depths are 8 to 11 feet. On the drawing of chart 952 mentioned under paragraph 1 (a) above, this sounding is shown in red and it is presumed that this sounding also appeared on the H. O. chart from which the compilation was made; but whether the hydrographic office found that depth from an original survey or whether they merely incorporated on their chart some of the shoal soundings that we had shown on the first edition of chart 952, is difficult to ascertain at this time without resorting to a seemingly unnecessary procedure. The latest survey (H. 4806) shows three closely spaced sounding lines running through this shoal with nine and ten foot soundings on them. In view of this it seems unlikely that the shoal depth still exists and notwithstanding the fact that the original soundings were marked rocky it is recommended that they be superseded by the later work.
  - c. In lat.  $8^{\circ} 54' 1680$  m., long.  $79^{\circ} 33' 70$  m., there is a charted 2-foot sounding. This sounding was taken from H. O. chart 5001 and the authority for it will be found on the drawing of chart 952 mentioned above. The present survey shows a least depth of 5 feet close by with a 1 foot sounding about 190 meters to the southwest. While it is not impossible that this sounding exists, it would seem that, in view of the ~~unimportance~~ importance of the area, together with the fact that considerable change has taken place here, the new survey should take precedence.
  - d. The comment under (c) applies equally to the 4-foot charted sounding in lat.  $8^{\circ} 54' 720$  m., long.  $79^{\circ} 32' 1430$  m. The source is the same and the new survey shows 8 and 9 feet in the vicinity.
2. Attention is called to the following:

- a. Penamarca Rock, which is at present charted as a rock bare at high water, should be changed to a rock awash at half tide as shown on the latest hydrographic survey (H. 4806). A reference to the topographic sheet (T. 3245) from which the rock was originally charted shows a faint pencil note "Bare at L.W.", although the symbol used was that of a high water rock. The adjoining topographic sheet (T. 3244) shows the correct symbol and the hydrographic survey H. 3368 shows the rock bare 10 feet at mean low water springs. This agrees approximately with the notation on the present survey. The necessary notes have been inked on topographic sheet 3245 and the symbol corrected in accordance with standard practice and to conform to the adjoining topographic sheet. The above also applies to the rock about 400 meters south by east of Changarmi Island although this is already charted as a rock awash.
- b. The pile marked "covered at high water" and charted in lat.  $8^{\circ} 53' 90''$  m., long.  $79^{\circ} 32' 50''$  m. has been referred to the field party for possible further information. This was added to chart 952 from H. O. chart 5001 in 1915 and has been carried on the charts ever since. The present survey makes no mention of it either in the sounding records or in the descriptive report. A line of soundings (70-71 B, red) was run 50 meters to the starboard of the charted location, at low water, but no mention was made of a pile. Whether the hydrographer saw the pile, and knowing that it is already charted, failed to note it in the record, or whether he saw no evidence of its existence, is the information that has been requested and until such data come in, the pile should be retained on the charts.
3. No additional work is considered necessary within the limits of this survey, but it should be noted that while a considerable shoaling had taken place in the vicinity of the 18 foot spit to the north of the dumping ground between the date of the 1912 survey and the survey represented by H. O. chart 5001, the latest survey shows a recession of the 18 foot curve with a few shoal spots outside this curve showing remains of the old spit.

This conclusion of course presupposes that the survey represented by H. O. chart 5001 actually showed a continuous 18 foot spit. If the 18 foot curve on that chart was generalized then it is even possible that the spit is in reality shoaling up, for the spots found on the new survey are slightly less than those shown on the spit on the Hydrographic Office chart, although in a slightly different position.

To the westward of the dumping ground the reverse condition seems to have taken place and the 18 foot curve making off to the southeastward from Changarmi Island has moved seaward about 400 meters with a least depth at the outer end of 13 feet where 19 feet is shown at present.

It is therefore suggested that in studying the necessity for further work here, consideration should not be confined merely to an examination of the closeness of the development of shoals discovered, but rather to the advisability of making additional surveys in this locality for the purpose of studying the fluctuations occurring here.

4. The following are places close to the dredged channel that fall in a slightly different category from those mentioned above and on account of their location with reference to the canal, special consideration will be given them:
  - a. The charted 24 foot sounding in lat.  $8^{\circ} 53' 830$  m., long.  $79^{\circ} 31' 1210$  m. falls in depths of 35 to 39 feet on the new survey. The authority for this sounding is H. O. chart 5001 (see drawing of chart 952, Feb. 12, 1915). The 1912 hydrographic survey, H. 3368, shows 42 to 44 feet in this vicinity and the wire drag survey of that same year (H. 3360) shows a 33-36 foot drag as having cleared this spot. It is therefore reasonably certain that the 24 foot shoal, assuming its location to be correct, must have formed subsequent to the wire drag examination. If it was a dump for the dredging of the canal, then it is quite probable that current and wave action have leveled it to a great extent and the new survey fairly represents the depths in this vicinity. It is therefore recommended that this 24 foot sounding be omitted from the charts.
  - b. In lat.  $8^{\circ} 53' 1045$  m., long.  $79^{\circ} 31' 945$  m., the Engineers' survey of July, 1927 (blueprint 21372) shows a 33 foot sounding at the mouth of the canal surrounded by 39 and 40 foot depths. The latest survey (H. 4806) shows 39 to 41 feet in this vicinity. The 1912 surveys (H. 3362 and 3368) showed an isolated 33 foot sounding surrounded by 39 to 44 feet about 100 meters to the northwest. Neither of the above 33 foot soundings has ever been charted. On account of the importance of the location and the fact that the Engineers' survey was made only 8 months prior to our latest survey, it is recommended that this 33 foot sounding supplement the new survey.
  - c. In lat.  $8^{\circ} 53' 880$  m., long.  $79^{\circ} 31' 1050$  m., there is another 33 foot sounding from the blueprint mentioned under (b) above. There is a corroborating sounding of 36 feet close by on the same blueprint. The soundings adjacent to these 2 soundings agree generally with the soundings on the new survey. The 33 and 36 foot soundings fall midway between two 100 meter lines on the new survey and it is not impossible that the shoal exists here. It is therefore recommended that the sounding be added to the charts.

- d. Two other soundings of importance should be utilized from the Engineers' blueprint (above mentioned). One is a 31 foot sounding in lat.  $8^{\circ} 53'$  1235 m., long.  $79^{\circ} 31'$  1380 m., and the other a 29 foot sounding in lat.  $8^{\circ} 54'$  20 m., long.  $79^{\circ} 31'$  1490 m. In both cases the development on the new survey is not very detailed and there is a sufficient indication of shoaling on the lines to make the Engineers soundings entirely plausible.
5. Special attention is called to the 34 foot sounding in lat.  $8^{\circ} 53'$  1360 m., long.  $79^{\circ} 31'$  1320 m. This sounding falls in the middle of the dredged channel and is surrounded by depths of 38 and 39 feet. The original recorded sounding (pos. 136-137 c, red) is somewhat doubtful. It appears as an 8-1 transformed into a 9-1 or vice versa, but it is uncertain which was made first. If the 8-1 is correct then the field party should have further developed the area. The latest Engineers survey (blueprint 21372, July 1927) shows about  $37 \frac{1}{2}$  feet at this point, but since the present note on the chart, giving 33 feet as the controlling depth in the canal to beacon 13, will be retained until further information is received from the Engineers, the 34 foot sounding will not affect the new chart. It will be retained on the sheet for the present, but should be referred to the field party for a possible explanation. If this sounding is authenticated by the field party, then it might be advisable to inform the Engineers of its existence in case no additional dredging has been done in this vicinity since our survey.

A. L. Shalowitz

Approved:

A. M. Sobieralski  
Chief, Section of Field Records (Charts)

Chief, Section of Field Work (H. & T.)

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

C. & G. SURVEY  
L. & A.  
OCT 22 1928  
Acc. No.

REG. NO. 4806

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. 1

REGISTER NO. **4806**

State ~~PANAMA~~ Canal Zone

General locality Pacific Entrance to Panama Canal

Locality Dumping Ground Area South of Naos Id.

Scale 10,000 Date of survey May, 1928

Vessel M.V. NATOMA and launch Taboguilla.

Chief of Party JACK SENIOR

Surveyed by JACK SENIOR and J.C. BOSE

Protracted by W.J. CHOVAN and J.N. JONES

Soundings penciled by J.N. JONES

Soundings in ~~fathoms~~ feet

Plane of reference Low Water Springs (7.6 on Balboa staff)

Subdivision of wire dragged areas by \_\_\_\_\_

Inked by \_\_\_\_\_

Verified by \_\_\_\_\_

Instructions dated March 24-th, 1928

Remarks: \_\_\_\_\_

*9 vols.  
1 vol. Bp.  
1 BS.  
Zepher*

Field Records Section (Charts)

HYDROGRAPHIC SHEET No. 4806

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

Number of positions on sheet 2140  
Number of positions checked 320  
Number of positions revised 75 approx.  
Number of soundings recorded 9184  
Number of soundings revised 150 approx.  
Number of signals erroneously  
plotted or transferred . . . . .

Date: Nov 30, 1928

Cartographer: E. Piccini