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10-16-98

Diag. Unit. No. 5530-5

Form 504

U. S. COAST AND GEODETIC SURVEY  
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey ..... HYDROGRAPHIC

Field No. EO-1317 ..... Office No. H-7621

LOCALITY

State ..... CALIFORNIA

General locality ..... SAN FRANCISCO BAY

Locality ..... ALCATRAZ ISLAND TO GOLDEN GATE

194 7

CHIEF OF PARTY

W. M. Gibson

LIBRARY & ARCHIVES

DATE ..... Nov. 21, 1949

B-1870-1 (1)

7621

DEPARTMENT OF COMMERCE

U. S. COAST AND GEODETIC SURVEY

HYDROGRAPHIC TITLE SHEET

REG. NO. H-7621

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

REGISTER NO. H-7621

Field No. Bo-1347

State CALIFORNIA ✓

General locality SAN FRANCISCO BAY ✓

Locality ALCATRAZ ISLAND TO GOLDEN GATE ✓

Scale 1:10,000 ✓ Date of survey 20 June to 20 Nov. 1947 ✓

Instructions dated 16 Nov. 1940 and 24 April 1947

Vessel BOWIE

Chief of party W.M. GIBSON ✓

Surveyed by W.M. GIBSON ✓

Soundings taken by ~~fathometer~~ ALCATRAZ, graphic recorder, hand lead, ~~with~~

Fathograms scaled by FIELD PARTY

Fathograms checked by FIELD PARTY

Protracted by A. KAUPA

Soundings penciled by A. KAUPA

Soundings in ~~fathoms~~ feet at ~~MLLW~~ MLLW ✓

REMARKS:

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Notes to Accompany

Sheet BO-1347

- (A) Project: Hydrography executed under project CS-256, instructions dated 16 Nov. 1940; Supplemental instructions dated 24 April 1947.
- (B) Survey Limits and Dates: This survey extends from the Golden Gate to about 1 mile east of Alcatraz Island, north to Ansel Island, and south to the Ferry Building. This survey joins sheet <sup>H-7619(1947)</sup> BO-1147 on its eastern limit. To the south and north a junction will be made with next seasons work (1948). No prior survey was furnished of this area. On the west limits of the sheet the hydrography was carried to the Golden Gate as per instructions. Work began 20 June 1947 and ended on 20 November 1947.
- For junctions  
see Review,  
par. 4
- (C) Vessels & Equipment: Vessels operating were the ship Bowie and Launch 113 and 133. Launches worked inshore and around Alcatraz Island; completing the inshore hydrography from the Golden Gate north to Sausalito, California; from the Golden Gate east to the Ferry Building. The ship completed all deep water hydrography. The launches operated from the ship. Fathometers 808J- Serial Nos. S-111 and S-112 were used in recording depths. These fathometers operated very successfully in depths from 3 feet to 353 feet. The greater percentage of deep soundings were recorded on B, C, & D scales; other were recorded on the fathom scale.

(D) Tide and Current stations: Predicted Tides were used in the reduction of soundings. For smooth plotting the Standard Gage at Fort Point should be used; records of which can be obtained from the Washington Office. No current Station was occupied.

(F) Control Stations: The positions of all triangulation stations plotted were obtained from the pamphlet published by the U.S. Coast & Geodetic Survey titled "Geographic Positions of Triangulation Stations, California VII, San Francisco and Vicinity." Topographic stations from Golden Gate north to Sausalito, Calif. including a portion of Peninsula Point (Belvedere) were transferred from topographic Sheet <sup>T-7067 (1947-48)</sup> BO-D-47. The Hydrographic signals around Alcatraz Island were located by three point fixes, sextant angles, from stations along the San Francisco water front. The signals circled in red from Golden Gate east on the San Francisco side were transferred from planimetric maps T-5922 No. Half; T-5923 No. Half. (1945)

(G) Shoreline and Topography:

All Shoreline was transferred from planimetric maps <sup>i</sup> (1945) T-5922 No. Half; T-5923 No. Half; T-5926 E<sup>1</sup>; ~~T-5929~~

- (H) Soundings: Soundings were measured with an 808J Fathometer Serial Nos. S-111 and S-112. Before and after each days work direct comparisons were made with bar checks. Any deviation between the depths measured on the bar and fathometer were recorded in the sounding records; and the soundings were adjusted accordingly.
- (I) Control of Hydrography: Hydrography was controlled by sextant angles on shore objects either located by triangulation, topography or from planometric maps.
- (J) Adequacy of Survey: The survey is complete and is adequate to supersede prior surveys for charting. Satisfactory junction was made with sheet <sup>H-7619 (1947)</sup> BO-1147 on the eastern limits of this sheet. No other sheet joined this Survey. (at the time of this survey)
- (K) Crosslines: Approximately 15 to 20% of the survey has been covered with crosslines. In the shoaler depths where the bottom is rather even the crosslines checked satisfactorily. In the deeper depths where the bottom is very irregular the depths varied at the crosslines by as much as 5 to 15 feet. (in highly irregular bottom)
- (L) Comparison With Prior Surveys: No prior survey was made of this area. (Review, par. 5. )
- (M) Comparison With Chart: The following comparisons have been made with chart 5535, Scale 1:20,000 "San Francisco Bay, Candlestick Point to Angel Island."

All the soundings from chart 5535 covering this area were transferred to this sheet. In general the soundings on the chart agreed with the present survey. In many instances when the chart sounding was plotted on this sheet it failed to check the present survey. However, in the immediate vicinity approximately within 50 meters radius this survey shows the same or slightly shoaler depth as indicated on the chart. Review,  
par. 6.

Investigations Examined

The chart shows a 11 foot sounding in Lat.  $37^{\circ}-48.70'$ , Long.  $122^{\circ}-28.50'$ . This sounding was verified by this survey.

The chart shows in Lat.  $37^{\circ}-49.90'$ , Long.  $122^{\circ}-28.50'$  two piles projecting from the water in the entrance to Horseshoe Bay. These two piles are signals Ink and Sea located on Topographic Sheet <sup>T-7067(1947-48)</sup> BO-D-47.

The chart shows a 6 Ft. sounding in Lat.  $37^{\circ}-50.21'$ , Long.  $122^{\circ}-28.18'$ . A thorough development was made of this area (See overlay near Yellow Bluff) and the 6 Ft. <sup>5 ft. obtained on present survey</sup> sounding was verified. The 15 foot sounding (uncharted) from H-462 (1855) Falling 50 meters to the northeast of the 6 foot sounding could not be verified; therefore should not be charted. <sup>(24' shoalest depth found on pres. survey in vicinity of the uncharted 15)</sup>

\*  
The 41 has  
been since  
superseded  
by depths  
from subse-  
quent surveys

The chart shows a \*41 Ft. sounding in Lat. 37°-49.0',  
Long. 122°-27.34' on Presidio Shoal. A thorough  
development was made in this locality (See overlay of  
Presidio Shoal). A ~~39~~<sup>8</sup> foot sounding was obtained about  
200 meters south of the 41 foot sounding in Lat. 37°-48.8<sup>8</sup>'  
Long. 122°-27.33'. A 38 foot sounding was <sup>also</sup> obtained  
about 200 meters southeast of the charted 41 foot  
sounding in Lat. 37°-48.90' Long. 122-27.15.

Chart 5535 in Lat. 37-48.45 Long. 122-27.50 Shows  
a 7 foot sounding. This survey checked this sounding.

The chart shows Anita Rock in Lat. 37-48.50  
Long. 122-27.15 <sup>(superseded by pres. survey)</sup> bearing at low water. A thorough investi-  
gation was made of the area and the least depth found  
was ~~4~~<sup>3</sup> feet a MLLW. (3 ft. now charted)

The chart shows an obstruction in Lat. 37-48.53  
Long. 122-26.66. This has not been investigated. An  
investigation of this area will be accomplished on the  
inshore sheet next season (1948). (see H-7706(1948-49))

42 has  
been super-  
seded by  
shallower depths

Chart 5535 in Lat. 37-49.38 Long. 122-26.08 shows  
a 42 foot sounding. The present survey obtained a ~~39~~<sup>37</sup>  
foot sounding in this locality. About 1<sup>00</sup>~~30~~ meters south  
of the charted 42 foot sounding the present survey  
obtained a 36 foot sounding.

36' has moved  
180 meters west  
on later charts  
3/11/55

The chart shows three 35 foot shoals in the vicinity  
of Lat. 37-50.0 Long. 122-26.4. These three shoals have  
been investigated. In Lat. 37-49.77 Long. 122-26.~~38~~<sup>42</sup> a  
least depth of ~~36~~<sup>35</sup> feet was obtained.

MNR

Also a 33 ft. from  
Bp. 46340 (1949)

Charts shows 35 Ft. in this vicinity. In Lat. 37-50.06

Long. 122-26.38 least depth obtained was 36 Ft. chart  
Retain from Bp. 25627 (1932)

shows 35 Ft. In Lat. 37-50.22 Long. 122-26.6<sup>8</sup> least  
depth obtained was 3<sup>5</sup>/<sub>8</sub> Ft. chart shows 35 Ft. This one  
foot discrepancy might be caused in the Tide reductions.  
↑ from actual tide reducers

Chart shows an 88 foot sounding in Lat. 37-50.28  
Long. 122-25.94 in a submarine operating base. This  
sounding could not be verified in the immediate vicinity.

Present soundings are at least 10 feet deeper. However,  
about 325 meters to the southeast in Lat. 37-50.<sup>20</sup>17

Long. 122-25.76 a shoal exists with a least depth of  
64 (64 now charted)  
68 feet. This area requires more development.

The chart shows in Lat. 37-51.06 Long. 122-26.20  
(from H-2254 (1895-96))  
a 30 ft. sounding. A thorough development was made of  
this area. The charted 30 ft. sounding could not be  
verified. About 200 meters northwest and inshore of  
the charted 30 ft. sounding numerous soundings ranging  
from 25 to 30 feet have been obtained. It appears the  
30 foot charted sounding is displaced. See Review, par. 5a. (8)

In Lat. 37-49.74 Long 122-25.76 the chart shows a  
depth of 40 ft. This survey shows the 40 ft. sounding  
about <sup>80</sup>100 meters east of the charted sounding. Present depth  
adequate for charting

In Lat. 37-49.6 Long. 122-25.62 the chart shows a  
23 ft. sounding. This sounding was verified by this  
survey. Directly east and inshore toward Alcatraz  
Island, numerous shoaler soundings were obtained, least  
depth 10 feet in Lat. 37-49.62 Long. 122-25.53.



Chart 5535 in Lat. 37-49.67 Long. 122-25.52 shows a rock which bares with 3 ft. of tide. This rock was located by position 148 "k" day and it ~~bears~~ <sup>bares</sup> 5 feet at MLLW.

In Lat. 37- 49.83 Long. 122-25.10 the chart shows a 43 ft. sounding as the least depth on shoal. About 80 meters southwest of the charted 43 ft. sounding a least depth of 40 feet has been obtained on the shoal.

Chart 5535 in Lat. 37-48.90 Long. 122-25.08 shows Disregard 41 which is not now charted; area has been dredged and a 41 ft. sounding. The present survey could not verify <sup>superseded by deeper depths</sup> this sounding. The present soundings are deeper.

Chart 5535 in Lat. 37-49.12 Long. 122-24.10 on Blossom Rock shows a least depth of 40 feet. A thorough investigation was made of this area and the least depth obtained was 42 ft. <sup>Recommend retention of 40 ft. from Bp. 25625 (1932)</sup> (An after-rock removal survey by C. of Engrs. at a scale of 1:120) or 1" = 20 ft.

Chart in Lat. 37-48.73 Long. 122-24.75 shows a 28 ft. sounding from U.S.E. Survey. This sounding could not be verified by the present survey. Soundings obtained by the present survey are 10 feet deeper in this immediate vicinity. (28 deleted; C.L. 909, 1949)

In Lat. 37-47.96 Long. 122-23.25 chart shows a 45 ft. sounding. A thorough investigation was made of this area and the charted 45 ft. sounding could not be verified. Present depths in this vicinity are 63 ft. This sounding should be removed from the chart. Disregard 45 (Review, par. 5)

(144-44)

Planimetric map T-5926<sup>E1</sup> shows a dolphin with light on top in Lat. 37-51.22 Long. 122-28.63 This dolphin and light has been removed and should be deleted from previous surveys. Previously removed from charts (H.O.N. to M. 29, 1946)

The following investigations were not examined during this survey but will be done next season on an inshore sheet of the San Francisco water front.

In Lat. 37-48.53 Long. 122-26.66 chart shows an obstruction, presumably a pile awash.

} See H-7706 (1948-49)

In Lat. 37-48.<sup>8 7</sup>/<sub>8</sub> Long. 122-25.<sup>00</sup>/<sub>62</sub> chart shows a sounding of 25 feet from U.S.E. Survey.

In Lat. 37-48.68 Long. 122-24.50 chart shows a Disregard → 30 ft. sounding from U.S.E. Survey. Review, par. 6 A

In Lat. 37-48.68 Long. 122-24.91 chart shows a sounding of 26 ft. from U.S.E. Survey. See H-7706 (1948-49)

(Q) Land Marks for Charts:

Landmarks shown on chart 5535 covered by the area of this sheet should be continued to be shown on the chart. There are no additional nor new prominent features to be listed as landmarks.

Remarks

The bottom of large areas on this sheet consist of very irregular sand dunes. In the strong currents and prevailing winds it is not practicable to hold a launch or ship course sufficiently well to completely develop them. Nor is the 1/10000 scale of survey sufficiently large to show all the irregularities. if completely developed.

It is believed that the depths as obtained should provide safe navigation. However, to be assured that no lesser depths exist than those obtained, it is believed that only a wire drag will suffice.

C. J. BEYMA

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DEPARTMENT OF COMMERCE  
U. S. Coast and Geodetic Survey

Ship BOWIE  
P. O. Box 328,  
Oakland, Calif.

8 June 1948

To: The Supervisor, Southeastern District.

Subject: ANGEL ISLAND, POINT BLUNT LIGHT, 1916-17.

Difficulty in tying out a recent topographic survey resulted in a re-determination of the position of the subject station by third order triangulation. The computations are being sent by registered mail. The new position is considerably different from the old. The Coast Guard states that the light structure was moved northward in 1930 or 1935, which tends to confirm the new position. The new position is:

Latitude - 37-51-11.218      Longitude - 122-25-03.865

It is requested that the Norfolk Processing Office correct the position on the Bowie smooth sheets involved, and process the data in accordance with paragraphs 9233 and 9243 of the Hydrographic Manual.

/s/

W. M. Gibson, Lieut. Comdr.  
U.S.C.&G.S. Commanding

C/C The Director  
The Supervisor, Western District

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28 July 1948

To: The Director  
U. S. Coast & Geodetic Survey  
Washington 25, D. C.

Subject: Topographic Sheets, Project CS-256

An inspection of the topographic sheets of Ship BOWIE, Project CS-256, San Francisco Bay, Calif., shows some apparent discrepancies when compared with air-photo compilations of the same area. This office is forwarding two of these sheets for an inspection by the Washington Office.

Many of these discrepancies are obvious upon comparison with air-photo compilations, such as, varying widths and directions of piers and the failure to make junctions of some piers with shoreline. Attention is directed to varying distances between projection lines and the confusion of prick points at some of the topo signals.

Scaled positions of most topographic signals were furnished by the field and these were used to plot control on smooth sheets, however, several of these do not agree with the topographic sheets, possibly due to poor inking of projections.

These sheets are being forwarded to you at this time in order that irregularities and deficiencies may be investigated and reconciled in the office if possible. If not possible, further field work may be necessary.

George L. Anderson  
Commander, USC&GS  
Supervisor S.E.D.

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Ship BOWIE,  
P. O. Box 328,  
Oakland 4, Calif.

9 August 1948

TO: Supervisor, Southeastern District,  
U. S. Coast and Geodetic Survey,  
New Postoffice Bldg.,  
Norfolk, Va.

SUBJECT: BOWIE Survey No. 1347.

It has been discovered in the progress of extending triangulation into Richardson Bay that the position of Sausalito Fog Signal does not agree with published data. The discrepancy was not noted in the subject hydrographic survey or on the graphic control sheet covering that area. The new position will be forwarded upon completion of triangulation and computations now in progress.

/s/

W. M. Gibson,  
Commander, C&G Survey,  
Commanding Ship BOWIE

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10 August 1948

To: The Director  
U. S. Coast & Geodetic Survey  
Washington 25, D. C.

Subject: Survey Records, Project CS-256

An inspection of the sounding records of the Ship BOWIE, Project CS-256, San Francisco Bay, Calif., indicates that soundings have been recorded in the record books with no attempt to have the same number of soundings between positions. For instance, the number of soundings between two minute fixes may vary from seven to fifteen. This method is undoubtedly necessary in certain instances where uneven bottom is encountered, but in general it is believed that the number of soundings between positions with occasional soundings recorded on odd intervals is preferable. By using the method which has been adopted by the BOWIE a great deal of extra time has been consumed in the field in preparing the records and it will be necessary to spend considerably more time in processing these records and plotting the smooth sheets than would be required if the uniform number of soundings were recorded.

The scanning of the fathograms by the Ship BOWIE has apparently been carefully and accurately accomplished and the smooth sheets are being plotted using the soundings as scaled by the field party. One smooth sheet has been nearly completed and the results appear to be satisfactory.

From an inspection of eighteen volumes of sounding records on one smooth sheet only one recorded fathometer speed check has been found, but it is assumed that more of these checks were made but not recorded. It would be very desirable if all such checks were recorded to assist in the processing where the same number of soundings is not taken between positions.

These items are called to your attention so that if you consider it desirable you may instruct the Commanding Officer of the Ship BOWIE to make changes in his methods of recording.

Earl O. Heaton  
Captain, USC&GS  
Supervisor, S.E. District

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Ship BOWIE,  
P. O. Box 328,  
Oakland 4, Calif.

16 August 1948

TO: The Supervisor, Southeastern District,  
U. S. Coast and Geodetic Survey,  
Norfolk, Va.

SUBJECT: Processing of BOWIE Hydrographic Sheet No. 1347.

It is requested that work on the subject sheet be suspended pending further examination of the control in that area.

To date, it appears that the following control stations and/or recoveries are incorrect:

Pt Blunt Light  
Sausalito Fog Signal  
Lime Point, South Stack.  
Pt Knox

Due to the strong currents in that area, inaccuracies in the control were not evident in plotting the boat sheet.

/s/

W. M. Gibson,  
Commander, C&G Survey,  
Commanding Ship BOWIE



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27 August 1948

To: The Director  
U. S. Coast & Geodetic Survey  
Washington 25, D. C.

Subject: Plane Table Surveys - Project CS-256,  
San Francisco Bay

With further reference to my letter of 28 July 1948 to you and your reply of 17 August 1948, Ref. No. 711-rd, further study of the plane table sheets for Project CS-256 has been made and it is my opinion that there are some phases of this work on which criticism may be desirable but that is not a function of this office, to direct this criticism to the field party. It is my belief that these surveys are not up to the standard that is ordinarily expected of our field parties and before they are made permanent records it would seem desirable to give some consideration to doing additional field work to verify apparent discrepancies. There are a number of items on these sheets that make one feel that the work is not entirely reliable. Some of these cases are:

Sheet BO-A-47 - Bridge Piers - Latitude  $40^{\circ}15'$  longitude  $122^{\circ}19'45''$  to  $20^{\circ}0'$  are not uniform and are not perpendicular to the center line of the bridge.

1 - Topographic signal centers are poorly defined and little attempt has been made to remove some of the preliminary centers. In some cases these centers are not in the center of the station symbol and without using the position scaled by the field party it is impossible to tell where the center actually is.

2 - Lettering in the vicinity of buoys is extremely poor indicating little care was taken in doing this lettering. Likewise, on Sheet B-47 lettering in the vicinity of floating canneries was also carelessly done.

Sheet C-47 - The azimuths of piers south of  $55^{\circ}15'$  and west of  $21^{\circ}45'$  do not agree well with the photogrammetric manuscripts.

Sheet E-47 - The azimuths of Pier 17 appear incorrect on the plane table sheet as well as the alignment of building between Signal A9

and Signal Bon. The bulkhead to the southwest of signal Up also appears incorrect but this may actually be a change in shoreline.

Sheet D-47 - Does not have any apparent discrepancies but triangulation station Pt. Knox and Sausalito Fog Signal fall on this sheet and there is now some uncertainty as to the correctness of the positions used for them, therefore, it is not known what effect these erroneous positions may have on this sheet.

The projections on all of these sheets are uneven, but possibly this is a result of poor inking. The projection on Sheet C-47 appears to be the most in error.

Paragraph three of your letter of 17 August 1948, has indicated that most of the above problems are recognized. In accordance with paragraph one of suggestions of that letter this office has used the plane table surveys as basic data for hydrographic signals but we have hesitated to use the shoreline in several places where it appears incorrect and where it does not agree with air-photo compilations.

These problems are being brought to your attention with the thought that with some revision work on these sheets they will make more satisfactory permanent records and that if certain things are called to the attention of the Commanding Officer it should undoubtedly improve the quality of the work now being done by the field party.

Two of these sheets are being forwarded to you for whatever further action you see fit. If you have no criticism of these sheets to make to the field party I shall then take up directly with the Commanding Officer the main points which are causing difficulty in establishing the proper shoreline.

Earl O. Heaton  
Captain, USC&GS  
Supervisor, S.E. Dist.

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Ship BOWIE,  
P. O. Box 328,  
Oakland 4, Calif.

13 September 1948

TO: Supervisor, Southeastern District,  
U. S. Coast and Geodetic Survey,  
Norfolk, Va.

SUBJECT: Processing of field records.

There are being forwarded triangulation data relative to control for 1948 hydrographic surveys in Richardsons Bay and the Golden Gate for final processing and for use in processing the 1948 field sheets.

These data also affect the 1947 field sheets in that a new geographic position of SAUSALITO FOG SIGNAL is included. The new positions of ANGEL ISLAND, POINT KNOX AND POINT STUART are believed to be near to the old positions and will not alter the hydrography.

In the 1947 field season an erroneous recovery of LIME POINT SOUTH STACK is believed to have been made. That old position is destroyed and the object erroneously used for it last year has been located by triangulation and included in the subject data. It is LIME POINT, SOUTH GABLE.

/s/

W. M. Gibson,  
Commander, C&G Survey,  
Commanding Ship BOWIE

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Ship BOWIE,  
P. O. Box 328,  
Oakland 4, Calif.

13 September 1948

TO: Supervisor, Southeastern District,  
U. S. Coast and Geodetic Survey,  
Norfolk, Va.

SUBJECT: Otis Elevator - Black Tank.

On recent graphic control sheet of the San Francisco water front (Scale 1/5000) the position of the same tank used for hydrography last year on BO 1347 was determined.

At the time of that hydrographic survey, a number of positions including the subject tank were rejected on account of "jumps" in the line. Apparently the OTIS ELEVATOR TANK was erroneously identified with HIGH BLACK TANK (1919).

The new position scaled from the aluminum sheet should enable the plotting of the rejected fixes. The position is BLACK TANK, OTIS ELEVATOR CO.

37° 48' 850.5 meters  
122° 24' 730.5 "

/s/

W. M. Gibson,  
Commander, C&G Survey,  
Commanding Ship BOWIE

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23 September 1948

To: Commanding Officer  
USC&GS Ship BOWIE  
Box 328  
Oakland, California

Subject: Planetable surveys--Project CS-256

Several of your topographic sheets for project CS-256, namely, BO-A-47 to BO-E-47 inclusive, are being returned to you for verification of apparent discrepancies. Before these sheets are made permanent records, all discrepancies shall be eliminated by field work and/or other appropriate methods, or sufficient additional information furnished to permit satisfactory correction.

In your letter to the Supervisor, Southeastern District dated 25 August 1948 you have suggested possible causes of some of the difficulties. In accordance with your suggestion, a comparison has been made between the geodetic positions of the 1947 unadjusted triangulation and preliminary geodetic positions used on the sheets. A maximum difference of 0.3 meter was found.

When examining the topographic sheets, some of the drafting and delineation of topographic features showed lack of care in plotting and inking. In some instances these discrepancies have been noted in pencil on the planetable sheet. Close supervision shall be given the additional work necessary to eliminate the indicated discrepancies.

Upon completion of the necessary investigation and revision, you will please transmit the topographic sheets and map manuscripts, together with all additional information, to the Norfolk Processing Office.

(Signed) L. O. COLBERT

Director.

cc: Supervisor, Western District  
Supervisor, Southeastern District  
Division of Photogrammetry  
Hydrography Section

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Ship BOWIE,  
P. O. Box 328,  
Oakland 4, Calif.

29 September 1949

Captain E. O. Heaton,  
U. S. Coast and Geodetic Survey,  
New Postoffice Bldg.,  
Norfolk, Va.

Dear Captain Heaton:

This party is revising 1947 topographic surveys of San Francisco Bay. A number of discrepancies were noted in pencil on the sheets, either in your office or the Washington office.

Will you please advise if those noted discrepancies are all that need investigating. The 1/5000 scale enlargements of Richmond Harbor, Oakland Outer Harbor and Treasure Island previously forwarded to your office will assist in our work if other discrepancies than those noted need investigation. In that case, will you please return the enlargements by Air Mail or advise.

It has been ascertained that the position of  $\Delta$  station BELL on the Oakland Outer Harbor sheet is probably in error and this also affects Sheets BO 05147 and 05247.

The letter recently sent your office listing a geographic position of LIME POINT, SOUTH GABLE should be changed as the correct designation of that station is LIME POINT, SOUTH CHIMNEY 1948.

I regret now that I did not proceed in supplementing the old triangulation against local advice in this area when starting the work, as it is causing a great deal of difficulty both in the field work and processing. The lettering and inking of the topographic sheets was my own error but I was refused permission to have that work done in a processing office.

Sincerely yours,

/s/

W. M. Gibson,  
Commander, C&G Survey,  
Commanding Ship BOWIE

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4 January 1949

TO: Supervisor, Southeastern District  
U. S. Coast and Geodetic Survey  
418 Post Office Building  
Norfolk 10, Virginia

Subject: Sand waves, San Francisco Bay

In conjunction with hydrographic surveys in San Francisco Bay, project CS-256, the Commanding Officer of the Ship BOWIE has made a study of sand waves in the general vicinity of Golden Gate and Angel Island. This study was voluntarily made for the purpose of preparing an article for publication in The Journal.

Commander Gibson has recently forwarded eight sounding volumes and accompanying fathograms to this office to supplement the hydrography accomplished under project instructions. The following is quoted in part from his letter dated 20 November 1948 to Mr. A. L. Shalowitz: "The records of the sand waves hydrography do not constitute a part of any regular survey and are being forwarded for whatever disposition is considered desirable. . . . . The shoalest soundings would be transferred to the BOWIE's hydrographic sheet 1347, which is now in the Norfolk Processing Office."

The data contained in these eight sounding volumes should be incorporated into the previous work and the sounding volumes assigned a sheet number. *H.7621a*

/s/ J. H. HAWLEY

Acting Director.

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AIR MAIL

23 March 1949

To: The Commanding Officer  
USC&GS Ship BOWIE  
P. O. Box 328  
Oakland 4, California

Subject: Control, San Francisco Bay.

This Office is still having difficulty plotting the control on Sheet Bo-1347. As the field party did not adequately identify and submit proper recovery notes on the triangulation stations during the 1947 season, the identities of some of these points are still in doubt. Also, some of the data on hand are contradictory so it will be greatly appreciated if the following points can be clarified.

Point Knox L.H., 1928

On 16 August 1948, a letter was received from the Officer-in-Charge stating that an incorrect recovery had been made on this station. On 13 September 1948, another letter was received stating that the change in position of Pt. Knox was not great enough to alter the hydrography. The following position of this station was sent as a 1948 triangulation location, and is in disagreement with the original 1928 position by about 15 meters:

Pt. Knox, Light      37°-51'-22.096  
                             122°-26'-29.380

It was noted that the original 1928 position of this station was used on topographic survey Bo-D-47 (revised). Kindly advise this Office which position should be used to plot the 1947 hydrographic survey.

Lime Point, L.H., South Stack, 1928

A letter, dated 13 September 1948, stated that an erroneous recovery had been made on this station and that the object used on the hydrographic survey had been located by triangulation and called Lime Point, South Gable. Another letter, dated 29 September 1948, changed the designation to Lime Point, South Chimney, 1948. However, the only triangulation position furnished in this area was called Chim, 1948. Please advise if we may assume these various names designate the same triangulation station.



C  
O  
P  
Y

Commanding Officer, USC&GS Ship BOWIE

-2-

23 March 1949

Yellow Bluff Light, 1939

This triangulation station was located by planetable on topographic survey Bo-D-47 (revised) and designated as a topographic station. There is a discrepancy of about 12 meters between the triangulation and topographic locations. Please advise this Office which location should be used to plot the 1947 hydrography.

S.F. Light, Pier No. 41, 1916-17

This triangulation station was given a topographic designation on Bo-B-48 and is in disagreement with the original 1916-17 location by about 25 meters. Please advise this Office which position to use in plotting 1947 hydrography.

Pier No. 35, Flagstaff, 1916-17

This triangulation station was used on 1947 hydrographic survey, but was not recovered on 1948 topographic survey. Due to the elapsed time since this station was established, a confirmation of its existence would be appreciated. If this station is no longer there, please send location of object used on hydrographic survey.

Earl O. Heaton  
Captain, C&GS  
Supervisor, S.E. Dist.

EOH:m

C  
O  
P  
Y

Ship BOWIE,  
P. O. Box 328  
Oakland 4, Calif.

30 March 1949

TO: Supervisor, Southeastern District,  
U. S. Coast and Geodetic Survey,  
Room 418, U. S. Postoffice Bldg.,  
Norfolk, Va.

SUBJECT: Control - San Francisco Bay

As requested in your letter of 23 March 1949, there is enclosed data clarifying the control on Hydrographic Survey BO-1347.

This information was obtained from the officers who were engaged on the 1947 and 1948 field work, and was reviewed by Commander W. M. Gibson who was in charge of the surveys.

With regard to Pier No. 35 Flagstaff, a field party of this vessel will attempt to identify the object used and locate it as soon as practicable.

/s/

C. A. George,  
Lt. Comdr. C&G Survey,  
Commanding Ship BOWIE

cc The Director

Encl:

Point Knox Lighthouse, 1928

Original description is as follows:

"The yellow chimney in the center of the lighthouse at Point Knox was cut in from stations, TRANSPORT, (1916) ALCATRAZ ISLAND LIGHTHOUSE and FORT POINT LIGHTHOUSE. This lighthouse is shown on Pacific Coast Light List for 1928 as Angel Island Light".

A recovery note in 1944 by E. H. P. reads as follows:

"Recovered as described. The light itself is not secured to this building which is the domicile for the keepers. Light is attached to a small adjacent building".

From the above descriptions it is evident that the station is the chimney on the lighthouse domicile. This chimney was located in 1948 to check the recovery and was called "Point Knox, chimney". The two positions differ by 2.6 meters in latitude and 0.4 meters in longitude.

The light at Point Knox was located for the first time in 1948, and called "Point Knox, Light." As stated in your letter of 23 March, it is about 15 meters from the chimney. The chimney was used exclusively for control of hydrography, both in 1947 and 1948.

Descriptions and recovery notes of the old station "Pt. Knox Lighthouse, 1928", the new stations "Pt. Knox, Light 1948" and "Pt. Knox, Chimney 1948" were submitted to the Washington Office. No doubt the confusion is due to the misleading name given the station in 1928. "Pt. Knox Lighthouse 1928" and "Pt. Knox Chimney (1948)" are identical.

Lime Point Lighthouse, South Stack, 1928

This station was erroneously recovered in 1947, used on hydrographic sheet BO 1347 and topographic sheet BO - D - 47. On BO 1347, it was assigned the short name of "South".

However, in 1948, it was discovered that the Stack had been destroyed long ago and nearby chimney erroneously used instead of the station by the survey parties. Accordingly, in 1948, the chimney was located by triangulation and called "Chim (1948)" in the records.

In order to correct the situation, LIME POINT LIGHTHOUSE, SOUTH STACK, 1928 should be removed from any records in which it may appear and the designation "Chim (1948)" inserted in its place. "Chim (1948)" is the only station at that locality that needs to be plotted on any of the sheets because as stated above LIME POINT LIGHTHOUSE, SOUTH STACK had been destroyed prior to 1947 and was never used.

YELLOW BLUFF LIGHT (1939)

This station was destroyed prior to 1947. The 1947 recovery card is erroneous and should be destroyed. A correct recovery note will be forwarded to the Director. Only the 1948 topographic location should be used on all of the 1947 and 1948 sheets.

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S. F. Light, Pier No. 41, 1916 - 17

This light has been moved, destroying the triangulation station. The topographic location from BO - B - 48 should be used for control of 1947 hydrography.

Pier No. 35, Flagstaff, 1916 - 17

This station has been destroyed due to extension of the pier. The location of the object used on the 1947 survey is unknown. A field party of the Ship BOWLE will attempt to identify the object used and furnish a location.

C  
O  
P  
Y

Ship BOWIE,  
P. O. Box 328,  
Oakland 4, Calif.

1 April 1949

TO: Supervisor, Southeastern District,  
U. S. Coast & Geodetic Survey  
Room 418, U. S. Postoffice Bldg.  
Norfolk, Va.

SUBJECT: Location of FLAGSTAFF, PIER 35.

With reference to your letter of 23 March 1949 and my reply dated 30 March, there is enclosed a sketch showing the location of the flagstaff on Pier 35, San Francisco. This is apparently the object used on the 1947 hydrographic survey.

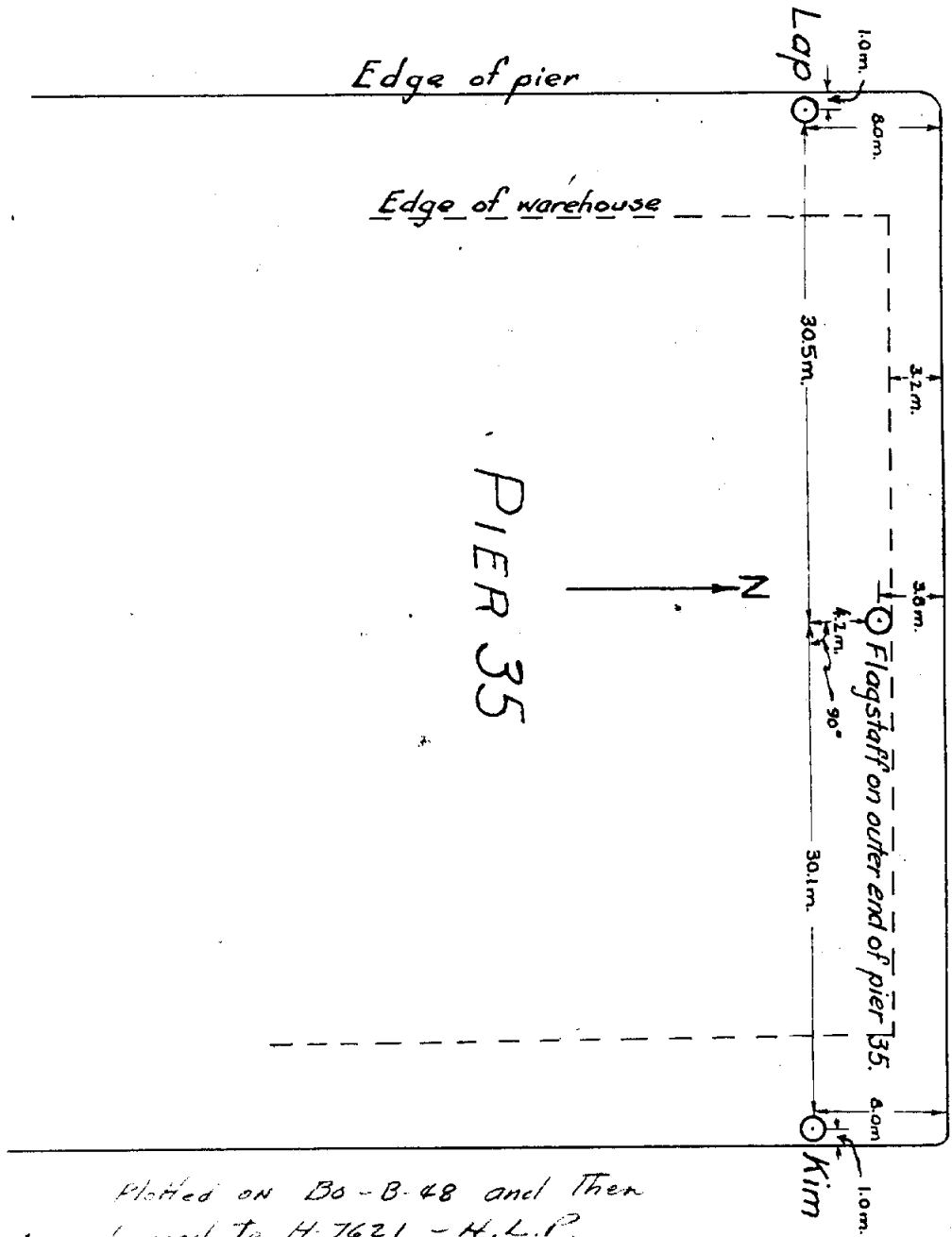
The flagstaff is referenced to station LAP and KIM, two recoverable topographic stations which were located on topographic survey BO-B-48.

The flagstaff was located by Lieutenant L. F. Woodcock, who also did the topography on BO-B-48, and there is no doubt as to the recovery of the topographic stations.

/s/

C. A. George,  
Lt. Comdr. C&G Survey,  
Commanding Ship BOWIE

H-7621



Plotted on B0-B-48 and then transferred to H-7621 - H.L.P.

Plotted by H.L.P.  
✓ by W.W.F.

STATISTICS H-7621

<u>Vessel</u>	<u>Date</u>	<u>Vol. No.</u>	<u>Red Day Letter</u>	<u>No. of Pos.</u>	<u>Stat. Miles</u>
BOWIE	6/20/47	1, 2	A	136	32.9
BOWIE	8/22/47	2, 3, 4	B	317	80.0
BOWIE	8/25/47	5, 6	C	143	33.9
BOWIE	8/26/47	6, 7	D	149	49.3
BOWIE	8/27/47	7, 8	E	211	57.0
BOWIE	8/28/47	9, 10	F	145	34.7
BOWIE	9/2/47	10, 11	G	201	46.7
BOWIE	9/3/47	11, 12	H	135	21.7
BOWIE	10/2/47	13, 14	J	207	44.5
BOWIE	10/3/47	14, 15	K	88	19.3
BOWIE	10/13/47	15, 16	L	198	25.5
BOWIE	10/14/47	17, 18	M	150	28.8
BOWIE	10/28/47	19	N	94	19.6
BOWIE	10/29/47	18, 20	P	169	32.9
BOWIE	11/4/47	20	Q	60	10.2
BOWIE	2/17/48	19, 36	R	41	8.5
Launch 113	6/30/47	21	a	71	10.3
Launch 113	7/3/47	22	b	49	7.8
Launch 113	7/22/47	23	c	40	4.5
Launch 113	9/16/47	24	d	78	8.7
Launch 113	9/17/47	24, 25	e	68	7.1
Launch 133	9/18/47	25	f	64	6.9
Launch 133	9/23/47	26	g	86	10.8
Launch 133	10/17/47	26, 27	h	147	15.0
Launch 133	10/20/47	28	j	86	9.8
Launch 133	10/21/47	29, 30	k	148	15.4
Launch 133	10/22/47	31	l	30	4.2
Launch 133	10/23/47	32	m	130	16.1
Launch 133	11/7/47	33, 34	n	194	24.0
Launch 133	11/20/47	34	p	72	7.1
Launch 133	10/8/47	35	q	12	---
					Buoy Locations
	Total			3719	693.2

Total Square Statute Miles of Sounding 13.0

H-764

FLOATING AIDS TO NAVIGATION

Light List Name	Depth	Pos. No.	Date	Depth	Lat.	Long.
Sausalito Ship Channel Entrance Lighted Bell Buoy 2	24	67e	9/17/47	17.8	37°-51.35'	122°-28.07'
Sausalito Ship Channel Entrance Lighted Buoy 1	24	68e	9/17/47	20.4	37°-51.36'	122°-28.21'
<i>Anchorage 7. Lighted Horn buoy. White (Buoy No. 4 designation changed since this survey was completed)</i> San Francisco Bar Channel Lighted Buoy 4	45	1g 1g	10/8/47 10/20/47		37°-49.05' 37° 49.05'	122°-24.12' 122°-24.09'
<i>Designated as Spar Buoy No. 4 in record Vol. 435</i> San Francisco Bar Channel Whistle Buoy 2	48	3g	10/8/47		37°-48.51'	122°-26.31'
<i>Designated as Can Buoy No. 2 in record Vol. 435</i> Anita Rock Buoy 2	50	7g	10/8/47		37°-48.53'	122°-27.13'
Obstruction Lighted Bell Buoy A	50	7g	10/17/47	59.8	37°-48.48'	122°-27.19'
Crissy Field Seaplane Station Buoy GF	21	8g	10/8/47	48.6	37°-48.57'	122°-27.98'
Pt. Knox Lighted Buoy 2	27	15m	10/23/47	20.4 25.5	37°-48.57' 37°-51.15'	122°-27.97' 122°-26.56'
Alcatraz Boundary W. Side Buoy	38	29d	9/16/47	44.4	37°-49.53'	122°-25.47'
Alcatraz Bell Buoy	30d	30d	9/16/47	33.4	37°-49.67'	122°-25.58'
Alcatraz Boundary N. End Buoy	80	31d	9/16/47	108.2	37°-49.81'	122°-25.45'
Alcatraz Boundary E. Side Buoy	78	32d	9/16/47	54.8	37°-49.72'	122°-25.21'
<i>Not shown on original records.</i>		35a	11/7/47	64.6	37°-48.23'	122°-28.96'



LIST OF SIGNALS H-7621

TRIANGULATION STATIONS

ALCATRAZ L. H. 1910-32  
S.F. BLACK PT. STACK, 1916-17  
PT. DIABLO LIGHT, 1928-48  
ANGEL ISLAND, PT. BLUNT LIGHT, 1948 ✓  
COIT MONUMENT, 1933  
ST. FRANCIS YACHT CLUB, NAVAL BEACON, 1932  
FERRY BUILDING TOWER, 1932  
S.F. FINE ARTS BUILDING, DOME, 1925-30  
GOAT, 1916-25  
MILE ROCK, L. H., 1916-20  
SAUSALITO POWER HOUSE, GABLE, 1916-17 ✓  
TRICK (S.F., P.G. & E. CHIMNEY, 1925)  
FORT POINT, L. H., 1916-48 ✓  
PT. KNOX CHIMNEY, 1948 ✓  
SAUSALITO FOG SIGNAL, 1948 ✓  
PT. STUART, L.H., 1928-48 ✓  
SOUTH (CHIM, 1948) ✓  
PIPE, 1948 ✓  
LIGHT, N. SIDE, SOUTH PIER, GOLDEN GATE BRIDGE, 1948 ✓  
OKE, 1948 ✓  
RANGE, 1931-48 ✓

No Δ pos. or  
record of pos.  
in Geodesy idistry  
ME

TOPOGRAPHIC SIGNALS

BO-D-47, T-7067 <sup>1:10,000 (1948)</sup> (Revised 1948)  
BEN, BIG, BOX, DOG, DOL, FLAG, MIN, NED ✓  
RIM, ROCK, ROS, SAND, SEV, STEP, TACK, TAN, YEL ✓  
BO-D-47, T-7067 <sup>1:10,000 (1947)</sup> (Not relocated in 1948)  
BELL, BLU, FOX, MA, RAY, POD, SIGN ✓  
BO-E-47, T-7065 <sup>(b) - 1:10,000 (1947-48)</sup> (Revised 1948) ✓  
CHIM, DOME ✓  
BO-B-48, T-7127 <sup>Not in the Washington yet.</sup>  
PIER 35 (See Descriptive report) ✓  
SIREN  
TANK

LIST OF SIGNALS H-7621 (Cont'd.)

TOPOGRAPHIC SIGNALS

BO-A-48, T-7120 ✓

PIER 41 ✓

AIR-PHOTO COMPILATION T-5923 ✓

PIER 45, PIER 25 ✓

AIR-PHOTO COMPILATION T-5922 ✓

CUP, LAG ✓

TOPOGRAPHIC FEATURES FROM T-5923 N.

PIER 31, PIER 37, PIER 39, PIER 43 ✓

HYDROGRAPHIC SIGNALS

ACK, Vol. 25 ✓

DIX, Vol. 25 ✓

FLY, Vol. 21 ✓

FOG, Vol. 25 ✓

HORN, Vol. 25 ✓

LAMP, Vol. 25 ✓

LITE, Vol. 25 ✓

OUT, Vol. 25 ✓

POST, Vol. 25 ✓

TEL, Vol. 25 ✓

## ADDENDUM

To Accompany

HYDROGRAPHIC SURVEY H-7621 (Field No. Bo-1347)

### GENERAL

There are numerous instances of disagreement in time between positions, in the fathometer and recorded time. Generally, the fathometer time checked the plotted time better. ✓

The field party apparently reduced all soundings by predicted tides and the correction of these by actual tides, resulted in many illegible soundings. These were recopied in the office column by this office. ✓

The following positions, showing development on shoals, were plotted on an overlay to accompany H-7621:

56H to 81H, Vol. 12 (Bowie) (Transferred to smooth sheet)  
23M to 89M (Not plotted on smooth sheet; area adequately developed)  
97M to 150M, Vols. 17 & 18 (Bowie) (Transferred to smooth sheet)

The eight volumes of sand wave investigations were incorporated into this survey. This work was not smooth plotted as the area was well developed on the original survey. A study of the sand wave boat sheet failed to show any shoal depths not already determined. See sheet H-7621a. (1948)

### CONTROL

A considerable amount of difficulty was experienced with the control on this survey. A study of the correspondence included in the descriptive report, as well as the list of signals, should show the origin of the control stations as they were plotted on the smooth sheet. Topographic stations, BELL, BLU, FOX, RAY, POD and SIGN were not relocated on the 1948 revision of T-7067, but were transferred from the original survey. Signal MA was taken from the original survey as it is believed an incorrect identification was made on the revision. ✓

### DISCREPANCIES

Due to steep slopes and a generally irregular bottom, crossings in greater depths were only fair. The following are discrepancies that could not be adjusted by this office: ✓

Lat. 37°-49.0' Long. 122°-26.7' Positions 187 - 200J:

Soundings on this cross line do not check other lines. This is obviously due to faulty fathometer operation. (Position numbers on fathogram and in record changed to agree with smooth sheet plotting)

Lat. 37°-49.1' Long. 122°-27.35' Positions 24 - 26H:

Soundings are in disagreement with surrounding hydrography.  
(discrepancies resolved during verification)

Lat. 37°-49.75' Long. 122°-25.2' Positions 7 - 8e: (pos. 8 was plotted in error)

Discrepancies in crossings. (Discrepancies eliminated by replotting pos. 8.)

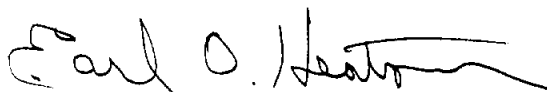
Respectfully submitted,



Hugh L. Proffitt  
Cartographer

Norfolk, Virginia  
10 November 1949

Approved and forwarded.



Earl O. Heaton  
Supervisor, SE Dist.

Transferred to S.S.

MMR

37° 50'

49' 30"

Overlay for H-7621

56H-81H - Transferred to S.S.

23M-89M; 97M-150M

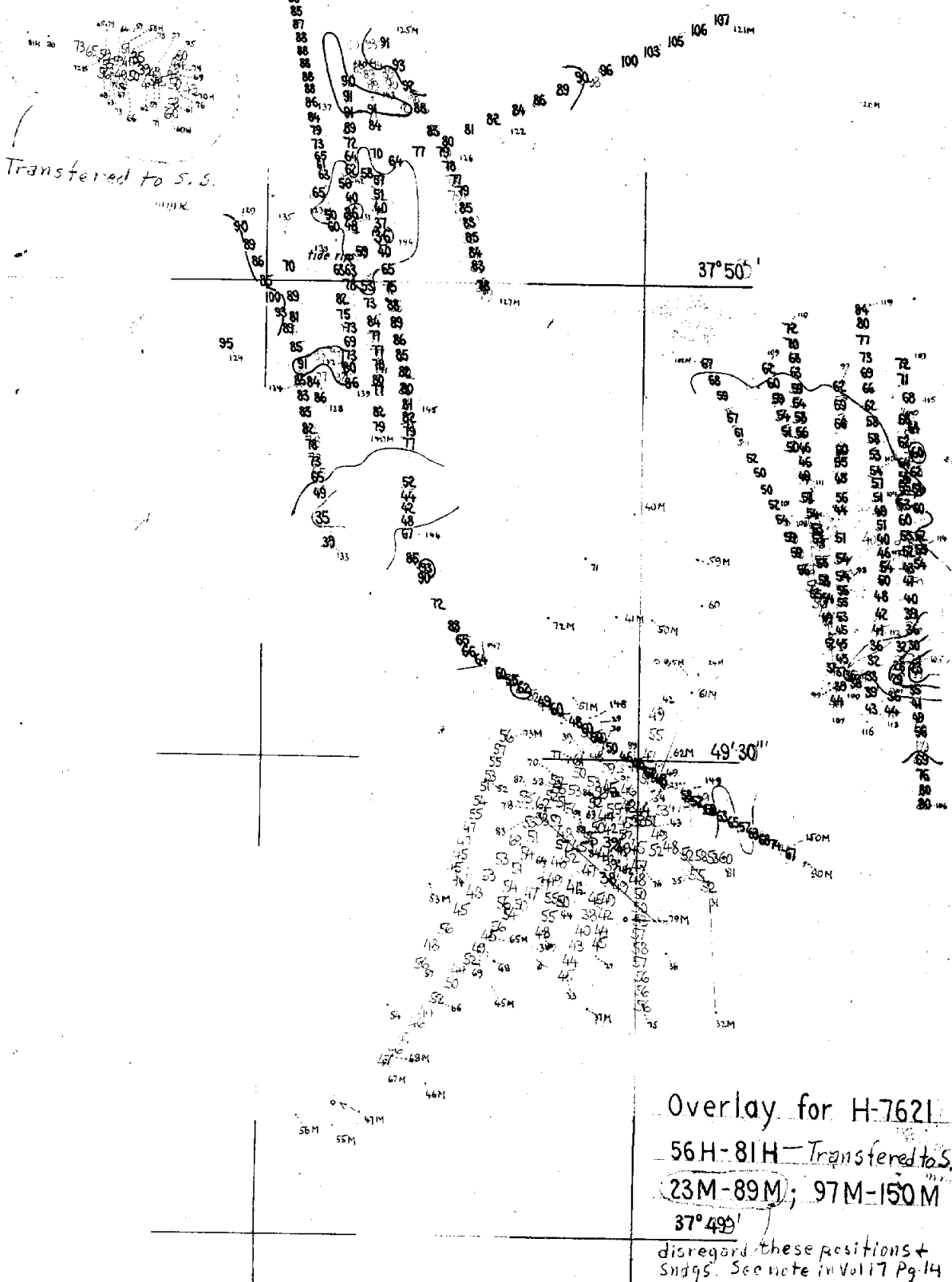
37° 49'

disregard these positions +  
Sigs. See note in Vol 17 Pg 14

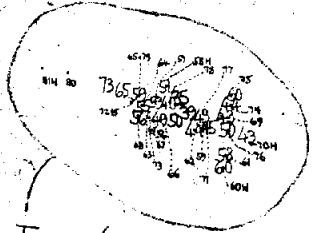
MMR

26' 30"

122° 26'



Transferred to S.S.



37° 50'

49' 30"

Overlay for H-7621

56 H-81 H - Transferred to S.S.

(23M-89M); 97M-150M

37° 49'

disregard these positions +  
Sdgs. See note in Vol 17 Pg 14

m.m.r.

25° 36'

122° 26'

GEOGRAPHIC NAMES

Survey No. H-7621

Name on Survey	A On Chart No.	B On previous survey No.	C On U. S. Quadrangle Maps	D From local information	E On local Maps	F P. O. Guide or Map	G Rand McNally Atlas	H U. S. Light List	K
<u>California</u>									USGB 1
<u>San Francisco Bay</u>									" 2
<u>Aleutraz Island</u>									3
<u>North Point</u>									4
<u>Fort Point</u>									5
<u>Golden Gate</u>									6
<u>Golden Gate Bridge</u>									7
<u>Lime Point</u>									8
<u>Horseshoe Bay</u>									9
<u>Sausalito</u>									USGB 10
<u>Richardson Bay</u>									11
<u>Angel Island</u>									12
<u>Point Blunt</u>									13
<u>Yerba Buena Island</u>									USGB 14
<u>Treasure Island</u>									15
<u>San Francisco-Oakland Bay Bridge</u>									16
									17
									18
									19
									20
									21
									22
									23
									24
									25
									26
									27

Names underlined in red are approved. 12-5-49

L. Heck

Hydrographic Surveys (Chart Division)

H-7621

HYDROGRAPHIC SURVEY NO. ....

Records accompanying survey:

Boat sheets <sup>21</sup>.....; sounding vols. <sup>44</sup>36.....; wire drag vols. ....; bomb vols. ....; graphic recorder rolls <sup>12</sup>4. encl. special reports, etc. 1 overlay template - (see descriptive Report)

.....  
Totals were changed as H-7621A was not incorporated in H 7621. See Report for H-7621A

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

Number of positions on sheet		3719..
Number of positions checked		290..
Number of positions revised		142..
Number of soundings revised (refers to depth only)		3600..
Number of soundings erroneously spaced		1400..
Number of signals erroneously plotted or transferred		1...
Topographic details	Time	51..
Junctions	Time	96.....
Verification of soundings from graphic record	Time	291..

Verification by *Maxwell M. Rogers*.... Total time 10.19 hrs Date *11/1/50*..  
Curves inspected before & after inking..... *A.R. Stirni*..... 15 hrs.  
Reviewed by *J. Adinsmore*..... Time 80 hrs. Date *2/19/51*..



RHC

# TIDE NOTE FOR HYDROGRAPHIC SHEET

4 January 1950

~~Division of Hydrography and Topography~~

Division of Charts: R. H. Carstens

Plane of reference approved in  
36 volumes of sounding records for

HYDROGRAPHIC SHEET 7621

Locality San Francisco Bay, California

Chief of Party: W. M. Gibson in 1947

Plane of reference is mean lower low water, reading  
5.6 ft. on tide staff at San Francisco (Presidio)  
13.4 ft. below B. M. 180 (1936)

Height of mean high water above plane of reference is 6.2 feet.

Condition of records satisfactory except as noted below:

*E. C. McKay*  
*Section*  
Chief, ~~Division of Tides and Currents.~~



7621a

Diag. Cht. No. 5530-5

Form 504

U. S. COAST AND GEODETIC SURVEY

DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey ..... HYDROGRAPHIC

Field No. BO-025148 ..... Office No. H-7621 A

LOCALITY

State ..... CALIFORNIA

General locality ..... SAN FRANCISCO BAY

Locality ..... SAND WAVE STUDY - PRESIDIO SHOAL

194 8

CHIEF OF PARTY

W. M. Gibson

LIBRARY & ARCHIVES

DATE ..... Feb. 14, 1950

7621a

DEPARTMENT OF COMMERCE  
U. S. COAST AND GEODETIC SURVEY

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.

REGISTER No. H-7621 A

Field No. Bo-025148

State CALIFORNIA

General locality SAN FRANCISCO BAY

Locality Sand Wave Study - Presidio Shoal  
~~EASTERN END OF PRESIDIO SHOAL~~

Scale 1:2500 Date of survey 3 MARCH TO 17 AUG. 1948

Instructions dated 24 APRIL 1947

Vessel SHIP BOWIE

Chief of party W.M. GIBSON

Surveyed by R.A. MARSHALL & P.A. WEBER

Soundings taken by ~~fathometer~~, graphic recorder, ~~hand lead, wire~~

Fathograms scaled by FIELD PARTY

Fathograms checked by " "

Protracted by W.W. FEAZEL

Soundings penciled by W.W. FEAZEL

Soundings in ~~fathoms~~ X feet at ~~MLLW~~ MLLW

REMARKS:  
.....  
.....  
.....  
.....  
.....

DESCRIPTIVE REPORT  
TO ACCOMPANY

HYDROGRAPHIC SURVEY 7621A (Field No. Bo-025148)

SCALE 1:2500

SHIP BOWIE

W. M. GIBSON, COMDG.

A. PROJECT

Project CS-256 - Instruction dated 24 April 1947. ✓

B. SURVEY LIMITS AND DATES

This survey covers a small part of the Eastern end of Presidio Shoal in San Francisco Bay and falls in the area covered by survey H-7621. ✓

Field work was started on 3 March 1948 and ended on 17 August 1948.

C. VESSEL AND EQUIPMENT

The entire survey was done with launch 133 operating from Ship BOWIE. ✓

D. TIDE STATIONS

The Standard Gage at Ft. Point was used for the reduction of soundings. No time or range corrections were applied. ✓

E. SMOOTH SHEET

The smooth sheet was plotted at the Norfolk Processing Office. The projection was made by hand. All shore-line and topographic detail was omitted from the smooth sheet. (See H-7621, 1947) ✓

F. CONTROL STATIONS

Only three control stations were used on the entire survey. These are: ST. FRANCIS YACHT CLUB, NAVAL BEACON, 1932 ✓

SAN FRANCISCO BLACK POINT, STACK, 1916-17 ✓

CUP (From air-photo compilation T-5922)(1945)

G. SHORELINE AND TOPOGRAPHY

Not applicable ✓

H. SOUNDINGS

All soundings were taken with 808J fathometers nos. 111 and 112. ✓

Velocity corrections for a & b days were computed from bar checks and entered in the sounding volumes by the Norfolk Office. Velocity corrections for c & d days were entered and checked by the field party. ✓  
(Corrections for a & b days filed with fathograms)

It will be noted there is a period of five and one-half months between b & c days, during which sounding operations were suspended. Maximum disagreement of about 2 ft. between the two periods of hydrography probably indicates a slight shifting of the sand waves.

I. CONTROL OF HYDROGRAPHY

A circle sheet was constructed by the field party for convenience in plotting the field work. The smooth plot was made in the conventional manner using a three arm protractor with extensions.

J. ADEQUACY OF SURVEY

This survey was done primarily for a study of sand wave conditions and shows detailed development of a small area that was sounded on survey H-7621.<sup>(1947)</sup> The survey is considered adequate for charting purposes.

K. CROSS LINES

The percentage of cross lines is small but the many over-lapping lines show that crossing discrepancies are small considering the irregular nature of the bottom.

M. COMPARISON WITH CHART

Due to the irregular nature of the bottom and the great difference in scales, a detailed comparison with the chart appears impractical, however, this survey appears to be in general agreement with chart 5535.

P. AIDS TO NAVIGATION

See survey H-7621.<sup>(1947)</sup> ✓

STATISTICS H- 7621 A

VESSEL	DATE	VOL. NO.	DAY LETTER	NO. POS	STAT. MI.
Lch. 133	3/3/48	1,2,3,	a -	314	23.3
" "	3/4/48	3,4,5	b -	258	17.5
" "	8/16/48	6	e -	92	5.61
" "	8/17/48	7,8	d -	<u>146</u>	<u>6.74</u>
			Totals	810	53.15

Total square statute miles sounding 0.27

LIST OF SIGNALS

H-7621A

TRIANGULATION STATIONS

CLUB - ST. FRANCIS YACHT CLUB, NAVAL BEACON, 1932 ✓

BLACK - S.F. BLACK POINT, STACK, 1916-17. ✓

TOPOGRAPHIC STATIONS

CUP - T-5922 112900 - 1911 ✓



ADDENDUM

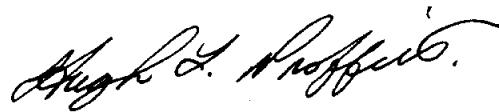
To Accompany

HYDROGRAPHIC SURVEY H-7621A (Field No. Bo-025148)

Hydrographic Survey H-7621A was smooth plotted by the Hydrographic Section of the Norfolk Processing Office.

The descriptive report was written at this Office as the survey was originally intended for a field examination only.

Respectfully submitted,

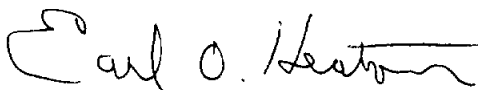


Hugh L. Proffitt  
Cartographer

Norfolk, Virginia

3 February 1950

Approved and forwarded.



Earl O. Heaton  
Supervisor, SE Dist.

GEOGRAPHIC NAMES

Survey No. H-7621a

Name on Survey	Source										
	A	B	C	D	E	F	G	H	K		
California				(fortible)						USAB	1
San Francisco Bay				( " " )						"	2
											3
Presidio Shoal											4
											5
											6
											7
											8
											9
											10
											11
											12
											13
											14
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											20
											21
											22
											23
											24
											25
											26
											27

Names underlined  
in red are approved  
2-21-57  
L. HECK

Hydrographic Surveys (Chart Division)

HYDROGRAPHIC SURVEY NO. H-7621a .....

Records accompanying survey:

Boat sheets ...<sup>1</sup>...; sounding vols. ...<sup>8</sup>...; wire drag vols. ....;  
 bomb vols. ....; graphic recorder, rolls ...<sup>2 envel.</sup>...;  
 special reports, etc. ....  
 .....

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

Number of positions on sheet		810..
Number of positions checked		50..
Number of positions revised		27..
Number of soundings revised (refers to depth only)		675..
Number of soundings erroneously spaced		208..
Number of signals erroneously plotted or transferred		0..
Topographic details	Time	0..
Junctions	Time	0..
Verification of soundings from graphic record	Time	56..
<i>Construction of overlay + Pricking of positions "c+d" days. Time ..... 8</i>		
Verification by .. <i>Maxwell M. Rogers</i> ..	Total time	168 hrs Date July 5, 1950
Reviewed by .. <i>J.A. Dinsmore</i> ..	Time	..... Date 2/19/51
		↑ included with H-7621

DIVISION OF CHARTS

REVIEW SECTION - NAUTICAL CHART BRANCH

REVIEW OF HYDROGRAPHIC SURVEY

REGISTRY NO. H-7621 &  
H-7621a  
FIELD NO. BO-1347  
BO-025148

California, San Francisco Bay, Alcatraz Island to Golden Gate  
Surveyed in June - Nov. 1947, Mar.- Aug. 1948 Scale 1:10,000  
& 1:2,500  
Project No. CS-256

Soundings:

808 Fathometer  
Hand lead

Control:

Sextant fixes on shore signals

Chief of Party - W. M. Gibson  
Surveyed by - W. M. Gibson, R. A. Marshall, P. A. Weber  
Protracted by - A. Kaupa, W. W. Feazel  
Soundings plotted by - A. Kaupa, W. W. Feazel  
Verified and inked by - M. M. Rogers  
Reviewed by - T. A. Dinsmore, 19 February 1951  
Inspected by - R. H. Carstens

1. Shoreline and Signals

The origin of the shoreline and signals is given in the Descriptive Report to which are attached fourteen letters pertaining to the determination and identification of signals in the area.

The fixes for supplementary hydrographic signals are recorded in the sounding volumes of the present survey.

2. Sounding Line Crossings

Considering the bottom irregularities, depths at crossings are in good agreement.

3. Depth Curves and Bottom Configuration

The usual depth curves are adequately delineated except in foul or inaccessible inshore areas. The 90-ft. depth curve has been added to aid in defining more clearly the configuration of the bottom.

The bottom is generally irregular. Many submerged knolls are scattered throughout the area. A prominent and unusual feature in the area is Presidio Shoal which extends more than two miles southwesterly from Alcatraz Island. Depths on the shoal range from 36 to 60 feet. The bottom over the shoal is marked by sharp irregularities which result from sand waves. Differences in depths from the trough to the crest of the sand waves are as much as 25 feet as exemplified in lat.  $37^{\circ} 49.46'$ , long.  $122^{\circ} 26.24'$ , where depths of 41-42 ft. were obtained between 66-ft. depths. Conspicuous examples of sand waves are apparent in several other localities throughout the area. Characteristically, the sand waves in most instances lie generally normal to the direction of the tidal current.

A portion of Presidio Shoal (outlined on H-7621, 1947) was surveyed on H-7621a (1948) at a scale of 1:2,500. This large-scale survey was made to permit a more detailed study of the sand waves on the shoal. The subject area was thoroughly developed during the early part of March 1948. About five and one-half months later, additional sounding lines were run over the same area. An appreciable shifting of the sand waves was indicated by a displacement of from 10-25 meters between the prior and subsequent depth curves.

#### 4. Junctions with Contemporary Surveys

Adequate junctions were effected with H-7619 (1947) on the east, H-7706 (1948-49) on the south and H-7717 (1948) on the west. The latter survey which is a large-scale (1:2,400) development of a portion of the Golden Gate actually falls within the limits of the present survey. In order to furnish a more complete portrayal of the surveyed area on one smooth sheet, representative soundings from H-7717 have been shown (in red) on the present survey. On the extreme west, the present survey terminates at the project limits where charted depths from prior surveys are in harmony with present depths.

The junctions with H-7704 (1948) on the north and H-7716 (1948) on the southeast (waterfront pier area) will be considered in the reviews of those surveys.

#### 5. Comparison with Prior Surveys

a.	H-347 (1853) 1:10,000	H-2246 (1895-96) 1:10,000
	T-359 (1852) 1:10,000	H-2247 (1895) 1:10,000
	H-462 (1855) 1:10,000	H-2254 (1895-96) 1:10,000
	H-463 (1855) 1:10,000	H-2283 (1894-97) 1:10,000

H-7621 (1947) & H-7621a (1948)-3-

H-464 (1855) 1:20,000	H-2285 (1895-97) 1:5,000
H-604 (1857) 1:10,000	H-2301 (1895-97) 1:10,000
H-1214a (1871-73) 1:20,000	H-3928 (1916-26) 1:20,000
H-1214c (1871) 1:300	H-3929 (1916-31) 1:20,000
H-1297 (1874) 1:10,000	H-4025 (1918) 1:5,000
H-1522 (1882) 1:10,000	<u>H-4105 (1920) 1:4,000</u>
<u>H-2244 (1895) 1:10,000</u>	

The above surveys comprise previous coverage over the area of the present survey during the periods indicated. The surveys of the period 1895-97 furnish the most complete prior coverage. A comparison between the prior and present surveys indicates that many bottom changes have taken place in the area. Probably the most conspicuous change has occurred on Presidio Shoal where prior depths of 20-30 ft. have since been dredged to minimum depths of 40 feet. Other noticeable changes have occurred in the depths over Shag Rocks, Arch Rock (formerly Bird Rock) and Blossom Rock. These prominent rocky shoals which formerly uncovered at low water or were covered by only several feet are now covered by 33-40 ft. at M.L.L.W. The greater present depths have resulted from rock-removal projects. The foregoing changes together with dredging throughout the pierhead area constitute the major changes resulting from artificial causes.

The natural bottom changes that have taken place since the early surveys are extensive and in some instances quite pronounced. Present depths, except in dredged areas, are generally shoaler than prior depths. Examples of appreciable shoaling are indicated in the following comparison:

<u>Prior Depth</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Present Depth</u>
66	37° 48.59'	122° 27.15'	56
72	37° 48.70'	122° 26.60'	62
84	37° 48.86'	122° 25.98'	73
61	37° 48.30'	122° 23.60'	54
132	37° 49.02'	122° 24.14'	105

An example of filling-in is indicated in the deep, south of Pt. Blunt (Angel Island), where a maximum prior depth of 192 ft. in lat. 37° 50.87', long. 122° 25.00', is now superseded by a maximum depth of 183 feet.

The bottom character of the surveyed area consists generally of sand and mud with sporadic outcroppings of rock.

The natural changes that have occurred are attributed largely to the instability of much of the bottom, sedimentation and the strong tidal currents which flow in this region.

Specific mention is made of the following differences between prior and present depths:

- (1) The 88-ft. sounding charted in lat.  $37^{\circ} 50.26'$ , long.  $122^{\circ} 25.93'$ , from H-3928 should be disregarded. Falling in present depths of 106 ft., the prior sounding is at the beginning of a line and is probably recorded in error.
- (2) The 8-ft. sounding charted in lat.  $37^{\circ} 48.49'$ , long.  $122^{\circ} 27.80'$ , from H-2254 falls in present depths of 13 ft. A comparison of prior and present depths clearly indicates that the immediate area has deepened. Present development is adequate to disprove the prior depth which should be disregarded.
- (3) The 147-ft. sounding charted in lat.  $37^{\circ} 49.23'$ , long.  $122^{\circ} 27.84'$ , from H-2254 falls in present depths of about 207 ft. Comparable depths on the present survey are several hundred meters distant. The prior sounding is probably 10 fms. in error and should be disregarded.
- (4) The 106-ft. sounding charted in lat.  $37^{\circ} 49.37'$ , long.  $122^{\circ} 25.40'$ , from H-3928 should be disregarded. Falling in present depths of about 150 ft., the prior sounding is probably erroneously positioned and should actually fall 130 meters northward where comparable depths were obtained on the present survey.
- (5) The 55-ft. sounding charted in lat.  $37^{\circ} 49.13'$ , long.  $122^{\circ} 24.80'$ , and the 60-ft. in lat.  $37^{\circ} 49.22'$ , long.  $122^{\circ} 24.60'$ , fall in present depths of 72 and 78 ft., respectively. Originating with H-2254, these prior soundings should be disregarded. A comparison of prior and present depths clearly indicates that bottom changes have occurred in the general vicinity and that the specific localities have deepened.
- (6) The 57-ft. sounding charted in lat.  $37^{\circ} 48.92'$ , long.  $122^{\circ} 24.10'$ , from H-2301 should be disregarded. Falling in present depths of 70 ft., the prior sounding is probably out of position. Comparable depths about 100 meters south and south-

westward on the present survey are adequate for charting.

- (7) The 45-ft. sounding charted in lat.  $37^{\circ} 47.95'$ , long.  $122^{\circ} 23.25'$ , from H-3928 should be disregarded. Falling in present depths of 62 ft., the position of this prior sounding is considered disproved by close development on the present survey. The 45 should probably fall closer inshore.
- (8) The 30-ft. sounding charted in lat.  $37^{\circ} 51.07'$ , long.  $122^{\circ} 26.20'$ , from H-2254 falls in present depths of 40 ft. Other prior soundings of 26 to 40 ft. charted in the general vicinity from H-2254 also fall in greater depths on the present survey. Although the bottom is moderately irregular, a careful comparison of prior and present depths indicates that bottom changes have occurred. The prior depths should, therefore, be disregarded.

A few prior inshore soundings and rocks have been carried forward to supplement the present survey. Several bottom characteristics have also been retained in localities where little or no bottom changes are apparent.

The present survey, with the indicated additions, is adequate to supersede the prior surveys within the common area.

- b. H-3967 W.D. (1917) 1:20,000; H-4105a W.D. (1921) 1:4,000  
H-3968 W.D. (1917-36) 1:20,000; H-4596b W.D. (1926) 1:20,000

These wire-drag surveys cover most of the present survey area except along the San Francisco north waterfront and around Alcatraz Island. No conflicts are noted between the effective drag depths and depths on the present survey. Attention, however, is directed to the following information originating with H-3968 W.D:

- (1) The sunken rock charted in lat.  $37^{\circ} 50.20'$ , long.  $122^{\circ} 28.18'$ , originates with a 6-ft. sounding obtained in 1936. The 5-ft. sounding charted about 40 meters northwestward was also obtained at that time. An intensive development of the area on the present survey reveals a 5-ft. sounding at about the position of the charted sunken rock and a 4-ft. sounding slightly southward. The present depths are considered adequate for charting.



H-7621 (1947) & H-7621a (1948)-6

- (2) The 24-ft. sounding charted in lat.  $37^{\circ} 51.07'$ , long.  $122^{\circ} 25.50'$ , from the 1917 work on H-3968 W.D. should be disregarded. Falling in present depths of 28 feet, present development indicates that this area has deepened slightly as previously discussed in paragraph 5a (8). *26.50 concurred 1/22/50*
- (3) A 24-ft. sounding (uncharted) in lat.  $37^{\circ} 51.10'$ , long.  $122^{\circ} 26.56'$ , has been carried forward from H-3968 W.D. to the present survey. *wrong*
- (4) The 20-ft. sounding charted in lat.  $37^{\circ} 51.17'$ , long.  $122^{\circ} 25.90'$ , from H-3968 W.D., falls slightly inshore from a 26-ft. sounding at the limits of the present survey. Disposition of the prior 20-ft. sounding will be considered in the review of inshore survey H-7704 (1948). *2000 1/22/50*

6. Comparison with Chart 5535 (Latest print date 8/28/50)

A. Hydrography

Charted hydrography originates with the previously discussed surveys, Corps of Engineers surveys to 1949, various chart letters and partial application of the present survey prior to verification and review. Attention is directed to the following charted information:

- (1) About thirty-two soundings ranging in depth from 35 to 84 ft. charted along the northern slope of Presidio Shoal from lat.  $37^{\circ} 48.85'$ , long.  $122^{\circ} 27.90'$ , to lat.  $37^{\circ} 49.20'$ , long.  $122^{\circ} 26.70'$ , fall in depths of 50-130 ft. on the present survey. Originating with Corps of Engineers surveys of 1948 and 1949 (Bps. 44019 & 45363), these charted soundings which are subsequent to the present survey depths are considered to be erroneously positioned. Comparable depths on the present survey are from 100 to 300 meters southeast of the charted soundings. Soundings in this vicinity from these blueprints should be disregarded.
- (2) The 44-ft. sounding charted in lat.  $37^{\circ} 48.66'$ , long.  $122^{\circ} 27.67'$ , from Bp. 44019 (1948) should be disregarded. Although obtained subsequent to the present survey, the 44-ft. sounding which falls in present depths of 70 ft. is considered to be out of position and should actually fall 100 meters southward where comparable depths were obtained on the present survey.

- (3) The 34-ft. sounding charted in lat.  $37^{\circ} 48.60'$ , long.  $122^{\circ} 25.98'$ , from a prior Corps of Engineers survey should be disregarded. The area has been dredged since the time of the prior survey. Present depths of 36 ft. are adequate to supersede the prior depth.
- (4) The 30-ft. sounding charted in lat.  $37^{\circ} 48.68'$ , long.  $122^{\circ} 24.50'$ , from a prior Corps of Engineers survey (Bp. 41088, 1946) should be disregarded. The sounding falls in the pierhead area which is dredged frequently. Present depths of 36 ft. are adequate to supersede the prior depth.
- (5) The 7-and 10-ft. soundings charted in lat.  $37^{\circ} 51.21'$ , long.  $122^{\circ} 28.45'$ , and lat.  $37^{\circ} 51.13'$ , long.  $122^{\circ} 28.44'$ , respectively, from the present survey prior to verification and review should be disregarded. The charted soundings originated with fathogram strays which have been subsequently revised to depths of 13 ft.
- (6) The 13-ft. sounding charted in lat.  $37^{\circ} 50.65'$ , long.  $122^{\circ} 28.44'$ , from the present survey prior to verification and review should be disregarded. This sounding also originated with a fathogram stray which has been subsequently revised to 19 ft.
- (7) The following charted soundings originating with the sources indicated should be retained on the chart:

<u>Depth</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Source</u>
33	$37^{\circ} 49.73'$	$122^{\circ} 26.33'$	Bp. 46340 (1949)
35	$37^{\circ} 50.04'$	$122^{\circ} 26.34'$	Bp. 25627 (1932)
40	$37^{\circ} 49.12'$	$122^{\circ} 24.10'$	Bp. 25625 (1932)

The above surveys by the Corps of Engineers are large-scale developments of important rocky shoals and reveal slightly lesser depths than were obtained on the present survey.

Except as noted in preceding paragraph (7), the present survey supersedes the charted hydrography. For charting purposes, H-7621 adequately shows the least depth in the area covered by H-7621a.

The compilers attention is directed to a 37-ft. sounding (uncharted) in lat.  $37^{\circ} 48.81'$ , long.  $122^{\circ} 27.58'$ , on blueprint 46631 (1949). The 37 which falls in 41-ft. depths on the present survey is later information than the present survey.

see later  
C of E surveys to Apr 1954

10/10/54

B. Aids to Navigation

The lighted whistle buoy located in lat.  $37^{\circ} 49.03'$ , long.  $122^{\circ} 24.10'$ , on the present survey has been removed and reestablished in lat.  $37^{\circ} 49.00'$ , long.  $122^{\circ} 23.44'$ , where it is now charted as a lighted horn buoy (H.O. Notice to Mariners 16, 1949). *Later moved back to Blossom Rock*

Except as noted, aids on the present survey are in substantial agreement with the charted aids and adequately mark the features intended.

7. Condition of Survey

a. The sounding records and the Descriptive Report are complete. The reduction of soundings from predicted tides, and their subsequent correction from actual tide reducers resulted in many illegible soundings in the sounding volumes. These were verified and recopied in the Processing Office.

b. The smooth plotting was satisfactory except that an abnormal number of corrections to plotted positions and soundings were made during verification. The verifiers report indicates that little attention was given to the proper spacing of soundings during the plotting of the smooth sheet. About 1400 soundings were replotted because of erroneous spacing. These errors occurred where the fathometer was changed from the foot to fathom scale (or conversely) between fixes or where soundings were recorded at uneven time intervals.

About 3600 soundings were revised in depth. These revisions resulted from fluctuations in the initial of the fathograms and the application of erroneous bar check and phase corrections. The errors were detected and the corrections made in the Washington Office. The corrected soundings have eliminated discrepancies in depths on overlapping sounding lines and have greatly improved the delineation of the depth curves.

The recorded time was frequently found to disagree with the time determined from the fathograms. The latter time was found to agree more closely with the distance run between fixes and was accepted as correct.

No uniform interval was used in scanning soundings from the fathograms. The number of soundings between two-minute fixes might vary from 7 to 15. This augmented the difficulty in checking the spacing of soundings and scanning of the fathograms.


- c. Supplementary soundings falling west and northwest of Alcatraz Island are shown on an overlay attached to the Descriptive Report. All important soundings have been transferred to the smooth sheet.
- d. The undeveloped 26-ft. shoal indication rising from 50-ft. depths in lat.  $37^{\circ} 51.16'$ , long.  $122^{\circ} 25.92'$ , will be considered in the verification and review of junctional survey H-7704 (1948) on the north. The 26-ft. sounding is supported by a 20-ft. sounding (charted) which falls closeby on H-3968 W.D. (1917-36).


8. Compliance with Project Instructions

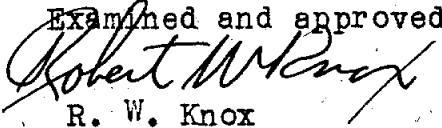
The survey adequately complies with the Project Instructions.

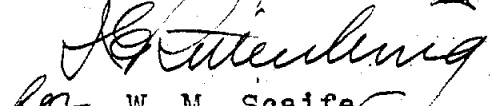
9. Additional Field Work

This is a basic survey and no additional field work is recommended. Because the area is subject to silting, considerable dredging is required and frequent surveys are accomplished over Presidio Shoal and along the San Francisco waterfront by the Corps of Engineers and the State Harbor Commissioners of California.

  
H. R. Edmonston  
Chief, Nautical Chart Branch

  
L. S. Hubbard  
Chief, Section of Hydrography

Examined and approved:  
  
R. W. Knox  
Chief, Division of Charts

  
for W. M. Scaife  
Chief, Division of Coastal Surveys

766 C

### TIDE NOTE FOR HYDROGRAPHIC SHEET

~~Division of Hydrography and Topography~~

23 February 1950

Division of Charts: R. H. Carstens

Plane of reference approved in  
8 volumes of sounding records for

HYDROGRAPHIC SHEET 7621 a

Locality Golden Gate, San Francisco Bay, California

Chief of Party: W. M. Gibson in 1948

Plane of reference is mean lower low water, reading  
5.6 ft. on tide staff at San Francisco (Presidio)  
13.4 ft. below B. M. 180 (1936)

Height of mean high water above plane of reference is 6.2 feet.

Condition of records satisfactory except as noted below:

*E. C. McKay*  
*Section*  
Chief, ~~Division of Tides and Currents.~~

# NAUTICAL CHARTS BRANCH

SURVEY NO. H-7621a

## Record of Application to Charts

DATE	CHART	CARTOGRAPHER	REMARKS
7/5/51	5535	H. W. Bourgoyne	<i>Exam for critical eds - No correction</i> Before After Verification and Review
3/24/52	5532	<i>Piregari</i>	<i>Exam for critical eds - none found.</i> Before After Verification and Review
10/26/54	5532	<i>J. Evans</i>	<i>Before After Verification and Review</i> <i>Complete application Reconstruction</i>
9/9/57	<i>Reconst.</i> 5535	<i>J. Evans</i>	<del>Before</del> After Verification and Review
			Before After Verification and Review
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M-2168-1

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

Note: The review of H-7621 (1947) includes H-7621 a (1948)