Diag'd. On Diag. Ch. No. 5530-4

Form 504

U. S. COAST AND GEODETIC SURVEY
DEPARTMENT OF COMMERCE

DESCRIPTIVE REPORT

Type of Survey Photogrammetric Shoreline Survey
Field No. CS-262-C Office No. T -5928

LOCALITY
State California
General locality San Francisco Bay
Locality Point Richmond

1941-45
CHIEF OF PARTY
E. H. Pagenhart

LIBRARY & ARCHIVES
DATE June, 1949
17 March 1950

Dear Admiral Adams:

Your memorandum, file No. 733-ral, dated 12 December 1949, addressed to the Director of Intelligence, United States Air Force, forwarding seventeen (17) maps for security clearance, was referred to the Assistant Chief of Staff, 0-2 for action.

There is no objection to the publication of the following maps as unclassified:

- T-5920 Point Avisadero - Point San Bruno
- T-5929 San Quentin - California City
- T-5931 Devil's Point - Pinole Point
- T-5936 Vallejo, California

Provided minor deletions are made as indicated on each map, there is no objection to publication of the following maps as unclassified:

- T-5922 (EN) San Francisco Bay and Oakland Area, California
- T-5923 San Francisco Bay and Oakland Area, California
- T-5924 (EN) San Francisco Bay and Oakland Area, California
- T-5928 San Francisco Bay and Oakland Area, California
- T-5929 San Pablo Bay Area, California
- T-5941 Suisun Bay Area, California
- T-5942 (2 sheets) Suisun Bay Area, California
- T-5943 Suisun Bay Area, California

The remainder of the maps forwarded with your memorandum have not yet been returned from the field agencies where they were sent for examination. Follow up action has been taken requesting that the return of the maps be expedited.

Sincerely,

ERNEST A. BARLOW
Chief, Security & Training Division

1 Incl
12 Maps
(as listed above)
Quadrangle (II): Project No. (II): GS 262 C
Field Office: San Francisco, Calif. Shoreline
Chief of Party: Capt. E. J. Paghehart
Lt. Comdr.
Instructions dated (II III): 8 Feb. 1944 Copy filed in Descriptive
Report No. T- Report No. T-
Photogrammetry Office Files.
Completed survey received in office;
Reported to Nautical Chart Section;
Reviewed: Dec. 31, 1944 Applied to chart No. 5552 Date: Jan. 1945
Bedrafting Completed;
Registered: 14 June 1949 Published;
Compilation Scale: 1:10,000 Published Scale:
Scale Factor (III): None
Datum Plane (III): NAVD Datum Plane (III): NAVD
Geographic Datum (III): N.A. 1927 Datum Plane (III): NAVD
Reference Station (III): Tall concrete stack, 1921

Lat.: 37° 27' 58.8" (653.6 m.) Long.: 122° 23' 32.7545" (797.1 m.) Adjusted

State Plane Coordinates (VI):

\[ X = \quad Y = \]

Military Grid Zone (VI)
<table>
<thead>
<tr>
<th>Number</th>
<th>Date</th>
<th>Time</th>
<th>Scale</th>
<th>Stage of Tide</th>
</tr>
</thead>
<tbody>
<tr>
<td>6361 - 65 incl.</td>
<td>9/3/41</td>
<td>12:17</td>
<td>1:10,000</td>
<td>5.2 ft.</td>
</tr>
<tr>
<td>6377 - 81 incl.</td>
<td>9/3/41</td>
<td>12:37</td>
<td>n</td>
<td>5.0 ft.</td>
</tr>
<tr>
<td>6387 - 90 incl.</td>
<td>9/3/41</td>
<td>1:05</td>
<td>n</td>
<td>4.6 ft.</td>
</tr>
<tr>
<td>&quot;444-44&quot;</td>
<td>10/31/22</td>
<td>1:00</td>
<td>1:0,000</td>
<td>unknown</td>
</tr>
<tr>
<td>&quot;2-1/2&quot;</td>
<td>June 1945</td>
<td>2-1/2</td>
<td>1:20,000</td>
<td>unknown</td>
</tr>
<tr>
<td>927-44 (NAS, Alameda, Calif.)</td>
<td>single lens, Richmond Shipyards</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Tide from (III): Pt. Richmond - San Francisco
Mean Range: 4.2
Diurnal Range: 5.9 ft.

Camera: (Type or source) U.S.C. & G.S. 9 Lens 1/2" focal length
Field Inspection by: Capt. N. F. Pagenhart
Field Edit by: None

Date of Mean High-Water Line Location (III): Aug 12-14, 1944

Projection and Grids ruled by (III) SR - BRC
" " " " checked by: BRC
Control plotted by: B.C.S.
Control checked by: B.H. Lyon

Radial Plot by: B.H. Lyon
Detailed by: R.A. Reese
Reviewed in compilation office by: J.A. Giles

Elevations on Field Edit Sheet checked by:
STATISTICS (III)

Land Area (Sq. Statute Miles): 135.

Shoreline (More than 200 meters to opposite shore): 18.5

Shoreline (Less than 200 meters to opposite shore): 17.5

Number of Recoverable Topographic Stations established: 13

Number of Temporary Hydrographic Stations located by radial plot: None

Leveling (to control contours) - miles:

Roman numerals indicate whether the item is to be entered by,

(II) Field Party, (III) Compilation Party, or, (VI) the Washington Office.

When entering names of personnel on this record give the surname

and initials (not initials only).

Remarks:
Field Inspection Report T-5928

The Field Inspection Report for the area of T-5928 could not be located at the time of registering the map.

K. N. Maki
6/17/49
Projections for these two sheets were received in this office on 25 August 1941. Control was carefully plotted and checked by members of the Control section; using the beam compass and meter bar method.

A circle, with 1½ inch radius, was drawn upon each photograph in order to facilitate use of the central portion of each photograph in preference to the outer extremities. Pass Points were picked as nearly as possible in a regular scheme of quadrilaterals, 5 inches on a side, in order to strengthen the graphic control scheme. Extreme care was exercised in plotting primary control on the photographs and this was done without regard for the 1½ inch circle.

All azimuths between centers were established by means of the stereoscope and radial liner method.

The photographs used for this plot were printed on unmounted positotype paper, therefore it was necessary to treat for the effect of paper distortion. This has been accomplished by means of the distortion templet, constructed from non-shrinking vinylite material.

Discussion of the main Radial Plot follows:

A. CONTROL

The following control stations were used to control this plot:

- Pt. San Pablo 3, 1940
- Sholin, 1940
- San Pablo Ridge, 1897
- Section Corner Offset, 1940
- Harbor Line No. 3 (U.S.E.D., 1937)
- Tall Conc. Stack, 1921
- Richard, 1932
- Richmond Ford Motor Co Water Tank, 1932 (Adm) 1943
- Red Rock Naval Beacon, 1932
- East Bros. Is. Lighthouse (Top)
- Richmond Airway Landmark Bn, 1932
- Mound 2, 1921
- Richmond City Hall, Flagstaff, 1921
- Pullman shops, Black Stack, 1921
- Jarge, 1944

Triangulation Station "Point San Pablo 3, 1940" could not be held in the plot. The point which had been identified for this station was cut in on the plot and was found to fall approximately 4½ meters N.E. from the plotted G.P.. The approximate location
of the station on the Photograph was determined and marked on the field print and returned to the field for verification. The new location as picked in the Tampa office was verified in the field as correct, (See Field Print No. 6390).

Control was well distributed and, with the single exception mentioned above, well identified, therefore control for this plot is considered to be adequate.

B. PHOTOGRAPHS.

The following nine lens photographs were used in this plot:

<table>
<thead>
<tr>
<th>6361</th>
<th>6377</th>
<th>6387</th>
<th>14030 (June 1943)</th>
</tr>
</thead>
<tbody>
<tr>
<td>62</td>
<td>78</td>
<td>88</td>
<td>14031</td>
</tr>
<tr>
<td>63</td>
<td>79</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>64</td>
<td>80</td>
<td>90</td>
<td></td>
</tr>
<tr>
<td>65</td>
<td>81</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Photograph coverage is adequate for 4 or more intersections in all parts of the sheet. Coverage is sufficient to locate existing detail at the time the Photographs were flown, but the photographs are considerably outdated.

C. CLOSURE AND ADJUSTMENT

Regular procedure was followed in laying templetis with strongest fixes first, then progressively laying through templetis with weaker fixes.

Tilt which may have approached 3° was present in some photographs, but not in sufficient amount to be considered excessive, or to necessitate tilt computation. All azimuths to adjacent centers were held, and excellent intersections were obtained throughout.

D. AREAS OF QUESTIONABLE ACCURACY

It is believed that all parts of this plot fall well within the prescribed limits of accuracy.

E. GENERAL

Pass Points were picked on the sheet and shown by double blue inked circles of 2.8 mm. and 1.5 mm. radii. The sheet was released to the draftsman for the addition of detailing points which are to be shown in blue ink with 2.0 mm. circles.

Respectfully submitted,

Bennie H. Lyon
Asst. Photo Engineer.


Forwarded by:
DESCRIPTIVE REPORT TO
ACCOMPANY
SHEET NO. T-5928 - PROJECT C3 262-G

26 and 27 CONTROL AND RADIAL-PLLOT

A special report by E. H. Lyon, Asst. Photogrammetric Engineer, covering main radial plot is submitted herewith.

Attention is called to a letter from Capt. E. T. Pagenhart, dated Feb. 27, 1945 stating that all necessary notes and forms covering the triangulation and topographic stations have been forwarded to the Washington Office.

28 DELINEATING

The delineating of this sheet has been done according to the current instructions for this project dated February 8, 1944.

In the delineation of this map manuscript it was necessary to use a 6300 series of 9 lens photographs dated 9/3/41 and a single lens photograph of approximately 1:10,000 scale. The later was received from the Alameda Naval Air Station, and was dated 8/27/44. The single lens photograph showed the Richmond shipyards, which, for the most part, were constructed after the 9 lens photographs were taken. The projector was used in transferring detail from the single lens photograph because of the difference in scale. The area on the 9 lens photographs which joins with the single lens photograph does not match very well, so it is likely that the area outside of that covered by the single lens photograph is not up to date.

The photographs were clear and of a reasonably good scale. Some difficulty was experienced, however, in selecting common points for detail prints in the area covered by the single lens photograph due to the numerous cultural changes between 1941 and 1944.

*The field inspection was adequate for the photographs used.

29 SUPPLEMENTAL DATA

A City Plan of Richmond compiled by E. A. Hoffman, City Engineer, in 1944 was used for comparison. No pertinent information was gotten from it.

A Property Map showing property owned by the Kaiser Company Inc. was used in conjunction with the single lens photograph of the Richmond Shipyards. It was quite useful in delineating the area.

The Naval Operating Base, San Francisco, Calif., furnished a General Plot Plan of Wharf and Causeway at Molate Point. This feature has been added since the 1:19,000 Aerial Photographs were taken. However, a 9 lens Aerial Photograph, 1:5,000 (approx.) scale, taken while the causeway was being constructed, proved helpful in delineating the wharf, causeway and surrounding area. This photograph is numbered 11444. Two other photographs, No. 11445 and 11446, of the same series were used for comparison. For the most part, little change has taken place in the shoreline details during the two years between photographing flights. This is with the exception of the Richmond Shipyard area.

*The field Inspection Report for the area of T-5928 could not be located.
30 MEAN HIGH WATER LINE

The H. W. L. has been shown according to field inspection notes, and so have the areas where the shoreline is indefinite. Water line structures of piers, shipways, and sea walls take up a goodly proportion of the shoreline.

31 LOW WATER AND SHOAL LINES

M. L. W. lines and shoal lines have been shown wherever recovered by field inspector.

32 DETAILS OFFSHORE FROM THE HIGH WATER LINE

A ship that is moored and aground below Castro Point should be investigated by the hydrographic party. This hulk appears on the early photographs (1941) and on the latest available photographs (1944). It is not shown on the latest nautical chart in this office bearing a print date of 8 Dec. 1943.

33 WHARVES AND SHORELINE STRUCTURES.

There are quite a number of shoreline structures. They have been delineated as indicated by the photographs and field inspection.

34 LANDMARKS AND AIDS TO NAVIGATION.

All landmarks and aids to navigation, identifiable, have been listed on form No. 567 and made a part of this report.

35 HYDROGRAPHIC CONTROL.

Instructions to field party, dated February 8, 1944, state that no hydrographic stations need be selected by them for this project.

36 LANDING FIELDS AND AERONAUTICAL AIDS.

Inapplicable.

37 to 43 (no additional items - inapplicable)

44 COMPARISON WITH EXISTING TOPOGRAPHIC QUADRANGLES.

Comparison was made with a quadrangle done by the Corps of Engineers in 1892 - 94, revised in 1914. The scale, 1:62,500, is too small to make a detailed comparison. In general, the shoreline shows little change with the exception of the area embracing the Richmond Shipyards, where considerable change has taken place.
Chart No. 5332 published by the U. S. O. & G. S. bearing a print date of 8 Dec. 1943 was used for comparison. The scale, 1:40,000, made it difficult to compare any of the finer details, but the general shoreline compared favorably. (See paragraphs No. 32)

Respectfully submitted,

Richard A. Reece
Richard A. Reece
Engineering Draftsman.

Approved and Forwarded

Chief of Party
I recommend that the following objects which have been inspected from seaward to determine their value as landmarks, be charted on the charts indicated.

The positions given have been checked after listing by

J. Y. Dawsey, Photogrammetric Aid

### Charts Affected

<table>
<thead>
<tr>
<th>Chart</th>
<th>California</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stack</td>
<td>Richmond Ford Motor Co.</td>
</tr>
<tr>
<td>Tank</td>
<td>Water, steel aluminum</td>
</tr>
<tr>
<td>Stack</td>
<td>(No of 2) Old Brickyard</td>
</tr>
<tr>
<td>Stack</td>
<td>(S. of 2)</td>
</tr>
<tr>
<td>Tank</td>
<td>Gas</td>
</tr>
<tr>
<td>Tank</td>
<td>move westerly of 5 - Ft. Richmond</td>
</tr>
<tr>
<td>Tank</td>
<td>Gas</td>
</tr>
<tr>
<td>Tree</td>
<td>Molate Point</td>
</tr>
<tr>
<td>Tank</td>
<td>Gas - largest of 5 - Ft. Richmond</td>
</tr>
<tr>
<td>Tank</td>
<td>Narrow Block</td>
</tr>
<tr>
<td>Tank</td>
<td>Elev. Steel</td>
</tr>
</tbody>
</table>

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and nonfloating aids to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.
I recommend that the following objects which have been inspected from seaward to determine their value as landmarks, be charted on the charts indicated.

The positions given have been checked after listing by W. W. Dawsey, Photogrammetric Aid.

<table>
<thead>
<tr>
<th>Charting Name</th>
<th>Description</th>
<th>Signal Name</th>
<th>Latitude</th>
<th>Longitude</th>
<th>Datum</th>
<th>Method of Location and Survey No.</th>
<th>Date of Location</th>
<th>Navigational Chart</th>
<th>Survey Chart</th>
<th>Charts Affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile Dolphin</td>
<td>(F.I. No 7)</td>
<td>None</td>
<td>37 57</td>
<td>1789</td>
<td>122 25</td>
<td>804 N. A. Radial Plot</td>
<td>1914</td>
<td>x</td>
<td>5532-3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>37 57</td>
<td>634</td>
<td>122 25</td>
<td>931</td>
<td>x</td>
<td>x</td>
<td>5573.1</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>37 57</td>
<td>819</td>
<td>122</td>
<td>854</td>
<td>x</td>
<td>x</td>
<td>Not charted</td>
<td></td>
</tr>
</tbody>
</table>

This form shall be prepared in accordance with Hydrographic Manual, pages 800 to 804. Positions of charted landmarks and nonfloating aids to navigation, if redetermined, shall be reported on this form. The data should be considered for the charts of the area and not by individual field survey sheets. Information under each column heading should be given.
<table>
<thead>
<tr>
<th>Name on Survey</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>California</td>
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<td>USGB 1</td>
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<tr>
<td>San Francisco Bay</td>
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<td>2</td>
</tr>
<tr>
<td>Atchison, Topeka &amp; Santa Fe</td>
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<td>3</td>
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<tr>
<td>Southern Pacific</td>
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<td>Southampton Shoal</td>
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<td>5</td>
</tr>
<tr>
<td>Brooks Island (abbreviation for one island is I., not Is.)</td>
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<td>6</td>
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<tr>
<td>Bird Island</td>
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<td>7</td>
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<tr>
<td>Richmond</td>
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<td>8</td>
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<tr>
<td>Richmond Yacht Harbor</td>
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<td>9</td>
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<tr>
<td>Parr Canal</td>
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<td>10</td>
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<tr>
<td>Lauritzen Canal</td>
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<td>11</td>
</tr>
<tr>
<td>Santa Fe Channel</td>
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<td></td>
<td></td>
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<td>USGB 12</td>
</tr>
<tr>
<td>Richmond Yacht Harbor (at head of Santa Fe Channel)</td>
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<td></td>
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<td>12</td>
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<tr>
<td>East Richmond</td>
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<td></td>
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<td>13</td>
</tr>
<tr>
<td>Point Richmond (apply name only to point, and delete other usage for a residential area)</td>
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<td>14</td>
</tr>
<tr>
<td>Shoal Point (not Potrero Point: Shoal Point is USGB decision, but case is being referred to Board for possible revision of older decision)</td>
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<td>16</td>
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<tr>
<td>Standard Oil Pier (Two places)</td>
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<td>17</td>
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<tr>
<td>Red Rock</td>
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<td>18</td>
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<tr>
<td>Castro Rocks</td>
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<td>19</td>
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<tr>
<td>Castro Point</td>
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<tr>
<td>Richmond-San Rafael Ferry Landing</td>
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<tr>
<td>Mole Point</td>
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<td>Naval Fuel Depot Pier</td>
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<td>23</td>
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<td>Winshippan</td>
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<td>24</td>
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<tr>
<td>Winshippan Pier</td>
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<td>25</td>
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<tr>
<td>Point Orient</td>
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<td>26</td>
</tr>
<tr>
<td>Point San Pablo</td>
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<td></td>
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<td></td>
<td>27</td>
</tr>
</tbody>
</table>

*Note: Some names have been marked with an asterisk (*) indicating they are no longer used.*
<table>
<thead>
<tr>
<th>Name on Survey</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Brothers</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>San Pablo Bay</td>
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<td>2</td>
</tr>
<tr>
<td>Marsh Island</td>
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<td>3</td>
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<tr>
<td>Castro Creek</td>
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<td></td>
<td>4</td>
</tr>
<tr>
<td>San Pablo Canal (new name: extends SWly from Castro Creek)</td>
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<td>5</td>
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<tr>
<td>San Pablo Creek</td>
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<td>6</td>
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<tr>
<td>Wildcat Creek</td>
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<td></td>
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<td>7</td>
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</tbody>
</table>

Names underlined in red are approved: 4/22/48 L. Hank.
Division of Photogrammetry

Review Report of

Shoreline Survey Map T-5928

Paragraph numbers not used in this Review Report have been adequately covered in other parts of this report. This map manuscript is adequate.


Four triangulation stations were plotted on the map manuscript by the reviewer. These stations were not used in the radial plot, and are indicated merely for additional horizontal control.

28. Detailing.- Extensive corrections and additions were made to the compilation from 1945 single-lens army photographs. Notable changes were made at Potrero Point, (Shoal Point on quadrangles and chart), Molate Point, and an area east of Wine Haven. Interior changes were made to show some recent major developments. Enough points, common to the old and the new photographs, were found so that the vertical projector could be used to transfer the more recent detail.

44. Comparison with Existing Topographic Surveys.-

| T-388 | 1:10,000 | 1853 | T-3650 | 1:10,000 | 1917 |
| T-561 | 1:10,000 | 1856 | T-4022 | 1:10,000 | 1927 |
| T-1621 | 1:10,000 | 1881 | T-1271 | 1:20,000 | 1927 |
| T-2445 | 1:10,000 | 1898 | T-7438 | 1:10,000 | 1929 |
| T-2941 | 1:10,000 | 1909 | T-5701 | 1:10,000 | 1934 |

U.S.G.S., San Francisco, California, 1:62,500, rep. 1932
U.S.E. San Francisco, California, 1:50,000, 1939, rev. 1946
The shore line and immediately adjacent detail on this map manuscript supersedes the same features on the previous surveys and quadrangles in all common areas.

45. Comparison with Nautical Charts.-

No. 5532 1:40,000 December 1943
This map manuscript has not been applied to nautical charts as of the date of this review report.

Reviewed by: Reviewed under direction of

Lena T. Stevens S. V. Griffith
Photogrammetrist Chief, Review Section
12-31-46
APPROVED BY:

[Signatures: C. H. Jones, D. M. Ahmad, W. M. Seaford]

Technical Assistant to the Chief, Div. of Photogrammetry

Chief, Nautical Chart Br.
Division of Charts

K. T. Adams
Chief, Div. of Photogrammetry

Chief, Div. of Coastal Surveys
Tide Tables: Pacific, 1941

Ref. Sta.
San Francisco (Golden Gate)

Table 2 (p. 229), Total O.S. Constants

Point Richmond:

Time of Tide
0.60
Rate of Range
1.1
Mean Range
4.2
Tidal Difference
2.2

Table 1, p. 33

Sept. 3, 1941, H.M.W. 
M.L.W. = 4.37
-2.04
M. H.W. = 3.01
5.91
M. L.W. = 1.98
4.03

Total range of tide = 6.5 + 0.2 x 2 = 3.5 ft.

Mean low water of 2000 low waters each day: Datum

L.T. 1909
G.D. 14

.35
1/3 of range of tide
<table>
<thead>
<tr>
<th>DATE</th>
<th>CHART</th>
<th>CARTOGRAPHER</th>
<th>REMARKS</th>
</tr>
</thead>
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<tr>
<td>3/19/48</td>
<td>5532</td>
<td>Richardson</td>
<td><strong>Before</strong> After Verification and Review Examined for Critical Changes.</td>
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<td>12/17</td>
<td>5372</td>
<td>Herman</td>
<td>After Verification and Review Reconstructed</td>
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<td></td>
<td></td>
<td></td>
<td>Before After Verification and Review</td>
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<td>Before After Verification and Review</td>
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<td>Before After Verification and Review</td>
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</tbody>
</table>

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.