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Form 504	
U. S. COAST AND GEODETIC SURVEY	
DEPARTMENT OF COMMERCE	
DESCRIPTIVE REPORT	
Type of Survey	<i>Hydrographic</i>
Field No.	Office No. <i>4025</i>
LOCALITY	
State	<i>California</i>
General locality	<i>San Francisco</i>
Locality	<i>Bay</i>
1948	
CHIEF OF PARTY	
<i>F. Westdahl</i>	
LIBRARY & ARCHIVES	
DATE	

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Descriptive Report

to accompany Hydrographic Sheet entitled
U. S. COAST AND GEODETIC SURVEY

E. Lester Jones, Superintendent

HYDROGRAPHIC SURVEY OF PRESIDIO SHOAL,

San Francisco Bay, California

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Scale 5000

executed in August, 1918, by

F. Westdahl, H. & G. Engineer, C. and G. Survey.

This survey was made to carry out the Superintendents instructions of July 11th, 1918, for "a close development of the Presidio Shoal". Owing to swift currents only the periods of slack water in the forenoons could be utilized, as the afternoon strong seabreeze invariably made the locality too rough for boat work.

The character of the bottom throughout is fine sand. This has not been marked on the sheet to avoid confusing the penciled soundings. In only one place, in the channel southward of the shoal, the leadsman reported mud as no specimen of sand was visible on the armored lead and the bottom felt soft. Not the slightest indication of rocky bottom was found and the lead failed to show contact with any hard substance.

The smooth full drawn pencil line on the north side of the shoal represents the 30 ft. (?) contour transferred and enlarged from chart 5532, Entrance to San Francisco Bay. The irregular pencil line below it is the present 30 ft. limit, as developed in this survey, and indicates that the shoal has shifted its position about one width to the southward. It also indicates that this shoal has no rocky basis, being in fact formed by the impinging of the ebb currents from the northern and southern arms of San Francisco Bay upon each other and consequent release of the material carried by these currents in suspense. The shoal can be traced in modified form all the way to Alcatraz Island, which forms the dividing buttress of the two currents. The greater amount of suspended material is carried from the northern arm of the bay, and, where this current is reinforced by the volume rushing through Raccoon Strait and meeting the one from the southern arm, the greatest amount of material is dropped to form the Presidio Shoal.

The opinion of the nonexistence of a rocky base at this shoal is strengthened by the fact that the rocky ridges of the country about San Francisco Bay, as well as their subsurface extensions and here and there projecting summits, invariably run in northwest and southeast directions, and not WSW. and ENE. like the Presidio Shoal. Witness the Point

Richmond ridge and its prolongation at Brooks Island and Berkeley Reef; the Tiburon peninsula, Angel Island and Goat Island: the Belvedere peninsula and Alcatraz Island, etc. Furthermore where single rocks exist, or have existed in this bay in the strong tidal currents the water is deep close up to and surrounding them. Witness Anita Rock, Blossom Rock, and the now removed Arch and Shag Rocks, around which no shoals have formed. In fact it would seem that the existence of a sunken rock in a tidal current has a tendency to deepen instead of shoaling the channel.

The shallowest water, 21 feet, was found in two places about 130 meters apart, but there may be more of that depth. The ridge of the shoal is very narrow and was undoubtedly missed in many of the lines crossing it. No convenient range could be run along this ridge. Cross lines were run with the buoy in line with Fort Point, etc. but these could not be continued to westward of the buoy, and the buoy itself is not placed on the highest ridge but on the northern slope of the shoal. Other lines forming oblique crossings were run towards Telegraph Hill. These crossings of the main scheme lines agree fairly well except where the leadsmen has read his line a fathom wrong, plainly indicated by other soundings, notes on which will be found on page 4 of the sounding book.

The boat and crew were loaned by the Fort Point Coast Guard station, and the men had no previous experience in

hydrographic work. Three different leads men took the soundings, which is not conducive to good work, but over which I had no control, the men being assigned to their duties by the Keeper of the station. He steered the boat himself part of the time, and this is the only hydrographic work I have ever had charge of in which I have not steered the boat in person. The boat had no rudder and was steered with a long oar, which was very inconvenient and made it difficult to keep straight on the range. Its general progress was along the line attempted to be run but with continual veerings to either side. The leadline was consequently brought to the perpendicular on either bow, making it difficult to check the leadsmans readings.

On the first two days I measured both position angles, stopping the boat over the lead held on the bottom for that purpose. After that I was joined by Lieut. W. Weidlich, U.S. N.R., formerly in the C. and G. Survey, who measured the left angle and, when the Keeper was detained on shore for other duties, also steered the boat. In addition to Lieut. Weidlich, Ensign H. Semel, U.S.N.R., was assigned to aid in this work by Lt. Commander D.B. Castle, Assist. Supervisor of 12th Auxiliary Reserve District, but he had no previous experience and merely took angles for practice until the last day when he observed the left angle while Mr. Weidlich devoted his entire attention to the steering. Mr. H.S. Ballard, Tide Observer,

acted as Recorder. Being entirely untrained in such work and unaccustomed to the motions of a boat he was necessarily much confused, but did fairly well after the first two days.

The leadline used in this work is the one used by me in the survey off Point San Bruno in 1917, and is a well seasoned braided cord nearly 14 fathoms long. It was examined each day and maintained its accuracy throughout. A ten pound lead was used with it.

Respectfully submitted

J. Nordahl

H. & G. Engineer, C. and G. Survey

Respectfully transmitted

E. F. Dickins,

*Inspector, C. & G. Survey
Chief of Party.*

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E. Lester Jones, Superintendent

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San Francisco Bay, California

Scale $\frac{1}{5000}$

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NOTE. Soundings were recorded to the nearest foot, and are reduced and plotted also to the nearest foot. They show the depth at the mean of the lower low waters of the 24 hours, which is the plane of reference, reading 5.55 ft. on the fixed staff at the Presidio Tide station.