

★ (391) **CALIFORNIA—Monterey Bay—Moss Landing Harbor—Channel depths.**—The following table shows the depths at mean lower low water in the improved channel in Moss Landing Harbor:

### MOSS LANDING HARBOR

*Tabulated from surveys by the Corps of Engineers—Report of Nov. 1965 and surveys of Mar.-Apr. 1965*

Controlling depths in channels from seaward in feet at mean lower low water					Project dimensions		
Name of channel	Left outside quarter	Middle half of channel	Right outside quarter	Date of survey	Width (feet)	Length (nautical miles)	Depth M.L.L.W. (feet)
Entrance channel.....	15. 0	<sup>a</sup> 13. 0	<sup>a</sup> 8. 0	3, 4-65	200	0. 3	15
Turning basin.....	15. 0	16. 0	15. 0	3, 4-65	300	. 1	15
Inner channel.....	<sup>b</sup> 13. 9	14. 9	14. 0	3, 4-65	100	. 4	15
Inner turning basin.....	<sup>c</sup> 13. 9	<sup>c</sup> 13. 0	<sup>c</sup> 13. 9	3, 4-65	100-200	. 1	15

<sup>a</sup> Shoal extends into the channel in the vicinity of Moss Landing Harbor Entrance Light; project depth was available in the left half of the channel.

<sup>b</sup> Except for shoaling to 11 feet near the edge of the channel in 36°48'29.2" N., 121°47'02.6" W.

<sup>c</sup> Except for shoaling to 11 feet in the southerly 50 feet of the basin and a depth of 7.6 feet in 36°48'04.5" N., 121°47'08.0" W.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(Supersedes N.M. 32(4120) 1964.)

(N.M. 3/66.)

(C. & G.S. CL-1690/65; BP-68762.)

C. & G.S. Chart 5403 (Inset).

C. & G.S. Coast Pilot 7, 1963, page 120.

★ (4120) **CALIFORNIA—Monterey Bay—Moss Landing Harbor—Channel depths.**—The following table shows the depths at mean lower low water in the improved channel in Moss Landing Harbor:

### MOSS LANDING HARBOR

*Tabulated from surveys by the Corps of Engineers—Report of June 1964 and survey of May 1964*

Controlling depths in channels from seaward in feet at mean lower low water					Project dimensions		
Name of channel	Left outside quarter	Middle half of channel	Right outside quarter	Date of survey	Width (feet)	Length (nautical miles)	Depth M.L. L.W. (feet)
Entrance channel.....	15.3	14.9	12.0	5-64	200	0.3	15
Turning basin.....	15.5	16.2	15.8	5-64	300	.1	15
Inner channel.....	14.1	15.9	14.3	5-64	100	.4	15
Inner turning basin....	* 15.9	* 15.9	* 16.0	5-64	100-200	.1	15

\* Shoaling to 1.2 feet exists at the southern end of the inner turning basin.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(Supersedes N.M. 29 (3773) 1963.)

(N.M. 32/64.)

(C. & G.S. CL-927/64; BP-66081.)

C. & G.S. Chart 5403.

C. & G.S. Coast Pilot 7, 1963, page 120.

★ (3749) **CALIFORNIA—Monterey Harbor—Depth.**—A survey of the small boat basin in Monterey Harbor by the Corps of Engineers from July to August 1963, shows a controlling depth of 3 feet for an approximate width of 40 feet along the southwest side of the floating moorings centered in approximately 36°36'10.8" N., 121°53'25.9" W.

**Note.**—1. Mariners should correct chart by changing the charted "6 FT REP" to "3 FT 1963".

2. The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(N.M. 26/65.)

(C. & G.S. BP-67762.)

C. & G.S. Chart 5403 (Inset).

C. & G.S. Coast Pilot 7, 1963, page 120.

about 0.5 mile from the beach near Moss Landing. Shelter from northwesterly winds is afforded at Santa Cruz Harbor and Sequel Cove, off the northern shore of the bay, and from southeasterly winds at Monterey Harbor, off the southern shore. The tidal currents are weak.

A **danger zone** for a firing range is in the southeastern part of the bay, and a **naval operating area** is in the northeastern part of the bay; limits and regulations are given in **204.205**, Chapter 2.

**Pacific Grove**, a summer resort just southeastward of Point Pinos, has no wharves.

**Monterey Harbor**, 3 miles southeastward of Point Pinos, is a compact resort harbor with some commercial activity and fishing. The port formerly was the home base of a large purse seine sardine-fishing industry, but in 1962 only two canneries were still operating. Depths of 20 feet or better are available in the outer harbor and entrance, and 6 feet in the small-boat basin. There are many sport-fishing landings and the small-craft basin provides good shelter for about 200 boats. An occasional surge makes in from the entrance.

**Monterey**, a colorful and picturesque little city on the west side of the harbor, was the capital of California under Mexican rule and for sometime after it became a state. The old adobe custom house is still standing near the waterfront, and is now used as a historical museum.

Prominent landmarks include the granite **Presidio Monument** on the brow of a barren hill. At Seaside there are several large tanks between the beach and highway. A large red-roofed building is conspicuous on a bluff above the shore 4 miles northeastward from the breakwater. Two radio towers just inshore from the sand dunes at **Marina**, 6 miles northeastward from the breakwater, are conspicuous in the southern part of Monterey Bay.

**Boundary lines of inland waters.**—The lines established for Monterey Harbor are described in **82.139**, Chapter 2.

A breakwater extends from the foot of Spence Street in an easterly direction for about 1,700 feet. This affords excellent protection in northwesterly weather. The outer end is marked by a light, and in the daytime usually by loud-barking sea lions. A Coast Guard station is near the inner end.

**Special anchorage areas** for small craft are south and southeastward of the breakwater; limits and regulations are given in **202.1** and **202.126**, Chapter 2.

See Appendix for storm warning display.

**Quarantine, customs, and immigration services** are handled by representatives from San Francisco.

The easterly municipal wharf is 1,600 feet long and 86 feet wide at the outer end; depths alongside the outer east and west sides are 24 feet. Freight and supplies are handled by trucks directly to the wharf; a 10-ton hoist is available. A fog signal is on the northern end of the wharf.

The inner large fish wharf has an elevator lift that can hoist boats up to 30 feet in length for ordinary repairs.

Just northwestward of cannery row is a small repair yard with a marine railway, but as this is virtually on

the open sea, haul-outs can be made only when the sea is calm.

Gasoline, diesel oil, water, and ice are available at the wharves; marine hardware and groceries can be obtained. Monterey has several machine shops.

Tankers handle fuel oil supplies offshore from a float connection of a submerged pipeline at **Seaside**, 1 mile eastward of Monterey municipal wharf; mooring buoys are provided.

Monterey has good rail, air, and bus connections with San Francisco and points south.

**Moss Landing**, on the eastern shore of Monterey Bay 12 miles northeastward of Point Pinos, has a 500-foot commercial wharf with a depth of 50 feet at the offshore end. Vessels make fast to mooring buoys and to the wharf for handling oil.

The large aluminum-colored oil tanks at Moss Landing are prominent. Back of Moss Landing Harbor, the huge powerplant with eight tall stacks, two of which are lighted at night, and the nearby mineral processing plant with twin stacks lighted at night, are the most conspicuous objects along this stretch of the coast.

Fuel oil for the powerplant is received through a submerged pipeline marked by a buoy 0.8 mile northwestward from the Moss Landing Harbor entrance.

The anchorage off Moss Landing is unprotected, but the holding ground is good. The prevailing winds are northwesterly, but there are a few southeasterly and northerly gales during the winter.

**Moss Landing Harbor**, 13 miles northeasterly of Monterey, is used by a substantial fleet of fishing boats.

**Boundary lines of inland waters.**—The line established for Moss Landing Harbor is described in **82.137**, Chapter 2.

The channel into the harbor is through a jettied entrance to a turning basin, thence southward to an inner turning basin. The channel is marked by buoys and lighted ranges. The Federal project depth is 15 feet to the inner turning basin, 0.8 mile above the entrance. In 1962, shoaling to 12 feet was reported in the southerly half of the entrance channel.

There are landings in the harbor where fuel and water can be obtained. A 100-ton marine railway is available.

Gasoline, diesel oil, lubricants, ice, water, some marine hardware, and groceries are available at a yacht club in the northerly inlet reached by a 9-foot channel.

Two radio towers are prominent at **Palm Beach**, a small resort and camping ground back of the sand dunes 4 miles northward of Moss Landing.

**Monterey Wind Gap.**—The great mountain barrier northward and southward of Monterey Bay and the receding shoreline to the eastward offer a broad entrance to the cold foggy northwesterly winds of the summer, as they drive over the bay and well into Salinas Valley to the southward.

**Sequel Cove** is in the northeastern part of Monterey Bay, eastward of Santa Cruz Harbor. Fair shelter is afforded in northwesterly weather, but the cove is open in

★ (6492) **CALIFORNIA—Monterey Bay—Santa Cruz Harbor—Controlling depths.**—Surveys by the Corps of Engineers in August 1965 show controlling depths at M.L.L.W. in the improved Santa Cruz Small Craft Harbor of 17 feet for a width of 100 feet from the channel entrance (36°57'36" N., 121°59'57" W.) to a point in 36°57'44" N., 122°00'04" W.; thence 14 feet to a point in 36°57'56" N., 122°00'05" W.; thence 9 feet to the end of the project.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(Supersedes N.M. 28 (4054) 1965.)

(N.M. 45/65.)

(C. & G.S. CL-1338/65; BP-68438-39.)

C. & G.S. Chart 5403 (Inset).

C. & G.S. Coast Pilot 7, 1963, page 121.

★ (935) **CALIFORNIA—Monterey Bay—Santa Cruz Harbor—Light established.**—Santa Cruz West Breakwater Light showing *flashing white* every 5 seconds, flash 1 second, of 400 candlepower, has been established on the end of the breakwater in (approximately) 36°57'37.8" N., 122°00'03" W. The light is exhibited 36 feet above the water from a white steel structure. A *diaphragm horn* sounding a group of 2 blasts every 30 seconds, blast 2 seconds, silent 2 seconds, blast 2 seconds, silent 2 1/4 seconds, has been installed at the light.

(See N.M. 6 (627) 1964.)

(N.M. 8/64.)

(L.N.M. 4, C.G., San Francisco, Jan. 30, 1964.)

C. & G.S. Charts 5403 (and Inset), 5402.

C.G. Light List, Vol. III, 1963, No. 268.1.

C. & G.S. Coast Pilot 7, 1963, page 121.

★ (3466) **CALIFORNIA—Monterey Bay—Santa Cruz Harbor—Depth.**—A survey by the Corps of Engineers in February 1964 shows a depth of 1 1/2 fathoms at M.L.L.W. in the middle of the improved channel in Santa Cruz Small Craft Harbor in (approximately) 36°57'49.8" N., 122°00'04" W.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(N.M. 24/65.)

(C. & G.S. BP-67759.)

C. & G.S. Chart 5403 (Inset).

C. & G.S. Coast Pilot 7, 1963, page 121.

★ (4054) **CALIFORNIA—Monterey Bay—Santa Cruz Harbor—Controlling depth.**—Surveys by the Corps of Engineers show a controlling depth at M.L.L.W. of 14 feet in January 1965 in the entrance channel of Santa Cruz Harbor (**36°57'36'' N., 121°59'57'' W.**) to Harbor Lighted Buoy 2, thence 11 feet for a **width of** 100 feet in February 1965 in outer harbor entrance between the jetties, **thence 9** feet in February 1965 to the end of the improved project.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(Supersedes N.M. 24 (3466) 1965).

(N.M. 28/65.)

(C. & G.S. CL-581/65; BP-67758-60.)

C. & G.S. Chart **5403 (Inset).**

C. & G.S. Coast Pilot 7, 1963, page **121.**

southerly weather. The best anchorage is southeastward of the mouth of **Soquel Creek** in 5 to 6 fathoms, sandy bottom.

At **Seacliff Beach**, 0.5 mile westward of **Aptos Creek**, a concrete ship with two masts has been beached and filled with sand. A pleasure pier for sport fishing extends from ship to the shore.

A small fishing and pleasure wharf at **Capitola**, on the northwest side of **Soquel Cove**, has 11 feet alongside the landing at the outer end. There are facilities to hoist out pulling boats. Houses on the bluffs about 1.5 miles eastward of **Capitola** are prominent. Two radio towers and an elevated water tank 0.6 mile northwestward of **Soquel Point** are conspicuous from the east and south.

**Point Santa Cruz**, 20 miles northward of **Point Pinos** and 2.5 miles west of **Soquel Point**, consists of cliff heads about 40 feet above the water. The area back of the point is flat, but rises in terraces to higher land. There are two flat rocks close under the point, the outer one being the higher.

A light is shown from a white tower near the southern extremity of the point. A whistle buoy is 1.1 miles southeast of the light.

**Santa Cruz Harbor** is on the northern shore of **Monterey Bay** between **Point Santa Cruz** and **Soquel Point**. The Casino building and the roller coaster immediately to the eastward are prominent.

The city of **Santa Cruz** is on the northwestern shore of the bay. **Seabright**, **Del Mar**, and **Twin Lakes**, suburbs of **Santa Cruz**, are along the beach to the eastward.

**Boundary lines of inland waters.**—The line established for **Santa Cruz Harbor** is described in 32.135, Chapter 2.

The **Santa Cruz** municipal small-craft harbor in **Woods Lagoon**, just eastward of **Seabright**, was nearing completion in 1962. With a jettied entrance, the basin will accommodate some 400 small craft at finger piers and floats. Project depths are 20 feet in the entrance, thence 15 feet to about the midpoint, and thence 10 feet to the head. Fueling, supplies, and repair facilities are being completed.

**Santa Cruz Harbor** provides good shelter in northerly weather but in northwesterly weather a heavy swell is likely to sweep into the anchorage. Good anchorage can be had anywhere off the wharf in 5 fathoms, sandy bottom. In southerly weather there is no protection in the harbor; vessels must either run for **Monterey** or **Moss Landing Harbor**, or take refuge in the new small-craft harbor.

A 900-foot municipal wharf with a cargo shed at its outer end extends out to depths of 28 feet; a fog signal is on the wharf. Landings can be made here in all but heavy southerly weather. Few vessels, other than fishing boats, land at this pier. Due to the ocean swell sweeping around the point, there is usually considerable surge, and heavy lines are required. Provisions and launch fuels may be obtained, and city water is piped to the wharf. Just eastward of this wharf is a small pleasure pier which is the westward end of the boardwalk.

There are no repair facilities except for machine work

on launches. Launches up to 30 feet can be hoisted onto the wharf for hull repairs.

**Santa Cruz** has bus and rail connections with **San Francisco** and the interior.

**Chart 5402.**—From **Point Santa Cruz** the coast trends westward about 4 miles to **Needle Rock Point** and thence northwestward to **Point Ano Nuevo**. The shoreline rises from high bluffs, with a few intervening beaches, to a low flat tree-covered mountain range.

**Needle Rock Point** is 4 miles westward of **Santa Cruz Light**; a slender pillar of rock stands a short distance seaward from the face of the cliffs; another lower pinnacle is about 200 yards eastward. Neither is distinguishable when abreast it.

**Sand Hill Bluff**, 6.5 miles westward of **Santa Cruz Light**, is composed of sandstone cliffs about 50 feet high, with a rounding irregular hillock of white sand near the edge of the cliffs; this hillock is white on the northwestern side, and is covered with brush and grass on the southeastern side. Neither this bluff nor **Needle Rock Point** is a good landmark.

The buildings of a large cement works at **Davenport**, 9 miles northwestward of **Point Santa Cruz**, are conspicuous; smoke from the plant can be seen a long distance by day, and many lights are visible at night. A large aluminum-colored oil tank and a tall stack are prominent marks. A steel wharf, 2,300 feet long and with a depth of 50 feet at its end, enables vessels to load bulk cement; there are pipelines for both cement and oil. The outer 500 feet of the wharf has been destroyed. Because of the current and ground swell, vessels must lay off the dock; mooring buoys are provided.

A submarine pipeline for unloading fuel oil is off **Scott Creek**, 2 miles northward of **Davenport**. The end of the pipeline and the ship moorings are marked by buoys. The oil is pumped to the cement works storage tanks at **Davenport**.

**Loma Prieta**, a prominent flat-topped peak surmounting the high mountainous ridge 13 miles north-northeastward of **Santa Cruz Light**, is the predominating mountain feature of this section. A fire observation tower is on the top of the peak.

**Waddell Creek**, 14.5 miles northwestward of **Point Santa Cruz**, is in a narrow steep-sided valley. The high whitish bluffs, immediately northward, are quite prominent.

**Point Ano Nuevo**, 18 miles northwestward of **Point Santa Cruz**, is formed by sand dunes, 20 to 100 feet high. Two radio masts are on the point. A low black rocky islet is 0.3 mile off the point. Foul ground extends northwestward and southeastward from the islet. A white square pyramidal skeleton 49-foot tower is on the islet. Near the tower is a group of red-roofed white houses. A lighted whistle buoy is about 0.8 mile southward of the tower.

Anchorage with protection from northerly and northwesterly winds can be had in the bight southward of the point in 8 fathoms, with the tower bearing 276°, distant

★ (4145) CALIFORNIA—Half Moon Bay—Pillar Point Harbor—Breakwater under construction.—The Corps of Engineers reports a breakwater extension under construction at the entrance to Pillar Point Harbor beginning at a point on the existing west breakwater in  $37^{\circ}29'41.0''$  N.,  $122^{\circ}29'13.5''$  W. and extending about 320 yards on a bearing of  $101^{\circ}45'$ .

(C. & G.S. BP-69783.)

(N.M. 26/66.)

C. & G.S. Charts 5520, 5072, 5072SC.

C. & G.S. Coast Pilot 7, 1963, page 122.

★ (4672) CALIFORNIA—Monterey Bay—Santa Cruz Harbor—Controlling depths.—A survey by the Corps of Engineers in April 1966 shows controlling depths at M.L.L.W. in the improved Santa Cruz Harbor channels of 10 feet from the channel entrance ( $36^{\circ}57'36''$  N.,  $121^{\circ}59'57''$  W.) to a point about 100 yards north of Lighted Buoy 2; thence 15 feet for a middle width of 50 feet to a point in  $38^{\circ}58'11''$  N.,  $122^{\circ}00'05''$  W.; thence 10 feet to the turning basin and 9 feet in the basin.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(See N.M. 14 (2046) 1966.)

(N.M. 29/66.)

(C. & G.S. BP-69900-01.)

C. & G.S. Chart 5403 (Inset).

C. & G.S. Coast Pilot 7, 1963, page 121.

★ (5236) CALIFORNIA—Half Moon Bay—Pillar Point Harbor—Temporary buoy established.—A black spherical buoy, showing a *quick flashing white light*, has been temporarily established about 100 yards beyond the end of the breakwater under construction in (approx.)  $37^{\circ}29'40''$  N.,  $122^{\circ}29'10''$  W.

(See N.M. 26 (4145) 1966.)

(L.N.M. 43, C.G., San Francisco, July 21, 1966.)

(N.M. 33/66.)

C. & G.S. Charts 5520, 5072, 5072SC.

C. & G.S. Coast Pilot 7, 1963, page 122.

0.8 mile. The kelp bed and reef, extending a little over 0.5 mile southeastward from the islet, break the force of the swell.

The 5-mile coast between Point Ano Nuevo and Pigeon Point is low and rocky. **Pigeon Point**, 22.5 miles northward of Point Santa Cruz, is 50 feet high and rises in a gentle slope to the coastal hills. Several moderately large detached rocks extend 350 yards southwestward. Pigeon Point was named from the wreck at this place of the clipper ship **CARRIER PIGEON**.

**Pigeon Point Light** ( $37^{\circ}10.9' \text{ N.}$ ,  $122^{\circ}23.6' \text{ W.}$ ), 148 feet above the water, is shown from a 115-foot white conical tower on the end of the point. A radiobeacon and fog signal are at the station. The light cannot be seen in the light eastward of a line joining Pigeon Point and Pillar Point, 20 miles to the northward. The light station buildings on Pigeon Point are white with red roofs. A group of farm buildings is about 0.5 mile eastward. A row of trees, conspicuous against a background of barren hills, is about 500 yards northeastward of the light.

From Pigeon Point for 4 miles to **Pescadero Point**, the coast is nearly straight and is composed of reddish cliffs, with numerous outlying sunken and visible rocks. A rocky patch covered  $1\frac{1}{4}$  fathoms is about 0.8 mile south by west of Pescadero Point; a  $6\frac{1}{2}$ -fathom rocky patch is about 0.7 mile west-southwestward of the point.

From **Pescadero Creek**, 1.5 miles northward of Pescadero Point, the coast for 8 miles northward becomes more broken and rugged, with yellow or white vertical cliffs. A prominent whitish cliff over 100 feet high is 7.5 miles northward of Pescadero Point. About 9 miles northward of the point is the prominent white building of the Marine Coastal Receiving Station (KBS), surrounded by numerous antenna poles.

The coast is broken by several small streams in deep steep-sided valleys. Northward of the high cliff, a low flat tableland extends northward for 9 miles and then bends sharply westward to Pillar Point, forming Half Moon Bay. The land consists generally of grass-covered rolling hills with ranch houses and cultivated ground in the foreground.

**Chart 5520.**—**Pillar Point**, 18 miles southward of San Francisco entrance, is the southern extremity of a 2.5-mile low ridge. Several black rocks extend over 300 yards southerly of the point; from northward these appear as three or four, but from southward as only one. **Half Moon Bay** comprises the light from **Miramontes Point** on the south to Pillar Point on the north.

**Pillar Point Harbor**, in the northern part of Half Moon Bay east of Pillar Point, is used by fishing vessels and pleasure craft. Depths of 10 to 20 feet are inside the harbor which is entered through a 250-yard opening in the breakwater marked by lights; greater depths are in the buoyed approaches.

Caution is necessary in approaching Pillar Point Harbor

because of the foul ground off the entrance. Rocks and reefs marked by kelp extend southeastward for over a mile from Pillar Point. **Southeast Reef**, extending from 1.5 to over 2 miles southeastward of Pillar Point, is covered 4 to 20 feet and has a pinnacle rock awash at extreme low water at the southeastern end. Vessels from southward approach the harbor south and east of the lighted gong buoy marking Southeast Reef, while vessels from northward use the buoyed opening between the Pillar Point foul ground and Southeast Reef.

An L-pier 590 feet long with 13 feet alongside the 275-foot outer face is on the northeast side of Pillar Point Harbor. Water and electricity are piped to all parts of the facility, and gasoline and diesel oil are pumped at the landing. Repair facilities will be added.

The 600-foot wharf west of the L-pier has 10 feet at the outer end. The two wharves to the westward were being removed in 1963.

*npw 5072  
N.M. 22/67 (2458)*  
**Chart 5402.**—**Montara Mountain**, 4 miles northward of Pillar Point and 2.5 miles inland, is covered with grass and bare trees. From southward it shows as a long ridge with several small elevations upon it, but from northwestward it appears as a flat-topped mountain with four knobs on the summit. It is a prominent feature in approaching the entrance to San Francisco Bay.

**Point Montara**, 2.8 miles northward of Pillar Point, is the seaward end of a spur from Montara Mountain and the northwestern extremity of the ridge forming Pillar Point. It terminates in cliffs about 60 feet high with numerous outlying rocks. Covered rocks and ledges lie 0.8 mile westward of the point and extend in a northwesterly direction for about 1.5 miles. This is a dangerous locality in thick weather, and extreme caution should be used when inside the 30-fathom curve.

**Point Montara Light** ( $37^{\circ}32.2' \text{ N.}$ ,  $122^{\circ}31.1' \text{ W.}$ ), 70 feet above the water, is shown from a 30-foot white conical tower on the point; a fog signal is at the station. A conspicuous white tank is near the station and in the daytime is more prominent.

From Point Montara for 2.5 miles to Point San Pedro the coast is bold and rugged, rising sharply from the sea to the spurs extending from Montara Mountain. **Devils Slide** is light-colored and is the highest bluff in this locality. The highway cuts are distinctive features in the bluffs. There are no outlying rocks or dangers other than those off Point Montara.

**Point San Pedro** is a dark, bold, rocky promontory, 640 feet high. It is the seaward termination of Montara Mountain and is an excellent mark in clear weather from either northward or southward. A large triple-headed rock, about 100 feet high and white on its southern face, projects 0.3 mile westward from the point. A rocky area, which breaks in a heavy swell, is reported to exist about

## 7. SAN FRANCISCO BAY, CALIFORNIA

**Chart 5502.**—**San Francisco Bay**, the largest harbor on the Pacific coast of the United States, is more properly described as a series of connecting bays and harbors of which San Francisco Bay proper, San Pablo Bay, and Suisan Bay are the largest. Depths of 29 feet and over are available for deep-draft vessels to San Francisco, Oakland, Alameda, Richmond, and Redwood City in San Francisco Bay proper; to Stockton on the San Joaquin River; and to Sacramento through the lower Sacramento River and a deepwater channel. Much of the local navigation is by light-draft vessels and barges.

The extensive foreign and domestic commerce of San Francisco Bay is handled through the several large ports which are the terminals for many transpacific steamship lines, airlines, and transcontinental railroads.

The eastern shore of San Francisco Bay proper is low except for rolling grassy hills in the northern part and extensive marshes intersected by numerous winding sloughs in the southern part. The western shore northward of the entrance is much bolder than the eastern shore where there are only a few stretches of low marsh. Below San Francisco, marshes and flats intersected by numerous sloughs extend to the south end of the bay.

The entrance to San Francisco Bay is through **Gulf of the Farallones** and the narrow Golden Gate. The gulf extends from Point San Pedro on the south for 34 miles to Point Reyes on the north, and has a greatest width of 23 miles from Farallon Islands on the west to the mainland.

In clear weather many prominent features are available for use in making San Francisco Bay, but in thick weather the currents, variable in direction and velocity, render the approaches difficult and dangerous. Point San Pablo, Montara Mountain, Farallon Islands, Mount Tamalpais, and Point Reyes are prominent in clear weather and frequently can be seen when the land near the beach is shut in by low fog or haze.

The first 8 miles of coast from Point San Pedro to San Francisco Bay entrance consists of whitish bluffs that reach a height of 600 feet, then a 3-mile sand beach extends to the entrance. **Shelter Cove**, on the north side of Point San Pedro, provides shelter from the easterly storms with good holding ground in gray sand bottom. The 150-foot rock close to the point also gives some protection from southerly weather.

**Point Lobos** (Chart 5532), on the south side of the entrance to the Golden Gate, is high, rocky, and rounding with black rugged cliffs at its base. A large water tank is on the summit. The **Cliff House** is near the southern

part of the western face of the point; high and rocky **Seal Rocks** are just offshore.

**Chart 5598.**—**Farallon Islands**, 23 miles westward of San Francisco Bay entrance, are rocky islets extending northwestward for 7 miles. **Southeast Farallon**, the largest of the group, actually consists of two islands separated by a narrow impassable gorge. The larger eastern island is pyramidal in shape and 350 feet high; a small-boat landing is on the south side. **Farallon Light** ( $37^{\circ}42.0' \text{ N.}$ ,  $123^{\circ}00.1' \text{ W.}$ ), 358 feet above the water, is shown from a 41-foot white conical tower on the highest peak of the island. A radiobeacon is 290 yards south-southwestward of the light. A fog signal and dwellings of the light attendants are on the lowland on the south side of the island. The fog signal can seldom be heard northwestward of the island. **Fisherman Bay**, just northward of Farallon Light, is somewhat protected by several rocky islets on the west side and affords anchorage in 8 fathoms in the outer part. Boats can be landed on a small sand beach on the largest islet.

**Hurst Shoal**, 0.6 mile southeastward of Farallon Light, is covered 22 feet and breaks only in heavy weather.

**Middle Farallon**, 2.3 miles northwestward of the light, is a 20-foot single black rock 50 yards in diameter; several rocks covered 5 to 7 fathoms are within 0.7 mile south and southwestward of it.

**North Farallon**, 6.5 miles northwestward of Farallon Light, consists of two clusters of bare precipitous islets and rocks from 91 to 155 feet high, 0.9 mile in extent, and 0.3 mile wide; sunken rocks surround them.

**Fanny Shoal**, 9.8 miles northwestward of Farallon Light and 14 miles southwestward of Point Reyes, is 2 miles in extent and covered 2 to 30 fathoms. **Noonday Rock**, covered 13 feet, rises abruptly from 20 fathoms and is the shallowest point of the shoal; it is the principal danger in the north approach to San Francisco Bay. A lighted whistle buoy is 400 yards southwestward of the rock. Noonday Rock derives its name from the clipper ship that struck it in 1862 and sank within an hour, in 40 fathoms.

**Cordell Bank** (Chart 5502), 27 miles northwestward of Farallon Light and 20 miles westward of Point Reyes, is about 6 miles long and 3 miles wide; the bank is covered 20 to 40 fathoms, but depths increase rapidly outside of it.

**Chart 5599.**—**Point Reyes**, 18 miles north of Farallon Light, is a bold, dark, rocky headland 612 feet high at the western and higher extremity of a ridge running in an easterly direction for 3 miles. There is lowland north-

ward of the point, so that from northward and southward, and from seaward in hazy weather, it usually appears as an island. The point is visible for over 25 miles.

**Point Reyes Light** ( $37^{\circ}59.7' \text{ N.}$ ,  $123^{\circ}01.3' \text{ W.}$ ), 294 feet above the water, is shown from a 37-foot white pyramidal tower on the western extremity of the point. A radiobeacon is at the light and a fog signal is on the western pitch of the point about 30 feet below the light. Two rocks, 275 yards westward of the light, are covered about 3 feet and break in a moderate swell.

**Drakes Bay**, eastward of Point Reyes, was named after Sir Francis Drake, the English explorer who anchored here in 1579. The bay affords shelter in northwesterly weather in 5 to 6 fathoms, sandy bottom. **Chimney Rock** lies close under the eastern extremity of Point Reyes; a reef 200 yards eastward of the rock breaks in moderate weather. High white cliffs extend northward and eastward in a gentle curve for about 6 miles and terminate in high white sand dunes. From here the 6-mile shore eastward and southward to Double Point becomes 100- to 200-foot high rocky cliffs. Several lagoons on the northern shore empty through a common channel which is used by light-draft vessels having local knowledge.

**Double Point** has two high spurs 0.4 mile apart extending 200 and 320 yards from the coastline. A small 47-foot-high island is 250 yards off the northern spur, and a rock is close under and nearly connected with the longer and lower southern spur.

Drakes Bay is used extensively by vessels in heavy northwesterly weather and many fishing boats operate from here during the season. Fuel and water are available at the fish wharf inside the west point of the bay near the Coast Guard station.

The 5-mile coast from Double Point to Duxbury Point is bold with high rocky cliffs bordered by narrow sand beaches and no dangers outside the 10-fathom curve.

**Bolinas Point**, 15.3 miles southeastward of Point Reyes Light, is 160 feet high and the western extremity of the comparatively level tableland extending eastward to Bolinas Lagoon. An aero light and numerous radio towers are 0.6 mile northward of the point.

**Duxbury Point**, 16.5 miles southeastward of Point Reyes Light, is 160 feet high and yellow in color. The point is the southern edge of the tableland westward of Bolinas Lagoon.

**Duxbury Reef**, extending 1.2 miles southeastward of Duxbury Point, is long, narrow, and partly bare at low water. A ledge covered 30 to 36 feet extends from the reef to about 1.4 miles southward of the point; a lighted whistle buoy is about 2 miles south of the point. Great care must be exercised in passing this area.

**Chart 5532.—Bolinas Bay**, eastward of Duxbury Point, is an open bight 3.5 miles wide between Duxbury Point and Rocky Point. The bay affords shelter in northwesterly weather in 24 to 36 feet, sandy bottom. Care must be taken to avoid Duxbury Reef and the dangers extending up to 0.7 mile eastward of it. **Bolinas Lagoon** is separated from the bay by a narrow strip of sandy beach that is cut by a narrow shifting channel. The lagoon is shoal

and entered only by small boats with local knowledge. The entrance has a depth of less than 3 feet.

**Rocky Point** is 100 feet high and shelving. Numerous detached rocks are within 200 yards of the high and precipitous cliffs on the southern side of the point.

The 6-mile coast between Rocky Point and Point Bonita is very rugged and broken. The cliffs, which are seaward ends of spurs from Mount Tamalpais, rise to heights of over 500 feet and are cut by deep narrow valleys stretching inland.

**Point Bonita**, on the north side of the entrance to Golden Gate, is a sharp black cliff 100 feet high, increasing to 300 feet on its seaward face, 0.3 mile northward. From northwestward it shows as three heads. **Point Bonita Light** ( $37^{\circ}48.9' \text{ N.}$ ,  $122^{\circ}31.7' \text{ W.}$ ), 124 feet above the water, is shown from a 33-foot white tower on the southern head. A radiobeacon and fog signal are at the station. In summer the cliffs are white with bird droppings, but the first heavy rain restores them to their natural black color. There are a few detached rocks surrounding the point, but these do not extend over 200 yards offshore.

**Bonita Cove**, eastward of Point Bonita, is occasionally used as an anchorage by small vessels. The anchorage is close under Point Bonita in about 36 feet.

**Mount Tamalpais**, 7 miles northward of Point Bonita, is visible for over 60 miles in clear weather. From southward and westward it shows three summits of which the westernmost is the highest and the easternmost with a lookout tower is the sharpest. The mountain is covered with bushes and scrub trees, giving it a dark appearance which contrasts strongly with the surrounding hills, especially in summer when the hills assume a light reddish color.

**San Francisco Lightship** ( $37^{\circ}45.0' \text{ N.}$ ,  $122^{\circ}41.5' \text{ W.}$ ), with red hull and the name SAN FRANCISCO in large white letters on the sides, is 9 miles west-southwestward of San Francisco Bay entrance; the light is 55 feet above the water. The lightship has a fog signal and a radiobeacon. The code flag signal and radio call is NNCS. **Storm warning displays** are made during the daytime.

**San Francisco Bar**, with depths less than 36 feet, extends in a semicircular shape from 3 miles south of Point Lobos to within 0.5 mile of the shore at Point Bonita; the extreme outer part is about 5 miles west-southwestward of San Francisco Bay entrance. **Potatopatch Shoal**, on the northern part of the bar, has depths reported to be less than 23 feet. The name is said to have originated from the fact that schooners from Bodega Bay frequently lost their deck load of potatoes while crossing the shoal. The southern part of the bar has depths of 32 to 36 feet.

**Golden Gate**, the passage between the ocean and San Francisco Bay, is 2 miles wide at the western end between Point Bonita and Point Lobos, but the channel is reduced in width to 1.5 miles by Mile Rocks and to less than 0.7 mile by the Golden Gate Bridge pier. Depths in the passage vary from 108 feet to over 300 feet.

**Mile Rocks**, 700 yards northwestward of the sharp projecting point off **Lands End** on the northern face of Point Lobos, are two small 20-foot-high black rocks about

★ (5237) **CALIFORNIA—San Francisco Bay approach—Buoy changed.**—San Francisco Bar Channel Lighted Bell Buoy 1 ( $37^{\circ}46.2'$  N.,  $122^{\circ}37.9'$  W. approx.) has been changed to show an *equal interval white* light every 6 seconds of 170 candlepower.

(See N.M. 29(4673) 1966.)

(N.M. 33/66.)

(L.N.M. 44, C.G., San Francisco, July 1966.)

C. & G.S. Charts 5532, 5072, 5072SC, 5402, 5502.

C.G. Light List, Vol. III, 1965, No. 624.

C. & G.S. Coast Pilot 7, 1963, page 124.

★ (5094) **CALIFORNIA—San Francisco Bay approach—Buoys changed.**—1. San Francisco Bar Channel Lighted Whistle Buoy 2 (LL 625) ( $37^{\circ}45.8'$  N.,  $122^{\circ}37.7'$  W. approx.) has been changed to show an *equal interval red* light every 6 seconds.

2. Drakes Bay Lighted Whistle Buoy 1 (LL 632) ( $37^{\circ}59.0'$  N.,  $122^{\circ}57.3'$  W. approx.) has been changed to show a *flashing white* light every 6 seconds, of 140 candlepower.

3. Bonita Channel Lighted Whistle Buoy 4 (LL 637) ( $37^{\circ}50.0'$  N.,  $122^{\circ}34.0'$  W. approx.) has been changed to show a *flashing white* light every 6 seconds, of 140 candlepower.

(See N.M. 29(4673) 1966.)

(N.M. 32/66.)

(L.N.M. 42, C.G., San Francisco, July 18, 1966.)

C. & G.S. Charts, 5532, 165SC, 5599, 5072, 5072SC, 5402, 5502, 5021, 5020.

C.G. Light List, Vol. III, 1965 (see above).

C. & G.S. Coast Pilot 7, 1963, page 124.

★ (2645) **CALIFORNIA—San Francisco Bay approach—Light changed.**—Mile Rock Light, previously temporarily discontinued to facilitate reconstruction, has been reestablished and converted to automatic operation. Resident personnel are no longer in attendance. The light has been changed to show *flashing white* every 5 seconds of 30,000 candlepower, luminous range 15 miles (geographic range 12 miles), exhibited 49 feet above the water from a black and white tower. The fog signal has been changed to a diaphragm horn sounding 1 blast every 30 seconds, blast 3 seconds. The temporary fog signal has been discontinued.

Approx. position:  $37^{\circ}47.6'$  N.,  $122^{\circ}30.6'$  W.

Note.—The light tower will be painted white and will be floodlighted in the near future.

(Supersedes N.M. 5(677) 1966.)

(N.M. 17/66.)

(L.N.M. 20, C.G., San Francisco, April 1, 1966.)

C. & G.S. Charts 5532, 5502, 5402, 5072, 5020, 5021, 5002, 5052, 165SC, 5072SC.

C.G. Light List, Vol. III, 1965, Nos. 48/640.

C. & G.S. Coast Pilot 7, 1963, page 125.

★ (677) CALIFORNIA—San Francisco Bay approach—Light to be changed.—About April 1, 1966, Mile Rocks Light, previously temporarily discontinued to facilitate reconstruction, will be converted to automatic operation and resident personnel will no longer be in attendance. The light will be changed to show *flashing white* every 5 seconds, of 30,000 candlepower, luminous range 15 miles (geographic range 12 miles) exhibited 49 feet above the water atop a floodlighted white tower. The fog signal will be changed to a *diaphragm horn sounding 1 blast* every 30 seconds, blast 3 seconds.

Approx. position: 37°47.6' N., 122°30.6' W.

(See N.M. 36 (5209), 37 (5356) 1965.)

(N.M. 5/66.)

(L.N.M. 3, C.G., San Francisco, Jan. 12, 1966.)

C. & G.S. Charts 5532, 5502, 5402, 5072, 5020, 5021, 5002, 5052, 165SC, 5072SC.

C.G. Light List, Vol. III, 1965, Nos. 48/640.

C. & G.S. Coast Pilot 7, 1963, page 125.

★ (676) CALIFORNIA—San Francisco Bay approach—Buoy changed.—1. San Francisco Bar Channel Lighted Whistle Buoy 12, previously temporarily established about 2,500 yards 254° from Mile Rocks Light (37°47.6' N., 122°30.6' W. approx.), has been discontinued.

2. San Francisco Bar Channel Lighted Bell Buoy 12, painted red and showing *flashing white* every 4 seconds, of 120 candlepower, has been temporarily established in 90 feet of water about 2,250 yards 254° from Mile Rocks Light.

(See N.M. 37 (5356) 1965.)

(Supersedes N.M. 4 (504) 1966.)

(N.M. 5/66.)

(L.M.N. 3, C.G., San Francisco, Jan. 12, 1965.)

C. & G.S. Charts 5532, 5072, 5072SC, 165SC, 5402, 5502.

C. & G.S. Coast Pilot 7, 1963, page 125.

100 feet apart. **Mile Rocks Light** ( $37^{\circ}47.6' \text{ N.}$ ,  $122^{\circ}30.6' \text{ W.}$ ), 78 feet above the water, is shown from a white cylindrical tower on dwelling on the outer and larger rock; a fog signal is at the station.

Passage between Mile Rocks and Point Lobos should not be attempted because of the covered and visible rocks extending over 300 yards from shore and the rocks covered 6 and 14 feet southward of Mile Rocks Light.

The southern shore of the Golden Gate extends in a gentle curve eastward for 2 miles to Fort Point, forming a shallow bight called **South Bay**. The cliffs rise abruptly from narrow beaches, except near the middle of the bight where a valley terminates in a sand beach 0.3 mile long. Sailing craft are sometimes obliged to anchor here when becalmed, or when meeting an ebb current, to avoid drifting onto Mile Rocks, but the anchorage is uncomfortable and it is difficult to get underway from it.

**Fort Point** projects slightly from the high cliffs, and is marked by a square red brick fort with a stone seawall in front. The fort is obscured by the southern end of the Golden Gate Bridge. A Coast Guard station is eastward of the point.

The northern shore of the Golden Gate is bold and rugged, with reddish cliffs rising abruptly from the water's edge to over 600 feet.

**Point Diablo**, 1.4 miles eastward of Point Bonita, rises abruptly from a 0.1-mile sharp projection to a height of over 200 feet with deep water on all sides. A light is shown from a white house on the end of the point; a fog signal is at the light.

The mile-long shore between Point Diablo and Lime Point forms a shallow bight with steep cliffs. Near the middle of the bight the cliffs are cut by a narrow valley which ends in a low beach at the shore.

**Lime Point**, 2.5 miles eastward of Point Bonita, is high and precipitous, and rises abruptly to a height of nearly 500 feet in less than 0.3 mile. A light is shown from a white brick building at the end of the point; a fog signal is at the light.

**Golden Gate Bridge**, crossing the Golden Gate from Fort Point to Lime Point, has a clearance of 232 feet at the center of the 4,028-foot wide channel span between the 740-foot high supporting towers; the least clearance is 211 feet. The center of the span is marked by a fixed green light and a fog signal; a light and fog signal are on the south pier. Aero obstruction lights mark the tops of the bridge towers. Do not rely on radiobeacon bearings when within 0.5 mile of the bridge.

**Boundary lines of inland waters.**—The line established for San Francisco Harbor is described in **82.133**, Chapter 2.

**Channels.**—The principal approach to San Francisco Bay is through the buoyed **Main Ship Channel** over the bar on bearing  $070^{\circ}$  toward Alcatraz Light. The project depth is 50 feet in the 2,000-foot wide channel.

From southward, some coasters and fishing vessels drawing not more than 15 feet use buoyed **South Channel**, parallel to and 0.7 mile off the peninsula shore.

From northward, coasters and some other vessels with local knowledge drawing not over 18 feet use buoyed **Bonita Channel**, between the eastern end of Potatopatch Shoal and the shore northward of Point Bonita. The channel is narrowed to 0.2 mile by several rocky patches including **Sears Rock**, covered 19 feet, 1.2 miles northwestward of Point Bonita. The southern portion of the channel is marked by a lighted range bearing  $137^{\circ}$ ; Mile Rocks Light is the front, and a light shown from a white building on the bluff is the rear; the rear light is visible only on the range line.

**Caution.**—Vessels departing San Francisco Bay through Bonita Channel on the ebb current must use extreme caution when crossing the tide rip off Point Bonita. When the bow passes the rip the stern is thrown to port and, unless promptly met, the vessel will head straight for the rocks off the point. Vessels favoring Potatopatch Shoal too closely have reported a set toward it.

Neither South Channel nor Bonita Channel should be used by large vessels. Strangers wishing to cross the bar in thick weather should either wait for clearing or take a pilot.

**Currents.**—The currents at the entrance to San Francisco Bay are variable, uncertain, and at times attain considerable velocity. Immediately outside the bar there is a slight current to the northward and westward, known as the **Coast Eddy Current**. The currents at San Francisco Lightship are described in some detail in the Tidal Current Tables. The currents most affecting navigation in this vicinity are the tidal currents. Across the bar the flood current converges toward the entrance and is felt sooner around Point Lobos and Point Bonita than across the Main Ship Channel. The ebb current spreads from the entrance over the bar, but the main strength is west-southwestward, parallel with the southern edge of the Potatopatch Shoal, and through the Main Ship Channel. In the Bonita Channel the ebb current is weak and of short duration, the flood current beginning so early that during the last half of the ebb in the Golden Gate the current in Bonita Channel forms an eddy flowing south-eastward around Point Bonita into Bonita Cove.

In the vicinity of Mile Rocks the currents attain considerable velocity within a few minutes after slack on both flood and ebb.

In the Golden Gate the flood current sets straight in, with a slight tendency toward the north shore, with heavy overfalls both at Lime Point and Fort Point when strong. It causes an eddy in the bight between Point Lobos and Fort Point. The ebb current has been observed to have a velocity of more than 6.5 knots between Lime Point and Fort Point, and it sets from inside the bay on the north side toward the latter point. Like the flood current, it causes an eddy in the bight between Fort Point and Point Lobos, and a heavy rip and overfall reaching about 0.25 mile southward from Point Bonita. At the Golden Gate Bridge there are large current eddies near the foundation piers which cause ships to sheer off course.

Daily current predictions are given in the Tidal Current Tables. Hourly directions and velocities of the tidal

current throughout the bay are shown on the Tidal Current Charts, San Francisco Bay.

**Weather.**—In common with the more northerly section of the Pacific coast of the United States, the San Francisco Bay entrance experiences fog more frequently during the summer than during the other seasons. Fog is generally brought in from seaward by westerly winds about sundown, and ordinarily continues until about noon of the following day. In winter, morning or tule fogs frequently occur, these forming over the lowlands of the central valley and over the bay.

During summer the fog often drifts in only as far as the Golden Gate, partially obscuring the bridge and shoreline, while the remainder of the bay is comparatively clear. Sausalito and Richardson Bay have much less fog than the Golden Gate.

Westerly winds prevail in this section of the Pacific coast throughout the greater part of the year; northerly winds are most prevalent during December and January. Southerly gales occur in the winter. The wind normally attains its greatest velocity about 4:30 p.m. and its least velocity about 8 a.m.

During certain times of the year, especially in May and June, the northwesterly winds attain high velocity. This is also true regarding the north-northeasterly winds of November, December, and occasionally January. In the winter the most prevalent high wind is from the southeast and is followed by a southwesterly wind.

The San Francisco Bay region has comparatively few storms. Except in the winter, very few low-pressure areas move from the ocean across California; nearly all the storms that enter the United States from the west pass far northward of central California.

**Routes.**—The routes for approaching San Francisco Bay are described in Chapter 3. Having made San Francisco Lightship, pass southward of it and steer a  $070^{\circ}$  course on the south side of the buoyed channel through the bar until Mile Rocks Light is abeam to starboard, then steer  $057^{\circ}$  until beneath Golden Gate Bridge. The recommended route for outbound vessels is to pass northward of the center of Golden Gate Bridge making good a  $250^{\circ}$  course until abeam of Point Diablo Light, thence a course of  $243^{\circ}$  to the bar channel, and thence on the north side of the bar channel to sea.

From the Golden Gate Bridge, vessels bound for San Pablo Bay and Carquinez Strait may set a course to pass 0.5 mile off Point Blunt at the southeast end of Angel Island, thence through the buoyed channels to a point 0.6 mile west of East Brother Island Light off Point San Pablo, thence a course to pass close aboard the fairway buoy in San Pablo Bay, and thence through the buoyed channel to Carquinez Strait.

**Pilotage.**—Pilotage in and out of San Francisco Bay is compulsory for all foreign vessels and United States vessels under register. The San Francisco Bar Pilots keep boats on station 24 hours a day near the lightship or, in foul weather, seaward of it. If prior arrangements have

not been made with the pilots association offices on Pier 7, masters may give these signals upon approaching the lightship:

**Clear visibility:** by day, hoist code flag "G"; by night, four flashes on the signal lamp. **Limited visibility:** four long blasts.

All vessels are boarded from a small launch; masters are requested to provide the standard ladder and assist by making a lee for boarding and departing.

River pilots are engaged by prior arrangement with the ship's agent or master, or by inquiry through the bar pilots.

**Chart 5535.**—San Francisco, one of America's great cities, occupies the northerly portion of the peninsula forming the southerly entrance to the bay. The 3-mile north shore of San Francisco from the Golden Gate Bridge to the main waterfront includes the **Presidio**, a United States military reservation; several yacht harbors; Government buildings and piers on Black Point; Aquatic Park; and Fisherman's Wharf. Shoals with depths less than 10 feet extend up to 0.2 mile from the shore.

A 700-yard wide degaussing range, 1.9 miles eastward of the Golden Gate Bridge and 800 yards offshore, is marked by lighted bell buoys. Vessels are cautioned not to foul the submarine cables that extend southward from the range to the observation house on the Marina seawall.

**Alcatraz Island**, 2.5 miles eastward of the Golden Gate Bridge, is one of the leading marks in entering San Francisco Bay. The small island is 148 feet high and has many buildings on it. **Alcatraz Light** ( $37^{\circ}49.6' N.$ ,  $122^{\circ}25.3' W.$ ), 214 feet above the water, is shown from a gray tower on the highest part of the island. Fog signals are on the extreme northwestern and southeastern ends of the island. Unless authorized, vessels are prohibited from navigating within 200 yards of the shoreline of Alcatraz Island; regulations are given in 207.640, Chapter 2.

A rock awash, marked on its westerly side by a bell buoy, is 125 yards westward of the northwestern end of Alcatraz Island.

**Yerba Buena Island**, 345 feet high and 2.5 miles south-eastward of Alcatraz Island, is of small extent, irregular in shape, and is covered with a scrubby growth of trees. On its summit is a lookout tower used by the Navy. The wharves of the Naval Training Station and Corps of Engineers are in the small cove on the eastern face of the island. A Coast Guard buoy depot is on the southeast end of the island.

**Yerba Buena Island Light** ( $37^{\circ}48.4' N.$ ,  $122^{\circ}21.7' W.$ ), 95 feet above the water, is shown from a white octagonal tower at the extreme southeastern point of the island; a fog signal is at the light. The buildings are white and part of the bluff is whitewashed to make the station more discernible.

**Treasure Island** is a low filled area northward of and connected by a causeway to Yerba Buena Island. Built originally for the San Francisco International Exposition of 1939-40, it is now used by the Navy. Some of the piers

★ (5095) **CALIFORNIA—San Francisco Bay—Aids changed.**—1. Treasure Island North End Buoy 2A (37°50.0' N., 122°22.7' W. (approx.) has been renumbered 4.

2. Treasure Island North End Light (LL 792) (37°50.0' N., 122°22.3' W. approx.) has been renamed *Treasure Island North End Light 6* (LL 663.11), changed to show *flashing white* every 6 seconds of 1,600 candlepower and equipped with a red triangular daymark with a red reflective border.

3. Treasure Island East Side North Wharf Light (LL 791) has been renamed *Treasure Island North End Light 8* (LL 663.21), changed to show *flashing red* every 4 seconds of 250 candlepower and equipped with a red triangular daymark with a red reflective border.

(Supersedes N.M. 27 (4316) 1966.)

(N.M. 32/66.)

(L.N.M. 42, C.G., San Francisco, July 18, 1966.)

C. & G.S. Charts 5535, 5532, 165SC.

C.G. Light List, Vol. III, 1965 (see above) and page 46.

C. & G.S. Coast Pilot 7, 1963, page 126.

I

2170

★ (5990) **CALIFORNIA—San Francisco Bay—Trans-Bay Tube—Information.**—Construction is in progress on the Bay Area Rapid Transit District (BARTD) Trans-Bay Tube between San Francisco and Oakland as follows:

(a) Diking and filling an area off the Oakland Mole.

(See N.M. 21 (3343) 1966.)

(b) Removal of ferry slips and sinking of a caisson ventilation structure off the San Francisco Ferry building; 37°47'45" N., 122°23'26" W.

(c) Erection of a lighted survey tower along the tube alignment in (approx.) 37°48'20" N., 122°21'37" W.

(d) Dredging a trench across the bay within an area about 330 yards wide **bounded on the north** by a line extending from a position on shore in (approx.) 37°47'49" N., 122°23'31" W. in a 062° direction for about 1,750 yards; thence in a gentle northeasterly curve to a position in (approx.) 37°48'18" N., 122°22'15" W.; thence about 3,530 yards 078°; thence in a gentle easterly curve to a position in (approx.) 37°48'40" N., 122°19'56" W.; thence in a 097° direction to Oakland Mole.

(e) Sinking 57 tube sections into the trench and backfilling over the tube.

**Notes.**—1. The dredging area described in (d) will be charted as dashed lines and the note "Tunnel under construction" charted within.

2. The project is expected to be completed in about three years.

(See N.M. 35 (5328) 1966.)

(N.M. 38/66.)

(L.N.M. 56, C.G., San Francisco, Aug. 23, 1966.)

C. & G.S. Charts 5535, 5532, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 127.

★ (6376) **CALIFORNIA**—San Francisco Bay—Anita Rock—Light established—Buoys discontinued.—1. Anita Rock Light showing *quick flashing white*, of 500 candlepower, has been established about 1,330 yards 075° from the cupola (37°48'20'' N., 122°27'57'' W. approx.). The light is exhibited 20 feet above the water from a concrete structure. A *bell* sounding *1 stroke* every *15 seconds* has been established at the light.

2. Anita Rock Lighted Bell Buoy 1 and Anita Rock Buoy 2 have been discontinued.

(Supersedes N.M. 38 (4940) 1964.)

(N.M. 48/64.)

(L.N.M. 58, C.G., San Francisco, Nov. 9, 1964.)

C. & G.S. Charts 5535, 5532, 165SC.

C.G. Light List, Vol. III, 1964, No. 648 and page 45.

C. & G.S. Coast Pilot 7, 1963, page 127.

★ (3726) CALIFORNIA—San Francisco Bay—Treasure Island—Anchorage  
~~area amended.~~—Section 202.224 is hereby amended with respect to paragraph  
(a) revising subparagraph (7) (i) and (ii) to extend Anchorage 7 (Temporary)  
in San Francisco Bay, Calif., as follows:

§ 202.224 San Francisco Bay, San Pablo Bay, Carquinez Strait, Suisun  
Bay, San Joaquin River, and connecting waters, Calif.

(a) *San Francisco Bay.* \* \* \*

(7) *Anchorage 7 (Temporary).* (i) That portion of San Francisco Bay  
bounded by the westerly shore of Treasure Island and the following lines:  
Beginning at the most westerly shore of Treasure Island at a point bearing  
89°, 4,135 yards from Alcatraz Light; thence to points which are the following  
bearings and distances from Alcatraz Light: 73°30', 3,100 yards; 65°00', 2,040  
yards; 117°40', 2,087 yards; 122°30', 3,730 yards; 111°00', 4,167 yards; 109°30',  
3,833 yards; 98°30', 4,583 yards.

(ii) That portion of this anchorage lying westerly of a line having a bearing  
of 311°30' from Pier E of the San Francisco-Oakland Bay Bridge is reserved  
for the use of vessels while undergoing examination by quarantine, customs,  
immigration, Coast Guard, and other governmental authorities. Upon com-  
pletion of these examinations, vessels shall promptly move out of this portion of  
the anchorage.

\* \* \* \* \*

(N.M. 29/64.)

(Federal Register, June 24, 1964.)

C. & G.S. Charts 5535, 5532, 165SC.

C. & G.S. Coast Pilot 7, 1963, pages 23, 127.

around the island have lights and fog signals. A shoal covered by 15 feet, off the northerly end of the island, is marked by a buoy.

When the prevailing westerly winds are blowing, deep-draft vessels proceeding to the berthing area on the eastern side of the island may have extreme difficulty making the 90° turn from the narrow channel between the 30-foot curves southeastward of Yerba Buena Island.

A measured course, on the west side of Treasure Island, is 6,102 feet long on bearing 330°44' and marked by white poles with small white targets. The southern range is on the northwestern extremity of Yerba Buena Island and the northern range is near the northwestern end of Treasure Island.

Naval restricted areas are off the north end of Treasure Island and between this island and Yerba Buena Island; limits and regulations are given in 207.640, Chapter 2.

San Francisco-Oakland Bridge crosses the bay from Rincon Point in San Francisco to Yerba Buena Island, thence to Oakland. The clearance between piers B and D is 217 feet.

Prominent features.—The skyline of the city of San Francisco is, of course, historically unmistakable, with several dominant landmarks: the old Ferry Building at the foot of Market Street, the tower and outside elevator shaft of the Fairmont Hotel, the "Top of the Mark" Hopkins Hotel, the Coit Tower on Telegraph Hill, and the Bay Bridges with their freeway elevated approaches.

The Ferry Building, once the terminal of many ferry-boats, now houses the Port of San Francisco and its San Francisco Port Authority offices, the offices of the Marine Exchange, Inc., and the many offices and exhibits of the World Trade Center. Located as it is in the center part of the Embarcadero, the Ferry Building with its 240-foot clock tower, illuminated at night, remains an outstanding landmark on the San Francisco side of the harbor.

Channels.—Depths of 45 feet or more are available from the Golden Gate Bridge to most of the anchorages; depths ranging from 29 to 40 feet can be taken to most of the San Francisco piers.

Anchorage.—General, naval, and explosives anchorage areas have been established in San Francisco Bay; limits and regulations are given in 202.224, Chapter 2. The western part of Anchorage 7, westward of Treasure Island, is used by vessels undergoing examination by quarantine, customs, and immigration officials.

Dangers.—Anita Rock, 1.1 miles eastward of Fort Point and 300 yards from shore, uncovers; it is marked by buoys.

There are several rocky patches with depths of 33 to 35 feet westward and northwestward of Alcatraz Island that must be avoided by deep-draft vessels.

Heavy tide rips occur in the vicinity of Alcatraz Island.

Tides.—The mean range of tide at San Francisco is 4 feet. The range between mean lower low water and mean higher high water is 5.7 feet. A range of about 9 feet may occur at the time of maximum tides. Daily tide predictions for San Francisco Bay are given in the Tide Tables.

Currents.—Inside the Golden Gate the flood current sets into all parts of the bay and causes swirls from the Golden Gate as far eastward as Alcatraz and Angel Islands and through Raccoon Strait, northward of Angel Island. The ebb current, inside the Golden Gate, is felt first along the southern shore. In the Golden Gate, the average duration of the ebb stream is somewhat greater than that of the flood. In the Sacramento and San Joaquin Rivers there is a weak flood current during periods of freshets.

At the San Francisco-Oakland Bridge there are large current eddies near the foundation piers which cause ships to sheer off course.

The flow of tidal currents throughout San Francisco Bay is clearly depicted on the Tidal Current Charts, San Francisco Bay. The charts, which may be used for any year, are referred to the times of the maximum flood and ebb currents at San Francisco Bay entrance (Golden Gate). Daily predictions are given in the Tidal Current tables.

See Appendix for storm warning displays.

Towage.—Tugboats are available in sufficient quantity for the traffic in the greater harbor.

Quarantine service is performed on a 24-hour basis, the off-hours by special arrangement in advance. Quarantine is enforced in accordance with the regulations of the U.S. Public Health Service. There is a Public Health Service Hospital in the city.

Customs.—San Francisco is the headquarters of the customs collection district and a port of entry; marine documents are issued.

Immigration officials are stationed at San Francisco.

Harbor regulations.—The Port of San Francisco is under the control of the State of California, and its management is vested in the San Francisco Port Authority, in direct charge of the port director of that body. The office of the Chief Wharfinger is on the Embarcadero at the foot of Pier 1.

The harbor regulations are prescribed by the San Francisco Port Authority and enforced by the Chief Wharfinger.

Wharves.—The Port of San Francisco maintains extensive terminals with belt-line connections and modern cargo-handling facilities. Depths of 20 to more than 30 feet are alongside most of the piers. A complete description of wharves and piers at San Francisco may be obtained from the Port Series, a Corps of Engineers publication.

Supplies.—Fuel oils, gasoline, marine hardware, and groceries may be had in any desired quantity. Fuel oil is usually delivered by barge. Water can be obtained on the wharves or by waterboat.

Repairs.—San Francisco, Oakland, and Alameda have facilities for making repairs to vessels and machinery of all kinds and sizes. The largest commercial floating drydock in San Francisco has a length of 584 feet at the keel blocks, clear width of 100 feet, depth of 28 feet over the blocks, and lifting capacity of 22,000 tons. There are several smaller drydocks on the San Francisco side, and

★ (6650) CALIFORNIA—San Francisco Bay—Chart amendments.—Aerial photographs by the Coast and Geodetic Survey and reports by the Corps of Engineers show the following topographic changes in San Francisco Bay:

(a) An area of fill, about 50 yards wide, south of Berkeley, beginning at a point on shore in  $37^{\circ}50'14''$  N.,  $122^{\circ}18'18''$  W. and extending into the bay about 440 yards  $270^{\circ}$ .

(b) An area being filled at Bay Farm Island, beginning at a point on shore in  $37^{\circ}44'26''$  N.,  $122^{\circ}15'03''$  W.; thence westerly to a point in  $37^{\circ}44'28''$  N.,  $122^{\circ}15'34''$  W.; thence southeasterly to a point in  $37^{\circ}43'36.5''$  N.,  $122^{\circ}14'41''$  W.; thence to a point on shore in  $37^{\circ}43'13''$  N.,  $122^{\circ}14'06''$  W.

**Note.**—A line of piling exists, beginning in  $37^{\circ}44'20.5''$  N.,  $122^{\circ}14'32''$  W. and extending about 2,190 yards  $090^{\circ}$  to a junction with the fill area above.

(c) A pier under construction, south of Potrero Pt. beginning at a point on shore in  $37^{\circ}45'07.5''$  N.,  $122^{\circ}22'43''$  W. and extending into the bay about 350 yards  $084^{\circ}$ , and thence 440 yards  $175^{\circ}$ , thence 1,025 yards  $265^{\circ}$  to shore.

(C. & G.S. Dwg. No. 38.)

(N.M. 46/65.)

C. & G.S. Charts 5535, 5532, 5531, 165SC.

C. & G.S. Coast Pilot 7, 1963, pages 128, 129.

★ (2994) UNITED STATES—Pacific Coast—Bridge and overhead power cable clearances:

Bridge or cable position	Type of bridge or cable	Horizontal clearance (feet)	Vertical clearance M.H.W. (feet)	C. & G.S. charts	C. & G.S. Coast Pilot(s)	
					No.	Page
a 37°30'28" N., 122°05'05.5" W.	Power	-----	*100	5531, 165SC	7	128
b 37°35'00" N., 122°15'00" W.	Under construction.	-----	-----	5531, 165SC	7	128
c 37°58'10.5" N., 122°31'05" W.	Under construction.	-----	-----	5532, 5533, 165SC	7	131
d 46°14'00" N., 118°59'32.5" W.	Power and telephone.	-----	43 (reported)	682SC	7	175
e 14°16'27" S., 170°40'58" W.	Aerial tramway.	-----	152 (reported)	4190	-----	-----

\*Authorized.

a Cable extends on a bearing of 096°/276° through the above position; cable crosses Newark Slough and Plummer Creek.

b Bridge will replace existing San Mateo Vertical Lift Bridge.

c Bridge extends on a bearing of 003°/183° through the above position.

d Minimum clearance for charted cables crossing channel on northwest side of Strawberry Island.

e Clearances revised; 200 feet was reported available under cable crossing Pago Pago Harbor when cable car is at south terminal. (Terminal positions published in N.M. 46(6147) 1964.)

(N.M. 21/65.)

(C. & G.S. CL-75, 267, 430, 460, 487/65.)

C. & G.S. Charts (see above).

H.O. Pub. 80, 1952, page 167.

C. & G.S. Coast Pilots (see above).

★ (6345) **CALIFORNIA—San Francisco Bay—Light temporarily changed.**—San Francisco Bay South Channel Light 8 has been temporarily changed to show *flashing red* every  $\frac{1}{4}$  seconds, without other change.

Approx. position :  $37^{\circ}36'17''$  N.,  $122^{\circ}17'21''$  W.

(See N.M. 33 (4727) 1965.)

(N.M. 44/65.)

(L.N.M. 54, C.G., San Francisco, Oct. 5, 1965.)

C. & G.S. Charts 5531, 165SC.

C.G. Light List, Vol. III, 1965, No. 761.

C. & G.S. Coast Pilot 7, 1963, page 128.

★ (6346) **CALIFORNIA—San Francisco Bay—San Leandro Marina—Lights established.**—The following range lights have been established as indicated to mark the entrance to San Leandro Marina :

(a) San Leandro Marina Range Front Light (LL 742.11) showing *quick flashing green* of 5,000 candlepower, about 2,270 yards  $173^{\circ}30'$  from the stack ( $37^{\circ}42'51''$  N.,  $122^{\circ}11'33''$  W. approx.). The light is exhibited 18 feet above the water from a black post.

(b) San Leandro Marina Range Rear Light (LL 742.12) showing *fixed green* of 13,000 candlepower, about 728 yards  $046^{\circ}30'$  from the front light. **The light** is exhibited 37 feet above the water from a black post.

**Note.**—The lights are privately maintained by the City of San Leandro.

(N.M. 44/65.)

(L.N.M. 54, C.G., San Francisco, Oct. 5, 1965.)

C. & G.S. Charts 5531, 165SC.

C.G. Light List, Vol. III, 1965, (see above).

C. & G.S. Coast Pilot 7, 1963, page 128.

★ (3468) **CALIFORNIA**—San Francisco Bay—Redwood City Harbor—Chart amendment.—The accompanying reproduction of a portion of C. & G.S. Chart 5531 shows recent improvements, changes in hydrography by the Corps of Engineers, and revision of aids to navigation by the U.S. Coast Guard in the **improved** channel in Redwood Creek.

Approx. position: 37°32' N., 122°12' W.

(N.M. **24/65.**)

(C. & G.S. CL-1218/64, 103/65; BP-67170, 67567-68.)

C. & G.S. Chart 5531 (Inset).

C. & G.S. Coast Pilot 7, 1963, page 128.

several marine railways and floating docks on the Oakland side.

**Communications.**—San Francisco is the terminus of several transpacific steamship lines and the port of call for numerous lines of coastal and intercoastal vessels. It is served by four transcontinental railroads and many airlines.

**Special signals** in use at San Francisco by International Code Flag and whistle include the following: Quarantine, letter **Q**, 1 long 1 short; Police, Ensign in rigging, 5 short; Fire, no flag, standard signal of 5 prolonged blasts for ships afire in port; Waterboat, letter **W**, no whistle; Customs-Barge office, no flag, 3 short 1 long; Immigration, no flag, 1 short 1 long 1 short; Marine Dept., S.F.C. of C. letter **M**, 1 short 1 long; Stockton pilots, letter **U**, 1 long 3 short; Towboat companies: Bay Cities, letter **B**, 1 long 3 short; Crowley, letter **C**, 4 short 1 long; Harbor, letter **H**, 2 long 2 short; Smith-Rice, letter **S**, 3 short; Red Stack, letter **T**, 1 long 3 short 1 long.

The **Marine Exchange** maintains a modern ship lookout and reporting station at the end of Pier 45, just east of Aquatic Park. Radar and UHF contact on the Harbor Channel 12 (KMG 389, 156.6 mc) keep 24-hour watch on ship movements.

**China Basin**, 1.1 miles southward of the Ferry Building, is the site of a banana terminal with rapid-handling machinery. **Channel Street**, a canal extending 0.5 mile southwesterly from China Basin, has depths of 13 to 24 feet. The drawbridges across the canal have a least clearance of 1 foot.

**Islais Creek**, 2.9 miles southward of the Ferry Building, has depths of 12 to 31 feet. A highway bridge across the creek has a bascule span with a clearance of 0 feet.

**Small-boat facilities.**—San Francisco Municipal Yacht Harbor, 1.8 miles eastward of the Golden Gate Bridge, has depths of 8 to 12 feet to the berths. A prominent 30-foot stone tower is 0.2 mile westward of the entrance.

**Aquatic Park**, 2.6 miles eastward of the Golden Gate Bridge, is a pleasure resort with a curved recreation pier. Depths of 9 to 16 feet are inside the basin.

**Fisherman's Wharf** is 2.8 miles eastward of the Golden Gate Bridge. Depths of 15 feet or more are available to the wharves. Gasoline, diesel oil, marine hardware, and groceries are available. There is a small marine railway; hull and engine repairs can be made.

**Central Basin**, 1.9 miles southward of the Ferry Building, has depths of 10 to 22 feet. Gasoline, diesel oil, and water are available. There is a 70-foot marine railway and a 2½-ton portable lift; hull and engine repairs can be made.

On the north side of **Hunters Point**, 3.8 miles southward of the Ferry Building, there are facilities for small boats. The largest marine railway can haul out boats up to 150 feet in length for hull and engine repairs; the largest lift is 7½ tons.

**Chart 5531.**—Southward of San Francisco, **Point Avisadero**, which is the eastern extremity of Hunters

Point, **Sierra Point**, **Point San Bruno**, and **Coyote Point**, all on the western shore of the bay, are prominent natural features. The San Francisco Naval Shipyard is at **Hunters Point**, where a **naval restricted area** is offshore; limits and regulations are given in **207.640**, Chapter 2. The Bayshore Freeway extends southward on a filled area from the vicinity of **Candlestick Point**, and cuts back inland at **Sierra Point**. **Coyote Point (Point San Mateo)** is covered by a heavy growth of trees and is raised as an island. A small-craft basin is here.

A **seaplane restricted area** extends offshore from Point San Bruno to off Coyote Point; limits and regulations are given in **207.640**, Chapter 2.

The **San Mateo Bridge** crossing the lower part of San Francisco Bay near **San Mateo** has a vertical lift with clearances of 35 feet down and 135 feet up. A fog signal is on the westerly pier of the lift span. A power cable with a clearance of 160 feet at the lift span crosses the bay just southward of the bridge.

**Redwood Creek**, 4 miles southeastward of San Mateo Bridge, is entered through a marked channel that leads to **Port of Redwood City**, 2.5 miles above the mouth. Traffic in the waterway includes petroleum products, bulk cement, gypsum rock, and salt. The project depth of 30 feet is maintained. A power cable across the waterway has a clearance of 155 feet. A prominent cement plant is at the junction with **Westpoint Slough**, just north of the port.

Most of the wharves and facilities are managed by the Port of Redwood City. The port authority maintains 30 feet alongside the principal wharves. Diesel oil and gasoline are pumped, and water, ice, some marine supplies, and groceries are available. **Redwood City** is 2 miles southward of the port facilities.

Depths of 8 feet or more can be taken to the small-boat facilities south of the port. Gasoline, diesel oil, water, and marine hardware are available. A marine railway can haul out boats up to 60 feet in length. There is a 20-ton portable lift; hull and engine repairs can be made.

**Ravenswood Point** and **Dumbarton Point** are at the head of the bay and the mouth of Coyote Creek. Two bridges and an aqueduct cross the bay at this point. The **Dumbarton Bridge** is a lift span with clearances of 9 feet down and 135 feet up. A fog signal is on the western pier. About 1,100 yards southeastward of the bridge are two flumes, with a clear opening between them of about 900 yards, which supply the city of San Francisco with water. The eastern flume tunnels the entire way and is marked by a large sign showing the word **PIPELINE**. The western flume is carried on a trestle to a concrete house at the edge of the channel where it tunnels. The railroad bridge, just southward, has a swing span with a clearance of 13 feet. A fog bell is on the bridgekeeper's house.

**Coyote Creek** has many tributary sloughs. The main channel is marked as far as **Calaveras Point**, about 4 miles above the railroad bridge at Dumbarton Point. The power cable, 1.3 miles above Calaveras Point, has a clearance of 65 feet.

A narrow marked channel extends from the railroad bridge to the mouth of **Mayfield Slough**, on the east side

★ (5096) **CALIFORNIA—San Francisco Bay—Cable and Pipeline Area enlarged.**—The northern limit of the cable and pipeline area ( $37^{\circ}49.3' \text{ N.}$ ,  $122^{\circ}-20.3' \text{ W.}$  approx.) now extends from a point on the existing limit in  $37^{\circ}49'33'' \text{ N.}$ ,  $122^{\circ}20'08'' \text{ W.}$  (approx.) in a  $270^{\circ}$  direction to shore.

**Note.**—The dashed line marking the former northern limit will be expunged.  
(N.M. 32/66.)

(R.S. 10970/66.)

C. & G.S. Charts **5535, 5532, 165SC.**

C. & G.S. Coast Pilot 7, 1963, page 129.

★ (6377) **CALIFORNIA—San Francisco Bay—Berkeley—Aid information.**—Berkeley Yacht Harbor Light (LL 794) ( $37^{\circ}52.0' \text{ N.}$ ,  $122^{\circ}19.0' \text{ W.}$  approx.) has been permanently discontinued.

**Note.**—The fog signal remains and has been named Berkeley Yacht Harbor Fog Signal (LL 794.01).

(N.M. 42/66.)

(L.N.M. 63, C.G., San Francisco, Sept. 15, 1966.)

C. & G.S. Charts **5532, 165SC.**

C.G. Light List, Vol. III, 1966 (see above).

C. & G.S. Coast Pilot 7, 1963, page 129.

★ (5097) **CALIFORNIA—San Francisco Bay—Berkeley—Lights to be established.**—About August 15, 1966, the following lights will be established as indicated; distances and bearings from the tank ( $37^{\circ}52'02'' \text{ N.}$ ,  $122^{\circ}18'01'' \text{ W.}$  approx.):

(a) Berkeley Breakwater Light 1 (LL 793.12), showing *quick flashing green*, about 1,700 yards  $260^{\circ}$ . The light will be exhibited 15 feet above the water on a post with a black square daymark and green reflector.

(b) Berkeley Breakwater Light 2 (LL 793.14), showing *occulting white* every 4 seconds, light 3 seconds, of 800 candlepower with a higher intensity beam toward the Golden Gate, about 1,800 yards  $267^{\circ}$ . The light will be exhibited 15 feet above the water on a post with a red triangular daymark and red reflector. A bell sounding 1 stroke every 10 seconds will be established at the base of the light.

(c) Berkeley Breakwater Center Light (LL 793.13), showing *quick flashing white*, midway between the above lights. The light will be exhibited 12 feet above the water on a post.

**Note.**—The temporary lights previously established will be discounted when the above aids are placed in operation.

(See N.M. 44 (6348) 1965.)

(N.M. 32/66.)

(L.N.M. 41, C.G., San Francisco, July 14, 1966.)

C. & G.S. Charts 5532, 165SC.

C.G. Light List, Vol. III, 1965 (see above).

C. & G.S. Coast Pilot 7, 1963, page 129.

★ (3586) CALIFORNIA—San Francisco Bay—Oakland Harbor—Tidal canal—Channel depths amended.—Surveys by the Corps of Engineers in January 1963 show the following changes:

Controlling depths in channels entering from seaward in feet at Mean Lower Low Water						Project dimensions		
Name of channel	Left outside quarter	Left inside quarter	Right inside quarter	Right outside quarter	Date of survey	Width (feet)	Length (nautical miles)	Depth MLLW (feet)
Tidal Canal:								
Fruitvale Avenue								
Bridge Reach.....	15. 7	15. 3	16. 2	10. 8	1-63	275	0. 35	* 25
Fruitvale Avenue to								
San Leandro Bay.....	11. 0	14. 4	13. 7	<sup>b</sup> 7. 3	1-63	275	0. 73	* 25

\* Project depth is 25 feet but channel is dredged and maintained to 18 feet.

<sup>b</sup> A depth of 12 feet was available in the quarter to a point opposite San Leandro Bay Channel Lighted Buoy 1.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(See N.M. 21 (3001) 1965).

(N.M. 25/65.)

(C. & G.S. BP-67756-57.)

C. & G.S. Charts 5532, 5535, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 129.

★ (6649) CALIFORNIA—San Francisco Bay—Oakland Inner Harbor—

**Depths.**—Surveys by the U.S. Navy in 1965 show shoal depths at M.L.L.W. in Oakland Inner Harbor as follows:

(a) ▲ depth of 15 feet in 37°47'21" N., 122°16'00" W.

(b) ▲ depth of 12 feet in 37°47'16.5" N., 122°15'50" W.

**Note.**—The 19 foot depth located about 25 yards northwestward should be expunged.

(c) A depth of 8 feet in 37°46'42.5" N., 122°14'41" W.

(N.M. 46/65.)

(C. & G.S. Dwg. No. 38.)

C. & G.S. Charts 5535, 165SC.

C. & G. S. Coast Pilot 7, 1963, page 129.

A small-craft harbor and marina were completed in 1963 by the city of San Leandro. Located just southeast of the international airport, the marina is entered by a marked dredged channel with controlling depth of about 6 feet. (NM-26/3373/63)

★ (6348) CALIFORNIA—San Francisco Bay—Berkeley—Lights temporarily established.—The following lights have been temporarily established as indicated to mark the detached breakwater off the entrance to Berkeley Marina; distances and bearings from the tank ( $37^{\circ}52'02''$  N.,  $122^{\circ}18'01''$  W. approx.):

- (a) A light, showing *flashing white* every 4 seconds, at the north end of the breakwater, about 1,800 yards  $267^{\circ}$ .
- (b) A light, showing *flashing green* every 4 seconds, at the south end of the breakwater, about 1,700 yards  $260^{\circ}$ .
- (c) A light, showing *quick flashing white*, midway between the above lights. (N.M. 44/65.)

(L.N.M. 54, C.G., San Francisco, Oct. 5, 1965.)  
C. & G.S. Charts 5532, 165SC.  
C. & G.S. Coast Pilot 7, 1963, page 129.

★ (6347) CALIFORNIA—San Francisco Bay—Alameda—Buoys to be discontinued.—About November 8, 1965 the following buoys will be discontinued:

- (a) South Seaplane Area Lighted Bell Buoy 1 (LL 736).

Approx. position:  $37^{\circ}45'40''$  N.,  $122^{\circ}20'41''$  W.

- (b) South Seaplane Area Lighted Buoy 3 (LL 737).
- (c) South Seaplane Area Lighted Buoy 5 (LL 738).

(N.M. 44/65.)

(L.N.M. 54, C.G., San Francisco, Oct. 5, 1965.)  
C. & G.S. Charts 5535, 5532, 165SC.  
C.G. Light List, Vol. III, 1965, (see above).  
C. & G.S. Coast Pilot 7, 1963, page 129.

**★ (3061) CALIFORNIA—San Francisco Bay—Oakland Harbor—Bar and Inner Harbor—Channel depths amended.**—Surveys by the Corps of Engineers in Feb.-Mar. 1965 show the following changes:

Controlling depths in channels entering from seaward in feet at Mean Lower Low Water						Project dimensions		
Name of Channel	Left outside quarter	Left inside quarter	Right inside quarter	Right outside quarter	Date of survey	Width (feet)	Length (nautical miles)	Depth MLLW (feet)
Bar channel-----	30.1	35.0	36.4	34.9	2, 3-65	800	0.45	35
Inner Harbor:								
Entrance Channel....	<sup>a</sup> 26.0	32.8	32.7	<sup>b</sup> 27.1	2, 3-65	800-500	1.00	30
Inner Harbor Reach..	<sup>c</sup> 16.0	31.8	<sup>d</sup> 24.9	<sup>e</sup> 12.0	2, 3-65	500-600	2.27	30
Grove St. Pier to Brooklyn Basin....	<sup>f</sup> 16.0	29.5	30.3	<sup>g</sup> 21.7	2, 3-65	600	1.30	30
Brooklyn Basin								
South Channel.....	<sup>h</sup> 16.9	28.8	30.2	<sup>i</sup> 7.7	2, 3-65	600-500	0.90	30
Brooklyn Basin North Channel....	18.0	12.0	12.0	9.0	8.50	300	0.93	25
Park St. Bridge Reach-----	<sup>j</sup> 7.0	22.0	19.0	16.1	2, 3-65	500-275	0.42	30

<sup>a</sup> The channel has shoaled along the edge; a depth of 30.2 feet was available in the inside half of the quarter.

<sup>b</sup> The channel has shoaled along the edge; a depth of 31.5 feet was available in the inside half of the quarter.

<sup>c</sup> The channel has shoaled along the edge; a depth of 27.0 feet was available in the inside half of the quarter.

<sup>d</sup> Shoal extends across the entire quarter 500 yards west of the junction with Grove St. Pier Reach; a depth of 30.5 was available in the remainder of the quarter.

<sup>e</sup> The channel has shoaled along the edge; a depth of 27.7 feet was available in the inside half of the quarter.

<sup>f</sup> The channel has shoaled along the edge; a depth of 26.6 feet was available in the inside half of the quarter.

<sup>g</sup> The channel has shoaled along the edge; a depth of 29.2 feet was available in the inside half of the quarter.

<sup>h</sup> The channel has shoaled along the edge; a depth of 25.0 feet was available in the inside half of the quarter.

<sup>i</sup> The channel has shoaled along the edge; a depth of 19.0 feet was available in the inside half of the quarter.

<sup>j</sup> The channel has shoaled along the edge; a depth of 20.0 feet was available in the inside half of the quarter.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(See N.M. 10(1315) 1965).

(N.M. 21/65.)

(C. & G.S. BP-6756-66.)

C. & G.S. Charts 5532, 5535, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 129.

**★ (4865) CALIFORNIA—San Francisco Bay—Berkeley—Light established.**—Berkeley Pier Light showing a *flashing white* light every  $\frac{1}{4}$  seconds, of 110 candlepower, has been established on the seaward end of the pier about 2,150 yards 034° from Treasure Island North End Light (37°50.0' N., 122°22.3' W. approx.). The light is exhibited 14 feet above the water from a post with a red-orange and white square daymark.

(N.M. 34/65.)

(L.N.M. 37, C.G., San Francisco, July 30, 1965.

C. & G.S. Charts 5535, 5532, 165SC.

C.G. Light List, Vol. III, 1964, No. 793.11.

C. & G.S. Coast Pilot 7, 1963, page 129.

★ (3728) CALIFORNIA—San Francisco Bay—Oakland Harbor  
 Inner Harbors—Channel depths amended.—Surveys by the Corps of Engineers in March 1964 show the following changes:

Controlling depths in channels entering from seaward in feet at Mean Lower Low Water						Project dimensions		
Name of Channel	Left outside quarter	Left inside quarter	Right inside quarter	Right outside quarter	Date of survey	Width (feet)	Length (nautical miles)	Depth M.L.L.W. (feet)
Inner Harbor:								
Entrance Channel	24.5	32.6	31.2	24.3	3-64	800-500	1.00	30
Inner Harbor Reach	18.2	31.1	30.7	11.9	3-64	500-600	2.27	30
Grove St. Pier to Brooklyn Basin	16.8	29.0	30.0	17.0	3-64	600	1.30	30
Brooklyn Basin South Channel	17.3	28.4	30.0	13.0	3-64	600-500	.90	30
Park St. Bridge Reach	13.3	23.0	21.2	15.8	3-64	500-275	.42	30

<sup>a</sup> The channel has shoaled along the edge; a depth of 26.7 feet was available throughout the affected Reaches.

<sup>b</sup> The channel has shoaled along the edge; a depth of 25.2 feet was available throughout the affected Reaches.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(See N.M. 45(5810) 1963.)

(N.M. 29/64.)

(C. & G.S. CL-751-64; BP-65911-16.)

C. & G.S. Charts 5532, 5535, 1658C.

C. & G.S. Coast Pilot 7, 1963, page 129.

of **Palo Alto Municipal Airport**. A power cable over the entrance to the slough has a clearance of 125 feet. A depth of 5 feet can be taken to a yacht club 0.5 mile above the entrance. A 52-foot marine railway and a 2-ton lift are available; hull and engine repairs can be made.

**Alviso** is at the headwaters of **Alviso Slough**. There is little water traffic by scows and light-draft vessels, hauling fruit and farm produce.

**Chart 5535.**—**Alameda** is on an island separated from the mainland by **San Leandro Bay** on the east, and **Oakland Inner Harbor** and **Tidal Canal** on the north. The **Naval Air Station** is on a filled area just west of the city and south of **Oakland Inner Harbor**.

There is a **seaplane restricted area** southward of the **Naval Air Station** where no vessel may enter without prior approval of the Naval authorities; limits and regulations are given in **207.640**, Chapter 2.

**Repairs.**—**Alameda** has shipbuilding and repair yards with marine ways and floating drydocks. The largest drydock has a length of 528 feet, width of 90 feet, 29 feet on the blocks, and a lifting capacity of 16,500 tons.

**Oakland**, on the eastern or mainland shore opposite **San Francisco**, is the second largest city on **San Francisco Bay**. It is the terminus of the transcontinental railroads entering the **San Francisco Bay** area.

The **Port of Oakland** is under the jurisdiction of the Board of Port Commissioners of the city of **Oakland** and is entirely distinct from the **Port of San Francisco**. **Oakland** is a separate customs port of entry. There is an appraiser's store in the city at the foot of **Grove Street**.

**Oakland Inner Harbor**, which is adjacent to the most highly developed section of **Oakland**, is an estuary 9 miles long. It is bordered on the north by **Oakland** and on the south by **Alameda**. At the eastern end of the harbor, artificial **Tidal Canal** leads to **San Leandro Bay** where a channel continues to the **Metropolitan Oakland International Airport**.

**Channels.**—A Federal project provides for channel depths as follows: **Bar Channel** to and including **Oakland Outer Harbor**, 35 feet; **Oakland Inner Harbor Channel** to the end of **Brooklyn Basin South Channel**, 4.5 miles above the entrance, 35 feet. The channels are generally maintained.

**Brooklyn Basin North Channel** has a controlling depth of about 12 feet. The controlling depth in the channel through **Tidal Canal** is about 16 feet, thence about 7 feet through **San Leandro Bay** to the airport.

For information as to conditions of the channel to **Alameda Naval Air Station**, mariners are advised to consult the **Naval Port Control Office, San Francisco**.

A measured nautical mile on course 105°32' is in **Oakland Inner Harbor**, just inside the entrance channel. The markers are on the northerly side of the channel.

A restricted area is in **Oakland Inner Harbor** from the entrance to the easterly boundary of the **Naval Air Station**; limits and regulations are given in **207.640**, Chapter 2.

**Bridges.**—The fixed highway bridge across **Brooklyn Basin** at the east end of **Government Island** has a 27-

foot width and a clearance of 11 feet. The three highway drawbridges across **Tidal Canal** have a least clearance of 6 feet. The vertical lift railroad bridge across **Tidal Canal** has clearances of 13 feet down and 135 feet up. Navigation regulations for passing through the railroad and highway bridges at **Fruitvale Avenue** are given in **203.712**, Chapter 2.

There are many small-boat facilities on both sides of the channel from **Oakland Inner Harbor** entrance to the airport at the south end of **San Leandro Bay** where gasoline, diesel oil, water, marine hardware, and groceries can be obtained. The largest marine railway can haul out boats up to 137 feet in length; the largest lift is 14 tons. Hull and engine repairs can be made.

The **Naval Supply Center** occupies **Middle Harbor**, between **Oakland Inner Harbor** entrance and the **Oakland Mole**. A channel from the entrance to the **Naval Center** piers has a controlling depth of about 27 feet. Regulations governing navigation in this area are given in **207.640**, Chapter 2. For depths to the naval installations, masters are advised to contact the **Naval Port Control Office**.

The **Oakland Outer Harbor**, between the **Oakland Mole** on the south and the **Bay Bridge** approach on the north, is the site of several large terminals.

A shipbuilding and repair firm in **Oakland** has a maximum drydock capacity of 12,000 tons, and another firm has marine railways capable of hauling out up to 1,000 tons. All kinds of repairs are made to both hulls and engines, and all kinds of marine hardware and supplies are available.

**Chart 5532.**—**Berkeley**, the seat of the University of California, adjoins **Oakland** and **Emeryville** to the northward. There is a long pier extending into the bay, but it is used for fishing purposes only. A 32-foot opening in the pier a mile offshore can be used by small craft in an emergency. In clear weather the **Campanile** (bell tower) at the university shows prominently from the bay.

**Berkeley Yacht Harbor**, on the northern side of the long pier, is enclosed by breakwaters. The southern side of the entrance is marked by a light and fog signal. A depth of 7 feet can be taken into the harbor. Gasoline, diesel oil, water, and marine hardware are available. A boat repair shop has a 20-ton lift; hull repairs can be made. The office of the harbor master is on the city wharf.

**Southampton Shoal Light** (37°52.9' N., 122°24.0' W.), 32 feet above the water, is shown from a white cylindrical tower near the southern end of the 2-mile long shoal. A fog signal is at the light. A degaussing range is on each side of the channel between **Southampton Shoal Light** and **Angel Island**.

Vessels going from **San Francisco Bay** proper to the upper bays and rivers usually use the buoyed 35-foot project channel through the shoal area northwestward of **Southampton Shoal Light**, which leads through the easterly opening of the **Richmond-San Rafael Bridge**.

**Red Rock**, 3.2 miles north-northwestward of **Southampton Shoal Light**, is 169 feet high and prominent in

★ (3587) **CALIFORNIA—San Francisco Bay—San Pablo Strait—Controlling depth.**—A survey by the Corps of Engineers in July 1964 shows a controlling depth of 14 feet at M.L.L.W. in the improved channel northeast of Point San Pablo.

Approx. position of channel entrance:  $37^{\circ}58'02''$  N.,  $122^{\circ}25'38''$  W.

(C. & G.S. BP-67752.)

(N.M. 25/65.)

C. & G.S. Charts 5532, 5533, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 130.

— — — — —

★ (6201) **CALIFORNIA—San Francisco Bay—Richmond—Chart correction.**—The location of Richmond Harbor Channel Light 14 should be amended to a position about 2,480 yards  $95^{\circ}30'$  from Richmond Harbor Entrance Light ( $37^{\circ}54'14''$  N.,  $122^{\circ}23'27''$  W.).

(N.M. 43/65.)

(C. & G.S. CL-1344/65.)

C. & G.S. Charts 5532, 165SC.

C.G. Light List, Vol. III, 1965, No. 818.

C. & G.S. Coast Pilot 7, 1963, page 130.

★ (6244) **CALIFORNIA—San Francisco Bay—Buoy established.**—YRA Race Course Buoy Y, an orange and white horizontally banded spherical buoy with a white reflector, has been established in 70 feet of water about 200 yards 023°30' from Yellow Bluff Light (37°50.2' N., 122°28.3' W. approx.).

**Note.**—The buoy is privately maintained.

(N.M. 40/66.)

(L.N.M. 61, C.G., San Francisco, Sept. 9, 1966.)

C. & G.S. Charts 5535, 5532, 165SC.

C.G. Light List, Vol. III, 1966, page 47.

C. & G.S. Coast Pilot 7, 1963, page 130.

the southerly approach. **Castro Rocks**, 0.6 mile east-northeastward of Red Rock, are small and low.

The 35-foot buoyed passage westward of Red Rock is frequently used by river steamers on the ebb, as the current has less velocity, although the rips and swirls are heavy at times.

**Richmond Harbor**, on the eastern shore of San Francisco Bay 1.5 miles northward of Southampton Shoal Light, includes the port facilities to Point San Pablo. The harbor is the terminus of the Atchison, Topeka, and Santa Fe Railway, and is an important oil refining center and oil shipping port.

The Federal project depth of 35 feet is generally maintained in the channel leading to the port facilities at **Point Richmond** and in the inner harbor through about 2,000 feet of Santa Fe Channel. The remainder of Santa Fe Channel and basin has depths of 24 to 30 feet. A 10,000-foot training wall is on the south side of the approach channel. Depths at most of the wharves are 30 feet or more.

A modern deepwater terminal is at Point Richmond, and two modern deepwater terminals, two oil wharves, three inactive shipbuilding yards, and numerous wharves for small craft are in the inner harbor. Railway car ferry slips extend out from Point Richmond. The terminal wharf at Point San Pablo is used by large vessels for general cargo and petroleum products.

Most of the small-boat facilities are along Santa Fe Channel. Available supplies include gasoline, diesel oil, water, and marine hardware. The largest marine railway can haul out boats up to 65 feet in length; the largest lift is 2 tons; hull and engine repairs can be made.

The 21,343-foot Richmond-San Rafael Highway Bridge, 8.8 miles above the Golden Gate Bridge, is one of the longest in the world. The easterly 970-foot fixed channel span clearance is 135 feet; the westerly fixed span has a 1,000-foot opening with a clearance of 185 feet. The bridge is well lighted and the channels leading to it are marked with navigational aids.

A restricted area extends 0.3 mile offshore at **Molate Point**, 0.8 mile north of Richmond-San Rafael Bridge; limits and regulations are given in 207.640, Chapter 2.

**Invincible Rock**, 1.3 miles north of Richmond-San Rafael Bridge, is covered 7 feet and lies almost in the middle of the approach to San Pablo Strait. **Whiting Rock**, covered 13 feet, is 0.2 mile north-northeastward of Invincible Rock. Both rocks are buoyed.

**The Brothers**, 1.7 miles northward of Richmond-San Rafael Bridge, are two small low flat-topped islands. **East Brother Island Light** (37°57.8' N., 122°26.0' W.), 61 feet above the water, is shown from a white square tower on dwelling on the eastern island. A fog signal is at the station.

**Point San Pablo**, 0.3 mile northeastward of East Brother Island Light, is the northwestern extremity of a low ridge of hills on the eastern shore of San Francisco Bay at its junction with San Pablo Bay. The point rises abruptly to a height of 140 feet. A dredged channel off the northeastern shore of the point is used by commer-

cial fishermen and yachtsmen. The controlling depth in the channel is about 10 feet.

Gasoline, diesel oil, and water are available at a boat basin 0.5 mile southeastward of Point San Pablo. A marine railway can haul out boats up to 40 feet in length; hull and engine repairs can be made.

**Point Cavallo**, on the western side of San Francisco Bay 0.5 mile northeastward of the Golden Gate Bridge, is sharp and rocky with some visible and covered rocks under its face. **Horseshoe Bay**, a shallow bight westward of the point, is part of a military reservation and only available to the public in case of an emergency.

From Point Cavallo the steep rocky shore tends northward for 0.3 mile to **Yellow Bluff**, thence northwestward for a mile to Sausalito.

**Richardson Bay**, 2 miles northward of the Golden Gate Bridge, is shoal except for the southern part fronting Sausalito. Limits and regulations for the anchorage areas in the bay are given in 202.224, Chapter 2.

**Sausalito** harbors many commercial fishing boats and pleasure craft. Several boat building and repair yards have marine ways, the largest of which can accommodate vessels up to 500 tons. General repairs to hulls and machinery can be made; supplies and fuel are available. The Corps of Engineers, which maintains the channel to a depth of about 16 feet, has an operations base and model current-flow basin at Sausalito.

**Belvedere Cove**, 3 miles north-northeastward of the Golden Gate Bridge, is used as a small-boat anchorage; limits and regulations are given in 202.224, Chapter 2. Private yacht clubs are in the upper part of the cove. Gasoline, diesel oil, and water can be obtained on the north side of the cove near **Point Tiburon**; a depth of 6 feet is alongside the pumps.

**Angel Island**, 3 miles northeastward of the Golden Gate Bridge, is partially wooded and level on top. The irregular shaped island is separated from the mainland by Raccoon Strait.

**Point Blunt**, the southeastern extremity of Angel Island, terminates in a 60-foot high knob, and is connected with the island by a low neck of land. **Point Blunt Light** (37°51.2' N., 122°25.1' W.), 60 feet above the water, is shown from a white house with orange stripe on the point; a fog signal is at the station. A shoal with visible and covered rocks extends southeastward for 0.1 mile. Tide rips and swirls are heavy around the point, especially with a large falling tide.

**Quarry Point**, the eastern end of Angel Island, is a bold bluff with deep water close-to. The wharf and buildings, 0.6 mile northward of the point, have been partly destroyed by fire.

A light and fog signal are on **Point Stuart**, the western extremity of Angel Island. A shoal area covered 14 to 30 feet, extending southwestward from **Point Knox**, is marked by a lighted gong buoy.

**Raccoon Strait**, nearly 0.5 mile wide between Angel Island and the mainland, is sometimes used by vessels bound northward in San Francisco Bay from the Golden

★ (7299) **CALIFORNIA—San Francisco Bay—Mare Island Strait—Channel depths.**—The following table shows the depths at mean lower low water in the improved channel in Mare Island Strait:

### MARE ISLAND STRAIT CHANNEL DEPTHS

*Tabulated from surveys by the U.S. Navy—Surveys of Sept. 1966*

Controlling channel depths in feet at M.L.L.W. entering from seaward						Project dimensions	
Channel range letter	Left outside quarter	Left inside quarter	Right inside quarter	Right outside quarter	Date of survey	Width (feet)	Depth M.L.L.W. (feet)
A-----	<sup>a</sup> 13.5	24.3	27.0	30.0	9-66	700	30
B-----	23.4	27.8	30.0	25.2	9-66	700	30
C-----	<sup>b</sup> 12.5	30.0	30.2	20.0	9-66	{ 700- }	30
D-----	<sup>c</sup> 17.4	28.8	28.2	<sup>d</sup> 14.2	9-66	1,000	30
E-----	<sup>e</sup> 19.9	29.0	28.8	22.2	9-66	1,000	30
F-----	21.0	24.8	25.8	<sup>f</sup> 16.2	9-66	1,000	30
G-----	17.2	17.8	18.8	18.8	9-66	{ 1,000-940 }	30

<sup>a</sup> The channel has shoaled along the edge; a depth of 23.5 feet was available in the inside half of the quarter.

<sup>b</sup> The channel has shoaled along the edge; a depth of 22 feet was available in the inside half of the quarter.

<sup>c</sup> The channel has shoaled along the edge; a depth of 25.8 feet was available in the inside half of the quarter.

<sup>d</sup> The channel has shoaled along the edge; a depth of 23.3 feet was available in the inside half of the quarter.

<sup>e</sup> The channel has shoaled along the edge; a depth of 29.2 feet was available in the inside half of the quarter.

<sup>f</sup> The channel has shoaled along the edge; a depth of 25.8 feet was available in the inside half of the quarter.

**Note.**—The U.S. Navy should be consulted for changing conditions subsequent to the above.

(Supersedes N.M. 36(5691) 1966.)

(N.M. 47/66.)

(C. & G.S. BP-70489.)

C. & G.S. Charts 5525, 5533, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 131.

★ (6249) **CALIFORNIA—San Francisco Bay—Carquinez Strait—Wharf construction.**—A wharf is reported to exist in Carquinez Strait, northwest of Davis Point, beginning at a point in 38°03'13.0" N., 122°16'24.5" W. and extending about 410 yards on the bearing 066°.

(N.M. 40/66.)

(C. & G.S. CL-1129/66.)

C. & G.S. Charts 5525, 5533, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 131.

★ (5691) CALIFORNIA—San Francisco Bay—Mare Island Strait—Channel depths.—The following table shows the depths at mean lower low water in the improved channel in Mare Island Strait:

### MARE ISLAND STRAIT CHANNEL DEPTHS

*Tabulated from surveys by the U.S. Navy—Surveys of April 1966*

Controlling channel depths in feet at M.L.L.W. entering from seaward						Project dimensions	
Channel range letter	Left outside quarter	Left inside quarter	Right inside quarter	Right outside quarter	Date of survey	Width (feet)	Depth M.L.L.W. (feet)
A-----	<sup>a</sup> 11.0	27.8	30.4	29.1	4-66	700	30
B-----	22.3	30.1	31.3	22.4	4-66	700	30
C-----	<sup>b</sup> 13.0	31.0	30.0	<sup>c</sup> 13.8	4-66	{ 700- 1,000 }	30
D-----	<sup>d</sup> 13.0	30.0	30.1	<sup>e</sup> 14.7	4-66		
E-----	<sup>f</sup> 22.5	30.2	29.5	22.8	4-66	1,000	30
F-----	17.8	23.2	25.5	<sup>g</sup> 13.2	4-66	1,000	30
G-----	17.6	18.3	19.1	16.8	4-66	{ 1,000- 940 }	30

<sup>a</sup> The channel has shoaled along the edge; a depth of 26.5 feet was available in the inside half of the quarter.

<sup>b</sup> The channel has shoaled along the edge at the junction with Section D; a depth of 22.3 feet was available in the inside half of the quarter.

<sup>c</sup> The channel has shoaled along the edge; a depth of 24.9 feet was available in the inside half of the quarter.

<sup>d</sup> The channel has shoaled along the edge; a depth of 14.9 feet was available in the inside half of the quarter.

<sup>e</sup> The shoal depth was located in approximately 38°05'26" N., 122°15'14" W.; a depth of 27.3 feet was available in the inside half of the quarter.

<sup>f</sup> The channel has shoaled along the edge; a depth of 28.2 feet was available in the inside half of the quarter. A depth of 18 feet was located off the pierhead in approx. 38°05'54" N., 122°15'56" W.

<sup>g</sup> The channel has shoaled along the edge; a depth of 23.1 feet was available in the inside half of the quarter.

**Note.**—The U.S. Navy should be consulted for changing conditions subsequent to the above.

(Supersedes N.M. 26(4148) 1966.)

(N.M. 36/66.)

(C. & G.S. BP-70149.)

C. & G.S. Charts 5525, 5533, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 131.

★ (6247) CALIFORNIA—San Francisco Bay—San Pablo Bay—Lights changed.—1. San Pablo Bay Radar Calibration Dolphin Light (LL 852) (38°02.5' N., 122°16.9' W. approx.) has been renamed *Rodeo Radar Target Light* and changed to show *flashing white* every  $\frac{1}{4}$  seconds of 100 candlepower.

2. Hamilton Field Pipeline Pier Light (LL 855) (38°02.7' N., 122°25.9' W. approx.) has been renamed *Petaluma River Entrance Light 1* and equipped with black square daymarks with green reflective border.

(Supersedes N.M. 35(5535) 1966.)

3. Petaluma River Entrance Channel Light 2 (LL 856) has been renamed *Petaluma River Entrance Light 2*.

4. Petaluma River Entrance Channel Buoys 3 and 4 have been renamed *Petaluma River Entrance Buoys 3 and 4*.

(N.M. 40/66.)

(L.N.M. 60, C.G., San Francisco. Sept. 9, 1966.)

C. & G.S. Charts 5533, 165SC.

C.G. Light List, Vol. III, 1966 (see above) and page 60.

C. & G.S. Coast Pilot 7, 1963, page 131.

Gate. The tidal currents in the strait have considerable velocity and the rips and swirls are heavy at times. A midchannel course can be followed, but care should be taken by deep-draft vessels to avoid **Raccoon Shoal**, covered 26 feet, 500 yards northward of Point Stuart Light. A strong ebb current sets directly across the channel at the east entrance.

**Point San Quentin**, at the western approach to the Richmond-San Rafael Bridge, has low land on either side. The buildings of the State Prison south of the bridge and the long wharf north of it are prominent.

**Corte Madera Creek**, at the head of a marshy bight southward of Point San Quentin, has depths of 6 to 2 feet to the fixed highway bridges, 1.5 miles above the mouth. The railroad bridge, just east of the fixed bridges, has a 40-foot bascule span with a clearance of 8 feet; drawspan regulations are given in **203.712**, Chapter 2. The fixed bridges have a 40-foot channel span with a clearance of 21 feet. The power cables between the creek entrance and the fixed bridges have a least clearance of 120 feet.

**San Rafael Creek**, 1.8 miles north of Point San Quentin, is used by many small craft basing at the city of San Rafael. In May 1962, the controlling depth was 7 feet through the marked entrance channel in **San Rafael Bay** to the turning basin at **San Rafael**. The power cable near the entrance has a clearance of 125 feet. A repair yard here has a marine elevator which can lift craft up to 70 feet in length and 70 tons; general repairs are made. Gasoline, diesel oil, water, some marine hardware, and groceries are available.

**Point San Pedro**, 3 miles northward of Point San Quentin at the western entrance to San Pablo Bay, extends 100 yards eastward of 356-foot high **San Pedro Hill**. There is a large quarry just northward of the point.

**Chart 5533.**—**San Pablo Bay** is nearly circular, 10 miles long in a northeasterly direction, with a greatest width of 8 miles. The northern part consists of low marshes intersected by numerous sloughs and a large area of shoal water and mudflats that bare at extreme low water. The southern shore is bolder, except between Point San Pablo and Pinole Point, where it is low and marshy for about 3 miles. Carquinez Strait joins San Pablo Bay with Mare Island Strait and Suisun Bay at its eastern extremity. There is considerable traffic through the bay. Deep-draft vessels pass through to load grain at points on Carquinez Strait, and to South Vallejo to load flour and discharge lumber, while many oil tankers and sugar-laden vessels pass through the bay bound for Crockett and Martinez, and up the San Joaquin River to Stockton, and the Sacramento River to Sacramento. Light-draft vessels pass through bound for points on Suisun Bay, Sacramento River, and San Joaquin River. There are several landings on the southern shore of San Pablo Bay used by light-draft vessels.

The San Francisco Bay UHF radio channel 12 (156.6 mc) connects the Marine Exchange, the towing companies, water taxis, harbor launches, and bridges on the

San Joaquin and Sacramento Rivers with all ships equipped with the UHF facilities. In addition, the river pilots and the two lift bridges inter-communicate on 154.83 mc.

The main buoyed channel through the bay extends in a gentle curve northward and eastward from the entrance to the eastern end. The Federal project depth is 35 feet across Pinole Shoal; the channel is maintained annually. Pinole Shoal Channel is reserved for use of vessels drawing more than 20 feet; navigation regulations are given in **207.640**, Chapter 2.

Limits and regulations for anchorage areas in San Pablo Bay are given in **202.224**, Chapter 2.

Shoals and flats, which uncover, extend from Point San Pablo to Pinole Point, thence northeastward to Lone Tree Point.

**Pinole Point** is a moderately high, rocky bluff, projecting about a mile from the southeastern shore of San Pablo Bay. A wharf is built out from the eastern side. Powder works are on the point, and about 2 miles back of it are numerous oil tanks. The elevated tank at the powder plant about 3.5 miles eastward of Pinole Point is prominent. A wharf is located here. A pleasure fishing pier is located at **Lone Tree Point**, 4.6 miles easterly of Pinole Point. **Oleum**, on **Davis Point**, is an oil town. There are many prominent oil tanks, painted in pastel colors, on the hills back of the town. A T-shaped wharf, which is frequently used by oil tankers, extends out to deep water. A depth of 32 feet is available at the outer face of the wharf. Lights are privately maintained on the outer ends of the wharf, and white lights are shown at night along the trestle leading to the wharf.

**Selby**, a smelting town a mile eastward of Oleum, is distinguished by a high concrete stack.

A shallow channel, on the western side of San Pablo Bay 3.6 miles northerly of Point San Pedro, leads to Hamilton Air Force Base. The channel is southward of an entrance light and a line of daybeacons.

**Petaluma River** enters San Pablo Bay on the northwest side. The city of **Petaluma**, 12 miles above the mouth, is the center of an extensive poultry and egg industry. Large quantities of feed and petroleum products are shipped in, and fruit, poultry, and eggs are shipped out.

The Federal project depth of 8 feet through a marked dredged channel in the bay to Petaluma is usually maintained. The least clearances over Petaluma River are: drawbridges, 4 feet; fixed bridges 70 feet; and power cables, 70 feet.

A danger zone is in the eastern part of San Pablo Bay adjacent to the westerly shore of Mare Island; limits and regulations are given in **204.215**, Chapter 2.

**Chart 5525.**—**Mare Island Strait**, at the mouth of the Napa River, is between the mainland and **Mare Island**. South Vallejo and Vallejo are on the eastern side of the strait and the Mare Island Naval Shipyard is on the western side, about 2 miles above the southern entrance. In

★ (4578) **CALIFORNIA—San Francisco Bay—Mare Island Strait—Depth.**—  
A survey by the Corps of Engineers in May 1965 shows a depth of 22 feet in  
38°04'47.3" N., 122°14'42.8" W.

**Note.**—The 28 foot depth about 20 yards northwestward should be expunged.  
(N.M. 32/65.)

(C. & G.S. BP-68155.)

C. & G.S. Charts 5525, 5533, 165SC.

C. & G.S. Coast Pilot 7, 1963, pages 131, 132.

e-  
a  
p.  
of  
ir-  
pa  
  
an  
ia-  
he  
its  
be

acts  
t is  
out  
f a  
iall  
the  
on  
eas

★ (5924) **CALIFORNIA—San Francisco Bay—Mare Island Strait—<sup>are</sup>Lights**  
**changed.**—The following lights have been changed as indicated:

(a) Mare Island Pier 35 Light (LL 863), renamed *San Pablo Bay Light 17*  
(LL 854.11).

Approx. position: 38°04'09" N., 122°15'06" W.

(b) Mare Island Dike No. 14 Light (LL 864), renamed *Mare Island Strait*  
*Light 1.*

Approx. position: 38°04'16" N., 122°14'17" W.

(c) Carquinez Strait Light (LL 865), renamed *Mare Island Strait Light 2.*

Approx. position: 38°04'11" N., 122°14'37" W.

(d) Mare Island Pier 34 Light (LL 866), renamed *Mare Island Strait Light 3.*

Approx. position: 38°04'32" N., 122°14'46" W.

(e) Mare Island Strait Light 2 (LL 867), renamed *Mare Island Strait Light 4.*

Approx. position: 38°04'38" N., 122°14'34" W.

(Supersedes N.M. 36(5212) 1965.)

(N.M. 41/65.)

(L.N.M. 52, C.G., San Francisco, Sept. 22, 1965.)

C. & G.S. Charts 5525, 5533, 5534, 165SC.

C.G. Light List, Vol. III, 1964 (see above).

C. & G.S. Coast Pilot 7, 1963, page 132.

with

**Page 132.—Line 1/L; read:** September 1963, depths of 35 to 19 feet were in  
the channel . . . (NM-47/6068/63)

**Lines 57/L-2/R; read:**

In August 1963, controlling depths in Napa River were 15 feet for 22 miles to  
**Rocktram**, thence 6½ feet to just below **Jacks Bend**, and thence 6 feet to the  
head of navigation at **Napa**. Local knowledgee was necessary to avoid a 10-foot  
shoal off **Goodluck Point**, near the westerly edge of the channel. (BP-64754/60)

January 1963. depths of <sup>35</sup>37 to <sup>16</sup>20 feet were in the channel to the first bridge, 2.9 miles above the entrance. Channel depths between the first and second bridges are 19 to 30 feet, but there are several shoal spots covered 13 to 18 feet.

**Notice.**—Ships destined for the Naval Shipyard, Mare Island, should await arrival of a Navy pilot at Carquinez Strait. The waters around Mare Island are included in a restricted area; limits and regulations are given in 207.640, Chapter 2.

A power cable crossing lower Mare Island Strait between South Vallejo and Mare Island has a clearance of 155 feet. If the clearance between the masthead and the cable is less than 10 feet or if the clearance is not known, vessels shall not move under the cable without authority from the pilot.

**Carquinez Strait Light** (38°04.2' N., 122°14.6' W.), 40 feet above the water, is shown from a white frame tower on a dwelling at the end of the jetty on the eastern side of the entrance to Mare Island Strait; a fog signal is at the light.

**South Vallejo**, on the eastern shore of Mare Island Strait inside the entrance, is the terminal of a railroad connecting interior northern points. A large flour mill is southward of the railroad wharf, and lumber wharves to northward are prominent in entering. The flour mill wharf has 30 feet alongside and 28 feet can be carried from the entrance to this point with local knowledge. From 10 to 21 feet can be taken alongside the other wharves, depending on the locality.

**Vallejo**, 1 mile above South Vallejo, is of little commercial importance. The city supplies a large amount of fresh provisions to the Naval Shipyard and affords residences for employees and others attached there. It is also a distributing point for a considerable agricultural area in its vicinity. The shipyard, on the western side of Mare Island Strait, has drydocks and extensive facilities for repairing and building vessels of all sizes.

The Vallejo-Mare Island Causeway and drawbridge connects Mare Island with the city of Vallejo at the northern end of the Naval Shipyard. It has a bascule span with a clearance of 13 feet. At Sears Point, 1 mile above Vallejo, a highway bridge across the strait has a bascule span with a clearance of 11 feet. In 1962, a fixed highway bridge was under construction just north of the existing bascule bridge. Drawspan regulations are given in 203.712, Chapter 2. If practicable, approach the bridges only when running against the current. No passage should be attempted during periods of peak flood or ebb current.

**Chart 5533.**—Napa River, the continuation of Mare Island Strait above the Naval Shipyard, is used by barges and some light-draft vessels. Traffic on the river consists of sand, gravel, crushed rock, gasoline, residual fuel oil, and some electrical machinery.

In 1962 the controlling depths in Napa River were (distances above the Vallejo-Mare Island Causeway Bridge): 15 feet from the entrance to Goodluck Point, 5 miles; thence 8 feet to Dutton Landing, 6.8 miles; thence 5 feet

to Rocktram, 10.3 miles; and thence 4 feet to Napa, 13 miles.

The railroad bridge across Napa River just above Dutton Landing has a swing span with a clearance of 5 feet. The channel through the bridge crosses from one bank to the other causing a hazardous condition, particularly for downbound loaded barges, because the direction of the ebb current is as much as 50° from the axis of the channel.

Near **Imola**, 12 miles above Vallejo-Mare Island Causeway Bridge, the highway bridge crossing the river has a lift span with clearances of 25 feet down and 60 feet up. The two fixed bridges in Napa have a minimum width of 47 feet and a clearance of 10 feet. The minimum clearance of the power cables crossing the river below Napa is 125 feet, and in Napa, 40 feet.

Gasoline, diesel oil, water, and some other supplies can be obtained at several places along Napa River. A marine railway near Cuttings Wharf, 8 miles above the Vallejo-Mare Island Causeway Bridge, can haul out boats up to 50 feet in length; hull and engine repairs can be made. A 10-ton portable lift is available.

**Chart 5534.**—Six-mile long **Carquinez Strait** connects San Pablo and Suisun Bays. For the first 3.5 miles it is a little less than 0.5 mile wide, and then widens to about a mile. It is deep throughout with the exception of a small stretch of flats on the northern shore, and a small shoal area in the bight on the southern shore near the eastern end. There are several small settlements on both shores. Limits and regulations of anchorage areas are given in 202.224, Chapter 2.

The **California State Maritime Academy** and pier are in **Morrow Cove**, on the northern shore of the western entrance to the strait.

Twin fixed highway bridges cross the strait at **Sample Point**. The channel on each side of the center pier is 1,000 feet wide; the clearances are 144 feet through the north span and 134 feet through the south span. Fog signals are sounded at the bridges; an aero light is atop the center pier.

Power cables cross the strait 0.3 mile west of the bridge and 1.2 miles east of it; the minimum clearance is 179 feet.

**Crockett**, on the south shore just east of the bridge, is built around a large sugar refinery. The wharves accommodate the deep-draft vessels that discharge sugar from Hawaii. Depths alongside are 35 feet or better.

**Chart 5574.**—A light and fog signal are off the northwestern extremity of a wharf in ruins on the south shore of Carquinez Strait, 1.5 miles eastward of the Carquinez twin bridges; another light and fog signal are offshore at **Port Costa**, 0.6 mile to the eastward. An oil wharf with deep water alongside is on **Point Carquinez**, on the south side of the strait 3 miles eastward of the Carquinez twin bridges. A brickyard with a wharf and other facilities in ruins is about 0.2 mile above the oil wharf.

A **T-wharf**, a mile eastward of Point Carquinez, extends out to deep water.

★ (5098) **CALIFORNIA**—San Francisco Bay—Suisun Bay—Channel depths amended.—The following table shows amendments to depths at mean lower low water in the improved channels at Suisun Bay :

*Tabulated from surveys by the Corps of Engineers, surveys to April 1966*

Controlling depths in channels entering from seaward in feet at mean lower low water					Project dimensions		
Name of channel	Left outside quarter	Middle half of channel	Right outside quarter	Date of survey	Width (feet)	Length (nautical miles)	Depth M.L.L.W. (feet)
Port Chicago Reach----	29. 0	32. 0	31. 5	3-66	300-450	0. 9	30

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(N.M. 32/66.)

(C. & G.S. BP-69757.)

C. & G.S. Charts 5575, 5534, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 133.

★ (5955) **CALIFORNIA**—San Joaquin River—Calaveras River—Shoaling reported.—Shoaling to a least depth of 1 foot at M.L.L.W. has been reported extending eastward from a point in approximately 37°58'47" N., 121°20'15" W.

(N.M. 45/64.)

(C. & G.S. BP-66620.)

C. & G.S. Chart 5527.

C. & G.S. Coast Pilot 7, 1963, page 133.

★ (5925) **CALIFORNIA** — San Francisco Bay — Carquinez Strait — Aids changed.—1. Shell Wharf Lights (LL 890) and fog signal (38°01.9' N., 122°07.8' W. approx.) have been discontinued.

2. The following aids have been established as indicated: distances and bearings from Benicia Wharf Light (38°02.4' N., 122°08.2' W. approx.):

(a) Shell Oil Wharf West End Light (LL 890.11) showing *occulting red* every 2.4 seconds, light 1.6 seconds, of 2,000 candlepower, exhibited 24 feet above the water about 1,230 yards 161°.

(b) Shell Oil Wharf Fog Signal (LL 890.12) a diaphragm horn sounding 1 blast every 20 seconds, blast 5 seconds, about 1,220 yards 148°.

**Note.**—The above aids are privately maintained by Shell Oil Co. on the wharf extension under construction.

(N.M. 41/65.)

★ (6251) **CALIFORNIA** — San Francisco Bay — Suisun Bay — Light changed.—Suisun Bay Light 33 (38°03.7' N., 121°52.1' W. approx.) has been changed to showing *flashing green* every 4 seconds.

(Supersedes N.M. 34(5382) 1966.)

(N.M. 40/66.)

(L.N.M. 59, C.G., San Francisco, Sept. 7, 1966.)

C. & G.S. Charts 5576, 5534, 165SC.

C.G. Light List, Vol. III, 1966, No. 948.

C. & G.S. Coast Pilot 7, 1963, page 133.

★ (678) CALIFORNIA—Suisun Bay—Pier extended.—A survey by the Corps of Engineers in September 1965 shows extension of a charted pier, beginning at a point on the southwest side of the pier in  $38^{\circ}03'14.4''$  N.,  $122^{\circ}02'36.9''$  W. and extending about 300 yards  $241^{\circ}$ .

(N.M. 5/66.)

C. & G.S. BP-68831.)

C. & G.S. Charts 5575, 5534, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 133.

★ (6349) **CALIFORNIA**—San Francisco Bay—Suisun Bay—Buoy moved.—Suisun Bay Lighted Buoy 29 (formerly numbered 21) ( $38^{\circ}02'52''$  N.,  $121^{\circ}53'18''$  W. approx.) has been moved and reestablished in 34 feet of water about 1,040 yards  $358^{\circ}$  from New York Slough Light 2 ( $38^{\circ}02'30''$  N.,  $121^{\circ}53'05''$  W. approx.).

(See N.M. 40 (5765) 1965.)

(N.M. 44/65.)

(L.N.M. 54, C.G., San Francisco, Oct. 5, 1965.)

C. & G.S. Charts **5576**, **5534**, **1658C**.

C.G. Light List, Vol. III, 1965, No. **945**.

C. & G.S. Coast Pilot 7, 1963, page 133.

★ (6350) **CALIFORNIA**—San Francisco Bay—San Joaquin River—Light information.—Threemile Slough Light has been numbered *Threemile Slough Light 1*.

Approx. position:  $38^{\circ}05'09''$  N.,  $121^{\circ}41'06''$  W.

(N.M. 44/65.)

(L.N.M. 56, C.G., San Francisco, Oct. 15, 1965.)

C. & G.S. Chart **5527**.

C.G. Light List, Vol. III, 1965, No. **967**.

C. & G.S. Coast Pilot 7, 1963, page 133.

There are several wharves extending out to deep water at **Martinez**, 2 miles southeastward of Point Carquinez. The shorter and westernmost pier is in poor condition and not used. The longer pier is used by light-draft vessels, fishermen, and yachts. An inactive ferry slip is on its western side.

A yacht harbor, on the eastern side of the long pier, is protected by a breakwater; depths of about 10 feet are inside the harbor. A harbormaster assigns berths. Available supplies include gasoline, diesel oil, water, and marine hardware. A marine railway can haul out boats up to 40 feet in length; hull and engine repairs can be made.

Just to the eastward of Martinez, are two oil piers extending out to deep water; depths of about 35 feet are at their faces. The piers are marked by lights and fog signals.

**Benicia** is on the northern shore at the eastern end of Carquinez Strait. The U.S. Army reservation and arsenal are at the eastern end of the town where a **restricted area** extends up to 500 yards offshore; limits and regulations are given in **207.640**, Chapter 2.

Two bridges cross Carquinez Strait at the eastern end from **Army Point to Suisun Point**. The fixed highway bridge has a clearance of 135 feet over Suisun Point Reach; the railroad lift bridge has clearance of 70 feet down and 135 feet up over that channel. **Bulls Head Point**, just east of the south end of the bridge, shows as a 100-foot rounding hill with a prominent high brick stack on it.

An oil wharf extending across the flats at **Avon**, 1.5 miles eastward of the Suisun Point bridges, has depths of 35 feet alongside the channel face. Lights and fog signals are on the outer ends of the wharf.

**Chart 5534.—Suisun Bay** is a broad shallow body of water with marshy shores and filled with numerous marshy islands, many of which have been reclaimed and are now under cultivation. It is practically the delta of the Sacramento and San Joaquin Rivers which empty into the eastern part of the bay. Two narrow winding channels lead to the mouths of the rivers. They are marked by buoys, daybeacons, and lights. The rivers and the channels near the mouths have been improved by the Government to increase the depth, remove obstructions, and provide relief during freshet seasons. A Federal project provides for a main channel 30 feet deep through the bay to the San Joaquin River. The channel is maintained at or near project depth. The bay is used by many light-draft vessels having local knowledge. Strangers should take a pilot if bound above Benicia. Limits and regulations for anchorage areas in Suisun Bay are given in **202.224**, Chapter 2.

**Suisun Slough**, emptying into the northwestern side of Suisun Bay 5.5 miles northward of Benicia, has a controlling depth of about 6 feet to **Suisun City**, 12 miles above the entrance. The mean range of tide is about 5 feet. Traffic on the slough includes gasoline, jet fuel, and residual fuel oil. The power cable across the slough just south of Suisun City has a clearance of 110 feet.

A **restricted berthing area** for Maritime Administration Reserve Fleet vessels is along the west side of Suisun Bay; limits and regulations are given in **207.900**, Chapter 2. Drawbridge regulations for minor tributaries of Suisun Bay are given in **203.713**, Chapter 2.

**Chart 5575.—Seal Bluff Landing**, 2.5 miles eastward of Avon Pier, is the site of a former shipyard. The ruins of a lumber wharf are just eastward of the landing. Three large Government piers are along the waterfront of **Port Chicago**, and the area is closed to navigation. Limits and regulations of the **restricted area** along the waterfront of Port Chicago are given in **207.640**, Chapter 2.

**Chart 5576.—Pittsburg**, 12 miles eastward of Suisun Point bridges, is a manufacturing city with an increasing amount of waterborne commerce. The Pacific Gas and Electric Company oil pier 0.3 mile westward of New York Point, and the M.&R. Terminal, the U.S. Steel Company Wharf, and the Dow Chemical Company Wharf on the southerly side of New York Slough have depths up to 35 feet alongside. Fuel, water, and marine hardware for small boats are available at the yacht basins southward of New York Point. A marine railway can haul out boats up to 65 feet in length; hull and engine repairs can be made.

**Antioch**, on the south side of San Joaquin River 16 miles eastward of Suisun Point bridges, is a manufacturing city with an increasing amount of waterborne commerce. The Kaiser Gypsum Company Wharf and the Crown-Zellerbach Paper Company Wharf, eastward of the city, have depths of 30 feet or more alongside. The Fulton Shipyard has a marine railway that can haul out vessels up to 500 tons for general repairs; marine hardware is available.

**Chart 5527.—San Joaquin River** rises in the Sierra Nevada, flows 275 miles in a westerly direction, and enters Suisun Bay through **New York Slough**. The winding river is navigable for deep-draft vessels to Stockton. The water is generally fresh at Antioch. The mean range of tide is about 3 feet from the entrance to Stockton. Major floods in the river valley may occur from November to April, caused by intense general storms of several days duration. At the mouth of the river an ordinary flood will cause a rise of 8 feet and an extreme flood a rise of 10 feet in the river level. At Stockton, ordinary flood will cause a rise of 8.5 feet, and extreme flood a rise of 13.5 feet in the river level. The delta of the river is formed of many marshy islands intersected by sloughs and channels. The islands are reclaimed tule and cattail marshes which have been converted to agriculture. **Tule** is the name given to a tall aquatic plant growth similar to bulrush. Bordering the river are levees which are 12 feet or more higher than the land behind them.

Reports of gage heights of the San Joaquin River delta can be obtained from the Sacramento Weather Bureau Office at any time. The information is published in the Sacramento Bee and, in addition, is reported on radio

★ (5238) **CALIFORNIA**—San Francisco Bay—San Joaquin River—Buoy established.—San Joaquin River Lighted Buoy 33A, painted black equipped with a radar reflector, and showing a *flashing green* light every  $\frac{1}{4}$  seconds, previously temporarily established, has been permanently established in 60 feet of water about 965 yards  $247^{\circ}$  from San Joaquin River Light 35 ( $38^{\circ}06.3'$  N.,  $121^{\circ}37.0'$  W. approx.).

(Supersedes N.M. 2(277) 1966.)

(N.M. ~~33/66~~)

(L.N.M. 44, C.G., San Francisco, July 26, 1966.)

C. & G.S. Chart **5527**.

C.G. Light List, Vol. III, 1965, No. **975.51**.

C. & G.S. Coast Pilot 7, 1963, page 134.

★ (1064) **CALIFORNIA**—San Francisco Bay—San Joaquin River—Stockton Channel—Controlling depths.—Surveys by the Corps of Engineers in June 1962 and November 1963 show a controlling depth of 30 feet at M.L.L.W. through the improved sections of the Stockton Deep Water Channel from Antioch to the Mormon Channel at Stockton (37°37'12" N., 121°18'47" W.).

Approx. position, C. & G.S. Depth Note; Chart 5527: 37°59'27" N., 121°47'50" W.

**Note.**—(1) Depths are charted in the natural channels between the dredged sections.

(2) The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(N.M. 9/64.)

(C. & G.S. C.E. Project Maps, BP-65171-78.)

C. & G.S. Charts **5527**.

C. & G.S. Coast Pilot 7, 1963, pages 133, 134.

broadcasts from stations KFBK whenever the gage heights are of sufficient magnitude to be of general interest.

Information on gage heights can also be obtained from the State Department of Public Works, Division of Water Resources, Public Works Building, Sacramento.

X A Federal project provides for a 30-foot channel from the mouth of the San Joaquin River to Stockton, and a channel 9 feet deep in Mormon Channel to the head of navigation at Washington Street. The project also provides for suitable passing and turning basins. Corps of Engineers project maps for June 1961 show that the controlling depths in the channels were: 30 feet to Mormon Channel, thence 22 feet to Edison Street, thence 9 feet to the head of navigation at Center Street; 9 feet in Fremont Channel and McLeod Lake; 9 feet in Mormon Channel to Main Street, and thence 6 feet to the head of navigation at Washington Street.

Limits and regulations for anchorage areas in the San Joaquin River are given in 202.224, Chapter 2.

Rules and regulations governing maximum speed, passing, right-of-way, collision, and wrecks in the San Joaquin River are given in 207.640, Chapter 2.

X Antioch Bridge, 3 miles eastward of Antioch, has a lift span with clearances of 78 feet down and 143 feet up at mean lower low water during lowest river stages. Power cables over the main channel of San Joaquin River from the mouth to the turning basin at Stockton have a minimum clearance of 125 feet.

There are small-boat facilities on the south side of San Joaquin River on both sides of Antioch Bridge. Available supplies include gasoline, diesel oil, water, marine hardware, and groceries. The largest marine railway can haul out boats up to 55 feet in length; hull and engine repairs can be made.

The main channel in San Joaquin River to Stockton is marked by lighted buoys, lights, and lighted ranges. At Mandeville Cut and Venice Cut, 15 miles above Antioch Bridge, the river still follows its old channel and violent sheers are experienced if the navigator is not prepared to meet the river current when passing from the cuts into the river and from the river into the relatively quiet waters of the dredged channel.

Stockton, 28 miles above Antioch Bridge, is in the center of the fertile San Joaquin Valley. The deep-draft harbor is near the westerly city limits.

Tides and currents.—The mean range of tide is 3.1 feet and the tidal current is negligible.

Pilotage.—River pilots, commissioned by the Port of Stockton, may be obtained through the office of the Port of Stockton or through agents.

X Towage.—It has not been necessary for towage companies to operate at this port because all vessels operate under their own power. A tugboat of 410 horsepower is available.

Quarantine is enforced in accordance with regulations of the U.S. Public Health Service.

Customs matters are handled through an agent whose office is located at Shed 8 in Stockton.

X Wharves.—There are 11 berths for large vessels with depths of 32 feet maintained alongside by the port. The

wharves for deep-water shipping are on the southerly side of the main channel. Modern rapid loaders and cargo-handling machinery, including two gantry cranes each with a capacity of 30 tons, are available. There is a large grain elevator at dockside and the port maintains extensive warehouses on the wharves and nearby; all are connected by its own belt-line railroad.

Supplies may be had in any quantity, and fresh water is piped to the wharves. Gasoline and oil are available to small craft, but bunkering of large vessels must be done at the oil terminals in the San Pablo Bay area.

Repairs.—Some dockside facilities are available here, but the nearest marine railway is the one of 500 tons capacity at Antioch. Major repairs to large vessels must be done at drydocks in Oakland and San Francisco.

San Joaquin River above Stockton.—From its junction with Stockton Channel, the river has a controlling depth of about 3 feet for 70 miles to Hills Ferry, and is used only by small pleasure craft, fishermen, and an occasional small barge. The only facilities available are those dispensing gasoline, lubricants, and water at a few points. Navigation above the Southern Pacific Railroad bridge near Lathrop, 14 miles above Stockton, is impracticable in the low stages after June. The river is tidal as far as Mossdale, 15 miles above Stockton. At the San Joaquin Bridge, 28 miles above Stockton, the ordinary flood range is 17 feet and the extreme flood is 21 feet. At Hills Ferry the ordinary flood is 12 feet and extreme flood is 16 feet.

Bridges.—More than 15 bridges cross San Joaquin River between Stockton and Hills Ferry; drawspan regulations are given in 203.714, Chapter 2. The drawbridges have a least clearance of 17 feet and the fixed bridges a least clearance of 21 feet at mean lower low water during lowest river stages. The first fixed bridge is 28 miles above the junction with Stockton Channel.

The tributaries of the San Joaquin River are the feeder rivers, sloughs, and canals which flow into or connect with it. The principal waterways are described in sequence as the river is ascended. Bridge clearances are at mean lower low water during lowest river stages; drawspan regulations are given in 203.714, Chapter 2.

Bordering the various waterways are levees which are 12 feet or more higher than the land behind them. The levees are built up from dredged material taken from the adjacent waterway, and due to settlement of the levees, dredging has been done periodically to keep the top at height and grade. As material is needed for levee work, the dredge pays more attention to the requirements of the levee than to the depth of the channel for navigation purposes. This leaves an uneven bottom. The tops of the levees for the most part have dirt roads. Tule is often found growing on the channel side of the levees.

Many of the tributaries are used for navigation, either by pleasure craft or by commercial vessels. The pleasure craft draw from 1½ to 4 feet, while tugs and barges draw from 4 to 9 feet. There are very few wharves on these sloughs. The boats and barges using the channels make fast alongside the levee at practically any place desired.

★ (483) UNITED STATES—Pacific coast—Bridge and overhead power cable clearances:

Bridge or cable position	Type of bridge or cable	Horizontal clearance (feet)	Vertical clearance MHW (feet)	C. & G.S. charts	C. & G.S. Coast Pilot(s)	
					No.	Page
38°01'15'' N., 121°36'04'' W. <sup>a</sup>	Power-----	-----	-----	5527	7	135
38°02'47'' N., 121°38'10'' W. <sup>a</sup>	Power-----	-----	-----	5527	7	135
38°13'25'' N., 121°32'15'' W. <sup>a</sup>	Power-----	-----	-----	5527	7	135
46°10'35'' N., 123°52'00'' W. <sup>b</sup>	Vertical lift.	130	45 down 80 up.	6151, 6002, 5902	7	166, 167

<sup>a</sup> Cable removed.

<sup>b</sup> Previously reported as under construction.

(See N.M. 26 (3369) 1963.)

(N.M. 4/65.)

(C. & G.S. 1256, 1731/64.)

C. & G.S. Charts (see above).

C. & G.S. Coast Pilots (see above).

★ (6580) CALIFORNIA—San Francisco Bay—Sacramento River—Light ~~re-built~~.—Decker Island North End Light (38°06.3' N., 121°42.5' W. approx.) is now exhibited 58 feet above the water on a skeleton tower. No other change.  
(N.M. 42/66.)

(L.N.M. 62, C.G., San Francisco, Sept. 14, 1966.)

C. & G.S. Charts 5527, 166SC.

C.G. Light List, Vol. III, 1966, No. 1072.

C. & G.S. Coast Pilot 7, 1963, page 135.

Usually landings are made at various sheds located on the levee.

**Caution.**—The river and its tributaries are crossed by ferries which are guided by cables fastened to shore, and sometimes propelled by a cable rig attached to the shore. Caution must be used not to navigate in the vicinity of the ferry lane when the ferry is underway because of the danger of fouling the cables.

**Threemile Slough**, 5.8 miles above Antioch Bridge, joins the Sacramento River at the north end of **Decker Island**. The slough is a route frequently used by river steamers making passage between Sacramento and Stockton. Near the junction with the Sacramento River is a highway lift bridge with clearances of 16 feet down and 111 feet up. The power cable east of the bridge has a clearance of 108 feet.

**Mokelumne River**, one of the principal tributaries of the San Joaquin River, rises in the Sierra Nevada and empties into it 11.8 miles above Antioch Bridge. The river separates, 3.5 miles above its mouth, into two branches, the **North Fork** and the **South Fork**. The forks continue in a northerly direction and rejoin 11 miles north-northeastward from the mouth. The river then describes a semicircular route for 7 miles to the northward and eastward to the head of navigation at the Galt-New Hope bridge.

Corps of Engineers project maps for June 1961 show the following controlling depths for Mokelumne River: 12 feet from the mouth to the lower junction of the North and South Forks; thence 7 feet by North Fork to Snodgrass Slough; thence 2 feet to upper junction of the North and South Forks, by North Fork; 7 feet from the lower junction by South Fork to the upper junction; and thence 2 feet to the Galt-New Hope bridge.

Drawspan regulations for the swing and removable span bridges crossing Mokelumne River between the entrance and Galt-New Hope fixed bridge at Thornton are given in **203.714**, Chapter 2. The minimum clearance of the drawbridges is 11 feet. Power cables have a minimum clearance of 110 feet.

At low-river stages the range between mean lower low water and mean higher high water at the mouth is 4 feet, with extreme tidal range of 5 feet; there is no tide at the upper end, just above Galt-New Hope bridge. Ordinary flood fluctuation is 8 feet at the mouth and 17 feet at the upper end.

Freight is handled at small wharves, landings, or on the banks at various points.

**Georgiana Slough** enters Mokelumne River about 3 miles above the mouth, and connects that river with Sacramento River at Walnut Grove. There is deep water the entire length of the slough. River vessels formerly used the slough in making the run from Sacramento to Stockton, but to avoid the snags and sharp turns they now favor the route through Threemile Slough.

The minimum clearance of the drawbridges crossing Georgiana Slough is 13 feet; drawspan regulations are given in **203.715**, Chapter 2. Power cables have a minimum clearance of 125 feet.

**Old River** leaves San Joaquin River 47 miles above the mouth and re-enters 13 miles above Antioch Bridge. It is the most westerly branch of the interconnecting tidal channels into which San Joaquin River divides in crossing its delta. Old River has many sloughs and canals which connect with Middle River to the eastward.

Corps of Engineers project maps for June 1961 show that the controlling depths in Old River were: 10 feet for 10 miles from the mouth to Orwood; thence 10 feet for 9 miles to the lower end of Grant Line Canal; thence 7 feet for 9 miles to the Holly Sugar Factory near Tracy; and thence 5 feet to the head of Old River in San Joaquin River.

The minimum clearances of the bridges crossing Old River are: drawbridges, 10 feet; fixed bridges, 18 feet. Power cables as far as Orwood have a minimum clearance of 110 feet.

The tidal range between mean lower low water and mean higher high water at the head of Old River is about 2 feet, and at its mouth about 4 feet; ordinary flood fluctuations are 15 feet and 5½ feet, respectively, and extreme flood fluctuations are 19 feet and 8 feet, respectively.

The Atchison, Topeka, and Santa Fe Railway has a warehouse and wharf at Orwood for transfer of farm produce from boat to rail. The Phillips cannery at Orwood has similar facilities. The Holly Sugar Company refinery and terminal near Tracy has a large wharf and an unloading basin; a passing basin is about 0.5 mile downstream from the terminal.

**Middle River** enters the San Joaquin River 15.3 miles above Antioch Bridge. The river and connecting channels are a part of a complicated network of tidal canals, some natural and some artificial, in the delta of the San Joaquin River. One of the principal channels, Middle River is a by-channel of the San Joaquin River leading Old River above the city of Stockton and rejoining the San Joaquin River about 13 miles below the city.

Corps of Engineers project maps for June 1961, show a controlling depth of 6 feet in Middle River to the Williams highway bridge, 19.3 miles above the mouth.

The least clearance of the drawbridges crossing Middle River below the Williams bridge is 12 feet; drawspan regulations are given in **203.714**, Chapter 2. Power cables as far as the town of Middle River have a minimum clearance of 110 feet.

The mean range of tide in Middle River is about 3 feet during stages of extreme low water.

A large wharf with warehouse and rail connection is at the town of **Middle River**, 8.5 miles above the mouth.

**Charts 5527, 5528.**—**Sacramento River** rises in the Trinity Mountains in north central California, flows southerly for 325 miles, and enters Suisun Bay on the north side of **Sherman Island**. Deep-draft vessels follow the lower Sacramento River to Cache Slough, 1.5 miles above Rio Vista Bridge, thence through a deepwater ship channel to Sacramento, a distance of 37 miles above the mouth of the river. Barges and other small craft also use Sacramento River all the way to Sacramento, a distance

★ (2053) **CALIFORNIA—San Francisco Bay—Sacramento Ship Channel—Controlling depths.**—Surveys by the Corps of Engineers to February 1965 show controlling depths at M.L.L.W. of 21.2, 25.2, and 23.3 feet in the left outside quarter, middle half, and right outside quarter, respectively, in the improved Sacramento Ship Channel from a point in approximately 38°04'00" N., 121°47'07" W. to 1 mile above the bridge at Rio Vista. The remainder of the channel was reported to have a controlling depth of 30 feet from the channel entrance (38°03'50" N., 121°51'05" W.) to and through the turning basin at West Sacramento in November 1963.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(See N.M. 27(3447) 1964; 11(1474) 1965.)

(N.M. 15/65.)

(C. & G.S. BP-67394-404.)

C. & G.S. Charts 5576, 5534, 5527, 5528, 666, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 136.

★ (6652) **CALIFORNIA—San Francisco Bay—Sacramento River—Buoys temporarily established or relocated.**—The following buoys have been temporarily established or temporarily relocated as indicated to mark a clear channel in the vicinity of submerged and partially submerged wingdams; even-numbered buoys are red nuns with red reflectors and odd-numbered buoys are black cans with white reflectors:

(a) Sacramento River Buoy 27, temporarily established in 13 feet of water about 150 yards 170° from Sacramento River Light 28 (38°28'33" N., 121°30'50" W. approx.).

(b) Sacramento River Buoy 38A, temporarily established in 12 feet of water about 600 yards 060° from Sacramento River Light 38 (38°30'46" N., 121°33'05" W. approx.).

(c) Upper Sacramento River Buoy 24, temporarily established in 15 feet of water in (approx.) 38°39'15" N., 121°36'06" W.

(d) Upper Sacramento River Buoy 27, temporarily established in 10 feet of water in (approx.) 38°39'50" N., 121°36'42" W.

(e) Upper Sacramento River Buoy 42, temporarily established in 10 feet of water in (approx.) 38°42'15" N., 121°37'12" W.

(f) Upper Sacramento River Buoy 50, temporarily relocated in 10 feet of water in (approx.) 38°43'38" N., 121°36'14" W.

(g) Upper Sacramento River Buoy 55, temporarily relocated in 10 feet of water in (approx.) 38°45'44" N., 121°35'31" W.

(h) Upper Sacramento River Buoy 55A, temporarily established in 10 feet of water in (approx.) 38°45'54" N., 121°35'34" W.

(N.M. 46/65.)

(L.N.M. 56, C.G., San Francisco, Oct. 15, 1965.)

C. & G.S. Charts 5528, 666.

C.G. Light List, Vol. III, 1965, pages 73, 74.

C. & G.S. Coast Pilot 7, 1963, page 136.

★ (5926) **CALIFORNIA**—**San Francisco Bay**—**Sacramento Channel**—**Aids relocated.**—Sacramento Channel Lights 54, 55, and 55A, previously reported destroyed, have each been rebuilt in respective positions indicated: distances and bearings from Sacramento Channel Light 56 ( $38^{\circ}11.9'$  N.,  $121^{\circ}39.3'$  W. approx.):

(a) Sacramento Channel Light 54, about 1,310 yards  $195^{\circ}$ .

(b) Sacramento Channel Light 55, about 740 yards  $202^{\circ}$ .

(c) Sacramento Channel Light 55A, about 200 yards  $279^{\circ}$ .

**Note.**—No other change to lights.

(See N.M. 39(5670) 1965.)

(N.M. 41/65.)

(L.N.M. 48, C.G., San Francisco, Sept. 7, 1965.)

C. & G.S. Chart **5527**.

C.G. Light List, Vol. III, 1964, Nos. 1091, 1092, 1093.11.

C. & G.S. Coast Pilot 7, 1963, page 136.

★ (1474) **CALIFORNIA—San Francisco Bay—Sacramento Ship Channel—Controlling depths.**—Survey by the Corps of Engineers to December 1964 show controlling depths at M.L.L.W. of 23.9, 26.4, and 27.0 feet in the left outside quarter, middle half and right outside quarter, respectively, in the improved Sacramento Ship Channel between a point in approximately  $38^{\circ}04'00''$  N.,  $121^{\circ}47'07''$  W. and the lift bridge at Rio Vista. The remainder of the channel was reported to have a controlling depth of 30 feet from the channel entrance ( $38^{\circ}03'50''$  N.,  $121^{\circ}51'05''$  W.) to and through the turning basin at West Sacramento in November 1963. The survey of November 1964 also shows depths at M.L.L.W. outside the dredged channel in Sacramento River as follows:

(a) A depth of 18 feet in approximately  $38^{\circ}04'33''$  N.,  $121^{\circ}46'10''$  W.

**Note.**—The 25-foot depth about 75 yards northward should be expunged.

(b) A depth of 7 feet in approximately  $38^{\circ}06'39''$  N.,  $121^{\circ}42'47.5''$  W.

(c) A depth of 11 feet in approximately  $38^{\circ}06'55''$  N.,  $121^{\circ}42'27''$  W.

**Note.**—The 16-foot depth about 190 yards southwestward should be expunged.

(d) A depth of 14 feet in approximately  $38^{\circ}09'23''$  N.,  $121^{\circ}41'02''$  W.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(See N.M. 27(3447) 1964.)

(N.M. 11/65.)

(C. & G.S. BP-67116-25.)

C. & G.S. Charts 5576, 5534, 5527, 5528, 666, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 136.

★ (3447) **CALIFORNIA—San Francisco Bay—Sacramento Ship Channel—Controlling depths.**—The Corps of Engineers report controlling depths at M.L.L.W. in the Sacramento Ship Channel and Barge Canal as follows:

(a) A depth of 30 feet was reported in November 1963 in the Sacramento Ship Channel from the channel entrance ( $38^{\circ}03'50''$  N.,  $121^{\circ}51'05''$  W.) to and through the turning basin at West Sacramento.

(b) A survey in April 1964 shows a depth of 11 feet in the Sacramento Barge Canal from the east limit of the Sacramento Ship Channel Turning Basin ( $38^{\circ}33'40''$  N.,  $121^{\circ}32'40''$  W.) to the Sacramento River.

**Note.**—The Corps of Engineers should be consulted for changing conditions subsequent to the above.

(N. M. 27/64.)

(C. & G.S. CL-622/64; BP-65844-46.)

C. & G.S. Charts 5576, 5527, 5528, 5534, 666, 165SC.

C. & G.S. Coast Pilot 7, 1963, page 136.