SAN FRANCISCO, SAN PABLO AND SUISUN BAYS HARBOR SAFETY PLAN

June 14, 2007

Harbor Safety Committee

of the San Francisco Bay Region

Mandated by the California Oil Spill Prevention and Response Act of 1990

Pursuant to the
California Oil Spill and Prevention Act of 1990

Submitted by the
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Introduction

In 1990, the California Legislature enacted the Oil Spill Prevention and Response Act (OSPRA). The goals of OSPRA are to improve the prevention, removal, abatement, response, containment and clean up and mitigation of oil spills in the marine waters of California. The Act (SB 2040) created harbor safety committees for the major harbors of the state of California to plan "for the safe navigation and operation of tankers, barges, and other vessels within each harbor … [by preparing] … a harbor safety plan, encompassing all vessel traffic within the harbor." The Harbor Safety Committee of the San Francisco Bay Region was officially sworn in September 18, 1991 and held its first meeting on that date. The original Harbor Safety Plan for San Francisco, San Pablo and Suisun Bays was adopted August 13, 1992. SB 2040 mandates that the Harbor Safety Committee must annually review its previously adopted Harbor Safety Plan and recommendations and submit the annual review to the OSPR Administrator for comment.

The full committee of the Harbor Safety Committee holds regular monthly public meetings. The committee chairperson may appoint work groups to review the mandated components of the Harbor Safety Plan and timely issues. All committee and work group meetings are noticed to the public. Public comments are received throughout discussions of the various issues, which results in full public participation in developing the recommendations of the Harbor Safety Plan of the San Francisco Bay Region.

The San Francisco Bay Harbor Safety Plan encompasses a series of connecting bays, including the San Francisco, San Pablo and Suisun Bays, and the Sacramento River to the Port of Sacramento and the San Joaquin River to the Port of Stockton. The distance from the San Francisco lighted horn buoy outside the Bay to the Ports of Stockton and Sacramento is approximately one hundred miles. The 548-square-mile Bay has an irregular 1,000 mile shoreline composed of a variety of urban and suburban areas, marshes and salt ponds. Several significant islands are within the Bay, including Angel Island, Alcatraz Island, Yerba Buena Island and Treasure Island. Map 1 depicts the geographic boundaries of the area covered by the Harbor Safety Plan.

The San Francisco Bay system is the largest estuary on the Pacific Coasts of North and South America. Waters from the two major river systems and the Bay flow through the Golden Gate, which is less than a mile wide at its narrowest point. Because of the volume of water moving through the narrow opening on a daily basis, tides and strong currents occur in the Bay. While the Bay is extremely deep (356 feet) under the Golden Gate Bridge because of the swiftly moving volume of water, the Bay is very shallow in many areas and subject to sedimentation from the rivers emptying into the Bay. Sediment also is deposited outside the entrance to San Francisco Bay where a semicircular bar extends into the Pacific Ocean. The Bay itself is less than 18 feet deep over two-thirds of its area, and the Bay bottom is predominantly mud. A dredged Main Ship Channel allows deep-draft vessels to navigate the Bay.

The Bay presents a number of hazards to navigation, such as strong tides and currents and variable bottom depths, which confine large vessels to defined shipping lanes within the Bay. Navigating the Bay becomes more complex during periods of restricted visibility. The San Francisco Bar Pilots regularly compile recommended guidelines for safe navigation entitled "Port Safety Guidelines for Movement of Vessels on San Francisco Bay and Tributaries." The guidelines are sent to members of the shipping industry, and are based on a general consensus among pilots as to recommended navigation practices.

The Bay supports a variety of uses, including shipping, fishing, ferry transit and various recreational activities. There are seven ports, a number of marine terminals, and military facilities at the Military Ocean Terminal Concord (MOTCO) and Moffet Field. Because the water depths near refineries in Contra Costa and Solano Counties cannot safely accommodate larger oil tankers, large tankers lighter oil to smaller tankers or barges to move cargo in-Bay to marine terminals. Map 3 identifies the location of marine terminals in the plan area. In addition, an expanding ferry system annually makes over 85,000 (2004) trips, mainly to and from San Francisco in the central part of the Bay. Because much of the Bay shoreline is urbanized, recreational boating and the growing sports of board sailing and paddle sports are popular, with an estimated 20,000 boat berths around the Bay, exclusive of the Sacramento and San Joaquin Rivers, as well as numerous boat launch sites.

The shipping industry is a particularly vital part of the Bay Area economy. Shipping spokespersons estimate that approximately 100,000 jobs are dependent upon the shipping industry and that the industry contributes nearly $5 billion to the regional economy.

Thus, vessel traffic in the Bay consists of a complex variety of inbound and outbound vessels, wholly in-Bay vessel movements, tugs, government vessels, ferries, recreational boats, commercial and sports fishing boats, board sailors, paddle sports enthusiasts and personal watercraft (jet skis) within the series of bays, channels and rivers that comprise the San Francisco Bay planning area.

ORGANIZATION of the HARBOR SAFETY COMMITTEE of the SAN FRANCISCO BAY REGION

The San Francisco Harbor Safety Committee consists of representatives from the following: ports (four), dry cargo vessel operators (two), tank ship operators (two) or one ship operator and one oil marine terminal operator, and one tug operator, one tank barge operator, a passenger ferry or excursion vessel operator, the regional pilot organization, a vessel labor union, a commercial fishing representative, a recreational boater, an environmental organization, the U.S. Coast Guard Captain of the Port, the National Oceanic and Atmospheric Administration, the San Francisco Bay Conservation and Development Commission, the U.S. Army Corps of Engineers and the U.S. Navy. A complete list of committee members is found in Appendix A.

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Executive Summary 2006/2007

The San Francisco Bay Region Harbor Safety Committee is concerned with navigation, security and environmental issues that impact the San Francisco Bay Area. The Committee consistently has active member and public participation. In May 2007, the Committee received the National Harbor Safety Committee Award largely because the Committee is a successful example of federal and state government agencies, the maritime community and the public working together, to provide guidance and oversight of navigational safety in the Bay Region.

During 2006-2007:

- The Tug Escort Work Group met several times during the year to discuss the Bollard Pull testing regulations for Escort tugs, and reviewed the Escort tug regulations including the tug equipment lists. The work group also began a review of crew working hours.

- The Navigation Work Group discussed the safety aspects of the new CARB regulations and made safety recommendations that were added to the final draft of the regulations. Ferry operators expressed concern about organized swimming events in the vicinity of the San Francisco Ferry Terminal, which was scheduled to be discussed in a Navigation Work Group meeting. However, the swim members became aware of the concern and addressed it internally, thereby resolving the matter.

- The Ferry Operations Work Group worked with VTS in using a ferry routing model developed by George Washington University to identify risks associated with proposed ferry traffic lanes, and developed protocols for safe approach and berthing at the Ferry Building. The work group also developed communications protocols. The agreed routes will create greater predictability for the captains and VTS.

- The Prevention through People Work Group continued outreach to paddlesport groups, particularly organized kayak groups and rental companies, to meet and confer about Bay safety issues, producing a kayaking safety and Rules of the Road placard. The work group also conferred at length with all participants in bunkering procedure, and adopted a suite of documents detailing instructions and procedures for safe bunkering practices.

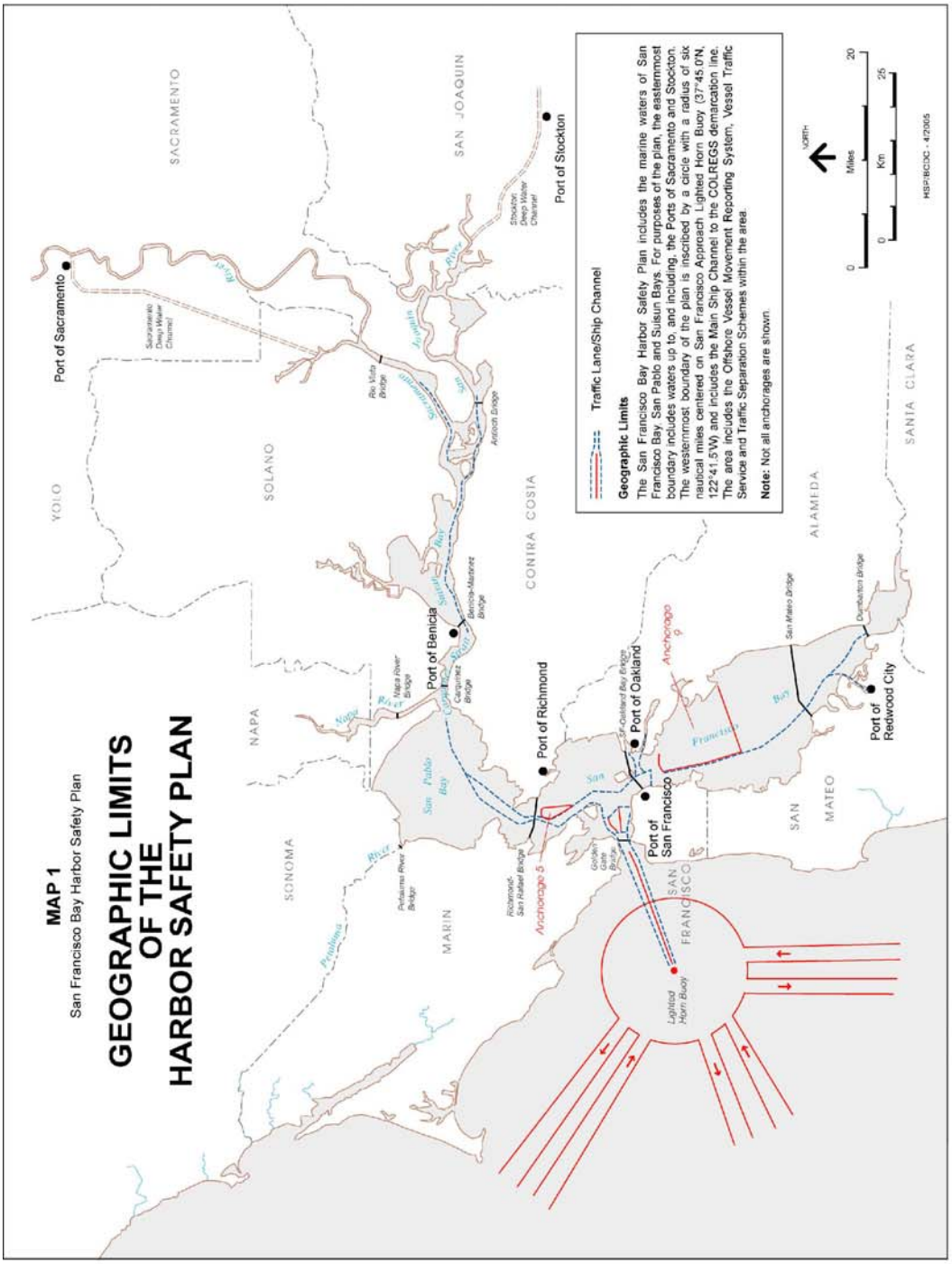
- The PORTS Work Group developed with other California Harbor Safety Committees legislation approving statewide PORTS to be administered by OSPR. The work group continued reactivation of San Francisco PORTS, and developed in conjunction with NOAA and SF Bar Pilots a cellular PORTS reporting system that can be accessed through a toll free phone number. The work group developed a plan to install additional PORTS sensors throughout the San Francisco Bay to support large vessel navigation and the marine community.

I. Geographic Boundaries

The policies and recommendations contained in the San Francisco Bay Harbor Safety Plan address vessel safety in the marine waters of the San Francisco, San Pablo and Suisun Bays, up to and including the Ports of Sacramento and Stockton, which establish the eastern boundary of the plan area. The western boundary of the plan is inscribed by a circle with a radius of six nautical miles (nm) centered on San Francisco Approach Lighted Horn Buoy SF (37° 45. 0'N., 122° 41.5'W) and includes the Main Ship Channel to the COLREGS demarcation line (see map opposite). This includes the Offshore Vessel Movement Reporting System, Vessel Traffic Service and Traffic Separation schemes within the area. NOAA charts 18649-18663 cover the Harbor Safety Plan Area.

(See map following page.)

I.


MAP 1
San Francisco Bay Harbor Safety Plan
GEOGRAPHIC LIMITS OF THE HARBOR SAFETY PLAN
Traffic Lane/Ship Channel
Geographic Limits
The San Francisco Bay Harbor Safety Plan includes the marine waters of San Francisco Bay, San Pablo and Suisun Bays. For purposes of the plan, the easternmost boundary includes waters up to, and including, the Ports of Sacramento and Stockton. The westernmost boundary of the plan is inscribed by a circle with a radius of six nautical miles centered on San Francisco Approach Lighted Horn Buoy (37°45.0'N, 122°41.5'W) and includes the Main Ship Channel to the COLREGS demarcation line. The area includes the Offshore Vessel Movement Reporting System, Vessel Traffic Service and Traffic Separation Schemes within the area.
Note: Not all anchorages are shown.
Port of Sacramento
Port of Stockton
Port of Benicia
Port of Richmond
Port of Oakland
Port of San Francisco
Port of Redwood City
SACRAMENTO
SAN JOAQUIN
YOLO
SOLANO
NAPA
SONOMA
MARIN
CONTRA COSTA
ALAMEDA
SAN MATEO
SAN FRANCISCO
SANTA CLARA
Anchorage 5
Anchorage 9
Lighted Horn Buoy
Miles
Km
NORTH
HSP/BCDC - 4/2005

II. General Weather, Currents And Tides

The majority of the information presented here is derived from the *U.S. Coast Pilot, Pacific Coast*, published by NOAA and available from the following website: http://nauticalcharts.noaa.gov/nsd/cpdownload.htm. The *Coast Pilot* information is augmented with observations from local sources.

Ships traveling into the Bay encounter diverse weather, currents, tides and bottom depths. Because of the often varied and changing set of harbor conditions, mariners must be observant about current conditions to navigate safely.

Weather

Winds

Bay area weather is seasonably variable with three discernible seasons affecting the marine environment.

Winter. Winter winds from November to February shift frequently and have a wide range of speeds dependent on the procession of offshore high and low pressure systems. Calms occur 15 to 40 percent of the time inside the Bay and 10 to 12 percent outside. Extreme wind conditions of 50 knots gusting to 75 knots have occurred during the winter. The strongest winds tend to come from the Southeast to Southwest ahead of a cold front.

Spring. Spring tends to be the windiest season with average speeds in the Bay of 6-12 knots, with wind speeds of 17-28 knot winds up to 40 percent of the time. Wind direction stabilizes as the Pacific High Pressure System becomes the dominant weather influence. Northwesterly winds are generated and reinforced by the sea breeze. Inside the Bay, winds are channeled and vary from Northwest to Southwest.

Summer. Summer winds are the most constant and predictable. The winds outside the Golden Gate are normally from Northwest to North and are generated by the strong Pacific High Pressure System. This condition lasts through October until the system weakens and the winter cycle starts again. Winds inside the Bay are local depending on the land contours acting on the onshore flow. One of the few occurrences that will alter this pattern is when a high pressure system settles over Washington and Oregon. When this happens a Northeast flow develops, bringing warm dry air. This clears away the summer fog.

Safety Considerations in Adverse Wind Conditions. Adverse wind conditions may cause ships at anchor to change position and drag anchor away from the intended mooring position. Winds in San Pablo Bay may be particularly strong and must be taken into consideration. Significant discrepancies exist in the reported winds noted in the *Coast Pilot* and observations made by local professional mariners and recreational boaters. A possible cause for this is the location of reporting sites on land, where deflection and channeling of wind results in data that differ from conditions on the water.

Fog

Fog is a common occurrence in the Bay Area, particularly around the Golden Gate. It is most frequent during the summer, occasional during fall and winter, and infrequent during spring. Although daily and seasonal fog cycles are predictable, long term fluctuations are not. Fog patterns can differ within the Bay region on the same day because of the unique geography of the Bay, which consists of two mountain ranges, the large expanse of bays and a major river system. Depending on the location, an area may experience high, dense or relatively little fog. The following is a brief summary of conditions in the Bay. For a detailed description, refer to the *Coast Pilot* (Weather Conditions, San Francisco Bay).

Summer. Summer fog is dependent on several routine conditions. The Pacific High becomes well established off the coast and maintains a constant Northwest wind. It also drives the cold California Current south and causes an upwelling of cold water along the coast. Air closest to the surface becomes chilled so that the temperature increases with altitude. This process forms an inversion layer at 500-1,500 feet, where the air is warmer at this level than the air below it. Moist, warm ocean air moving toward the coast is cooled first by the California Current, then more by cold coastal water. Condensation occurs and fog will form to the height of the inversion layer. This happens often enough to form a semi-permanent fog bank off the Golden Gate during the summer.

Under normal summer conditions a daily cycle is evident. A sheet of fog forms off the Golden Gate headlands during the morning and becomes more extensive as the day passes. As the temperature in the inland valleys rises, a local low pressure creates a steady onshore wind. By late afternoon, the fog begins to move through the Golden Gate at a speed of about 14 knots on the afternoon sea breeze. Once inside the Bay it is carried by local winds. In general, the northern part of the Bay is the last to be enveloped and the first to clear in the morning. There are times when the flow is strong enough to carry the sea fog as far east as Sacramento and Stockton. If this continues for a number of days, cooler ocean air replaces the warm valley air and causes the sea breeze mechanism to break down. Winds then diminish and the Bay Area clears for a few days; the valley then slowly reheats and the cycle begins anew.

Winter. Winter fogs are usually radiation fog or “tule” fog. With the clear skies and light winds of winter, land temperature drops rapidly at night. In low, damp places such as the Delta and Central Valley (where tules and marsh plants grow), this process creates a shallow radiation fog (moist sea air reacting to cold land mass), which can be very dense. In contrast to the summer fog that moves from sea to land at about 14 knots, the winter tule fogs move slowly seaward at about one knot.

Safety Considerations in Adverse Weather Conditions. Reduced visibility during periods of fog requires that mariners observe caution. During reduced visibility, vessels may remain docked, reduce speed if underway or anchor in or near a channel to await improved conditions. Extra vigilance must be used in reduced visibility, particularly in or near navigation channels. Vessels within the Bay at a dock or at a safe anchorage should not commence movement if visibility is less than .5 nautical miles throughout the intended route, unless the operator’s assessment of all variables is that the vessel can proceed safely. The operator’s local knowledge should include an understanding of historic weather patterns during that time of year, current weather reports and checking with reporting stations along the route. This guideline acknowledges that the Bay region is a series of bays and rivers, in-Bay distances are long and that there is not a single Bay region climate, but a series of many microclimates with variable fog. The Captain of the Port has the authority to prohibit movement of vessels within all or portions of the Bay during adverse weather conditions.

Because of the large size of the Bay (500 square miles), the longer distances traveled to the various ports, and the diverse weather conditions encountered in the Bay, mariners are dependent on accurate weather forecasting for vessel movements. The National Weather Service broadcasts marine weather information on VHF WX 1,2,3, and 4.

Currents And Tides

Currents

The currents at the entrance to San Francisco Bay are variable and can attain considerable velocity. Immediately outside the Golden Gate bar is a slight current to the North and West known as the Coast Eddy Current. The currents that have the greatest effect on navigation in the Bay and out through the Golden Gate are tidal in nature.

Golden Gate Flood Current. In the Golden Gate the flood or incoming current sets (direction of flow) straight in with a slight tendency to the northern shores and with heavy turbulence at both Lime Point and Fort Point when the flood is strong. This causes an eddy or circular current between Point Lobos and Fort Point.

Golden Gate Ebb Current. The ebb or outgoing current has been known to reach more than 6.5 knots between Lime and Fort Points. It sets from inside the northern part of the Bay toward Fort Point. As with the flood, it causes an eddy between Point Lobos and Fort Point, and a heavy rip and turbulence reach a quarter of a mile south of Point Bonita.

Golden Gate Current Maximums. In the Golden Gate the maximum flood current occurs about an hour-and-a-half before high water, with the maximum ebb occurring about an hour-and-a-half before low water. The average maximums are 3 knots for the flood and 3.5 kts for the ebb.

Inner Bay Currents. Inside the Golden Gate the flood sets to the Northeast and causes swirls and eddies. This is most pronounced between the Golden Gate, Angel Island and Alcatraz Island. The current sets through Raccoon Strait (north of Angel Island), taking the most direct path to the upper Bay and the Delta area. The ebb current inside the Golden Gate is felt on the south shore first. The duration of the ebb is somewhat longer than the flood due to the addition of runoff from the Sacramento and San Joaquin Rivers.

Tides

Tides in the San Francisco Bay Area are semi-diurnal in that there are usually two cycles of high and low tides daily, but with inequality of the heights of the two. Occasionally the tidal cycle will become diurnal (only one cycle of tide in a day). As a result, depths in the Bay are based on “mean lower low water” (MLLW), or the average height of the lower of the two daily low tides. The mean range of the tide at the Golden Gate is 4.1 feet, with a diurnal range of 5.8 feet. During the periodic maximum tidal variations the range may reach as much as 9 feet and have lowest low waters 2.4 feet below mean lower low water datum.

Safety Considerations Associated with Current and Tide Conditions. In late 1991, the National Oceanic and Atmospheric Administration (NOAA) stopped publishing the local tidal current charts due to significant errors in predictions that exceeded NOAA standards. Because safe navigation is highly dependent upon accurate tidal and current information, the Physical Oceanographic Real Time System (P.O.R.T.S.) was installed to give near-real time tide and current data updated every six minutes. P.O.R.T.S. is managed by the Marine Exchange of the San Francisco Bay Region (SFMX) with technical assistance from NOAA/NOS. Consistent funding is still to be identified for long term operation of the system in the Bay.

P.O.R.T.S continues to be of great benefit to recreational boaters, commercial shippers, vessel masters and pilots in providing accurate knowledge of winds, currents and other environmental parameters used by the San Francisco maritime community.

II.

Data from the sensors is collected and subject to automatic preliminary quality-control at the Data Acquisition System (DAS) located at the SFMX. The data is quality-tested in much greater detail on a 24-hour/7-day per week basis under a program called the Continuous Operating Real Time Monitoring System or CORMS. CORMS employs knowledgeable oceanographers at NOAA's National Ocean Service headquarters in Silver Spring, Maryland, who monitor the data quality and sensor performance using data quality control tests and remote sensor and DAS diagnostics.

Management of P.O.R.T.S., including administration, field maintenance and repair and the DAS, was handed over to the SFMX, located at Lower Fort Mason Center in San Francisco. The P.O.RT.S. Advisory Workgroup is studying various funding options in order to continue operating the system, and has made a recommendation to request general State funding.

Access to P.O.R.T.S. information may be obtained by logging onto the SFMX website at http://www.sfmx.org or by contacting the automated voice response number: (866) 727-6787.

III. Aids To Navigation

The waters of the San Francisco Bay Area are marked to assist navigation by the U.S. Aids to Navigation System. This system encompasses buoys and beacons conforming to the International Association of Lighthouse Authorities. The U.S. Aids to Navigation System is intended for use with nautical charts. The exact meaning of a particular aid to navigation may not be clear to an individual unless the appropriate nautical chart is consulted. Additional important information supplementing that shown on charts is contained in the *Light List, Coast Pilot* and *Sailing Directions.*

Aids to navigation in the Bay region are regularly reviewed. These reviews, known as the Waterway Analysis and Management System Studies (WAMS), are conducted by the U.S. Coast Guard with input from pilots and other waterway users. One of the results of these reviews was the establishment of new precautionary areas in the Central Bay and its approaches. (The prior traffic routing scheme, originally established in 1972, corrected the problems of contrary vessel movements in the Bay at that time.) The revised traffic routing scheme established a deep water traffic lane and a precautionary area between the Main Ship Channel traffic lanes and the Deep Water Traffic Lane (DWTL). It also established the Central Bay traffic lanes and expanded the associated precautionary areas. The northern traffic lanes were redesigned and the separation zones in the channel deleted. The Coast Guard also established Regulated Navigation Areas (RNAs) for San Francisco Bay and the ship channels of Oakland Harbor, Richmond Harbor/Southampton Shoal Channel, North Ship Channel, Pinole Shoal Channel and the channel under the Union Pacific Railroad Bridge in the Carquinez Strait.

Lighted buoys mark many of the major rocks near shipping channels in the Bay. A lighted buoy and a racon (radar beacon) mark Harding Rock, a submerged rock near the DWTL northwest of Alcatraz Island. Arch and Shag Rocks, which are submerged near Harding Rock, are unmarked. The Coast Guard determined that it was not necessary to mark these rocks. However, in September 1996, the Coast Guard established the San Francisco Bay North Channel Lighted Buoy 1 in position 37-49.9N, 122-24.5W to mark the shoal east of Alcatraz Island for deep-draft vessel traffic.

In addition to the hazards posed by rocks both above and below the water, area bridges create an additional challenge when navigating the Bay. There are racons on most bridges in the Bay Region. This is of major importance because racons are invaluable for radar navigation, particularly in fog, which is common to the Bay. Racons appear on radar screens as large coded signals extending in an arc behind the racon position. With racons placed on the center span of bridges, the mariner can determine the center of the bridge span, even in limited visibility. The Harbor Safety Committee continues to emphasize the importance of racons on bridges.

IV. Anchorages

Due to the extent of the Bay, a number of federally designated anchorages have been established in the San Francisco, San Pablo, and Suisun Bays and the San Joaquin and Sacramento Rivers. The *Coast Pilot* lists the area's anchorages and limitations. See 33 CFR 110.224 for regulations governing anchorages in the San Francisco Bay region. The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov.

Anchorage 9 is the only anchorage designated by the U.S. Coast Guard Captain of the Port where lightering of tankers and bunkering of vessels is allowed. Because of the number of active military bases that were situated around the Bay, the Coast Guard established several explosive anchorages, primarily within Anchorages 5 and 9 (see Map 1). Explosive Anchorage 14, within Anchorage 9, was realigned in 1997 to provide deeper water in order to allow vessels laden with explosives, and with drafts of 38 feet or greater, to safely anchor. This also minimized potential overcrowding of vessels anchored within the northern portion of Anchorage 9. Notice of activation of an explosive anchorage is made in the Coast Guard Notice to Mariners to advise vessels not to anchor within the area while vessels are laden with explosives within the Anchorage.

It was recommended that the USCG adopt pre-designated anchorage areas within the existing general anchorages throughout the VTS SF area, and in particular within General Anchorage 9, in order that safer and more disciplined anchoring practices may be managed by VTS SF, with due consideration for pilot and vessel master concerns. The final resolution was to divide the Anchorage into two areas: the western side is designated for deep-draft vessels and the eastern side for lighter-draft vessels. In addition, VTS requires that vessels not anchor closer than 750 yards from one another.

V. Surveys, Charts And Dredging

The rivers and streams that empty into San Francisco Bay carry large quantities of silt into the harbors and shipping channels of the Bay. Therefore, channel depths must be regularly maintained and shoaling controlled in order to accommodate deep-draft vessels. Beginning in 1868, Congress passed the River and Harbor Act and the federal government began dredging a channel to create a main ship channel in the approaches to San Francisco Bay. Maintenance dredging accounts for approximately 5,000,000 cubic yards of sediments dredged from the San Francisco Bay, Sacramento and San Joaquin ship channels annually.

Actual channel depths may vary from project depths and must be checked with the most recent hydrographic surveys. Presently the project depth of the Main Ship Channel from the Pacific Ocean into the Bay is 55 feet deep and 2,000 feet wide. However, continual sedimentation flowing out of the river systems into the ocean reduces the Main Ship Channel from its authorized depths. According to the U.S. Army Corps of Engineers (CoE), there are no current plans to change the entrance channel's authorized width or depth. The depth of the main channel limits the draft of vessels able to enter the Bay.

During the past century, the federal government deepened a number of shipping channels, removed several shoals and reduced rocks near Alcatraz Island. There are a number of federally dredged channels in the Bay, some of which are narrow. For example, Pinole Shoal is 600 feet wide and the Stockton Main Ship Channel is 200 feet wide. Bay Area ports and channels are maintained to various authorized project depths. (Consult the latest *Coast Pilot* or NOAA charts.)

Deep-draft vessels in the Bay are often constrained to navigate only within the main shipping channels. Groundings have been reported in many areas of the region, in part due to the narrow width of many of the channels. Groundings can result in damage to vessels and property, with the potential for serious environmental consequences. A ship aground in a channel can block the transit of other vessels or create new shoaling, and may cause serious delays to Bay commerce. Maneuvering deep-draft ships in narrow channels with minimal underkeel clearance poses high navigational risks, given the complexities of tides, currents and weather conditions in the Bay.

V.

Surveys

Surveys provide information on actual channel depths, reducing the risk of vessel groundings. The frequent shoaling and silting in the channels of San Francisco Bay and its tributaries require channel surveys to be conducted on a routine basis. Emergency surveys should be conducted when there is evidence that shoaling has occurred. Due to seasonal shoaling, some areas are surveyed on a more frequent basis. Even charts based on modern surveys may not show all seabed obstructions or shallow areas due to localized shoaling.

The variable hydrodynamics of the Bay estuary are due to a number of factors such as drought and flood cycles, dredging projects and in-Bay dredge disposal that may affect navigation channels. Strong seismic events may alter the bottom typography of the Bay due to liquefaction and lateral spread. Recent observations have indicated that manmade channels may be influencing tidal currents to a greater degree than anticipated, affecting sediment accretion.

Accumulation of disposed dredged material at the disposal site near Alcatraz Island resulted in the need for a new approach to dredged material management, leading to adoption of the Long Term Management Strategy (LTMS) for the placement of dredged material in the San Francisco Bay region by the state and federal agencies that regulate dredging and disposal. The LTMS provides the basis for uniform federal and state dredged material disposal policies and regulations, with a focus on minimizing in-bay disposal of dredged material.

Charts

NOAA's Office of Coast Survey (CS) designed a chart maintenance plan to provide support for the nation's largest commercial ports and trade routes. Selection of these ports and routes is based upon the tonnage and value of goods moving through them.

Raster Chart Products: NOAA has been active in developing electronic charts products. NOAA's entire suite of 1,000 nautical charts is available in raster format from nautical chart agents. There are 75 software developers that have produced 25 different navigational software applications utilizing these raster chart images.

V.

Print-on-Demand Charts (**POD**): POD charts are available nationwide from contractors that are listed on the NOAA website: http://nauticalcharts.noaa.gov. The POD allows CS to update charts immediately and electronically transmit the updated information to users. (means for the user to update raster charts is being investigated. The user will be able to download Notice to Mariner corrections and other chart corrections from the internet website or bulletin board that can be merged with the existing file (on CD-ROM or other media) using a "raster-differencing" application that in essence performs a pixel-by-pixel comparison between the existing chart and corrections to produce an updated chart version. Beta testing of this experimental process is still in progress.

San Francisco Bay NOAA Nautical Charts			
	Chart Number	Chart Scale	Chart Title
1	18640	1:207,840	San Francisco to Point Arena
2	18645	1:100,000	Gulf of the Farallones
3	18649	1:40,000	Entrance to San Francisco Bay
4	18650	1:20,000	S.F. Bay: Candlestick Pt. to Angel Island
5	18651	1:40,000	S.F. Bay: Southern Part
6	18652	1:80,000	Small Craft Chart: S.F. Bay to Antioch
7	18653	1:20,000	S.F. Bay: Angel Island to Pt. San Pedro
8	18654	1:40,000	San Pablo Bay
9	18655	1:10,000	Mare Island Strait
10	18656	1:40,000	Suisun Bay
11	18657	1:10,000	Carquinez Strait
12	18658	1:10,000	Suisun Bay: Roe Island and Vicinity
13	18659	1:10,000	Suisun Bay: Mallard Island to Antioch
14	18660	1:40,000	San Joaquin River, Antioch to Medford I
15	18661	1:40,000	Sacramento and San Joaquin Rivers
16	18662	1:40,000	Sacramento River
17	18663	1:20,000	Stockton Deep Water Channel
18	18664	1:20,000	Sacramento to Colusa
19	18680	1:210,668	Point Sur to San Francisco

Vector-Based Charts: NOAA is building a database to produce an accurate and detailed vector electronic navigational chart (ENC) for major U.S. ports and shipping lanes. The vector charts include "active" information on navigationally significant features such as aids to navigation, bridges, anchorages, obstructions, wrecks, rocks, cables, traffic separation schemes, pipelines, platforms, cautionary and dredged areas. The ENCs for the SF Bay region are compiled and available online at http://nauticalcharts.noaa.gov.

V.

Hydrographic Surveys: NOAA contracted for hydrographic surveys in the Bay in April 1999. Updates are continuously made by NOAA's Navigation Response Team and contract surveys.

Navigational Issues Associated with Channel Design and Dredging

Harding, Shag, and Arch rocks are large submerged rocks located approximately one to one-and-a-quarter nautical miles northwest of Alcatraz Island. The tops of the rocks are 36, 37, and 33 feet respectively below the surface of the water at MLLW. The submerged rocks are within the westbound traffic lane that passes north of Alcatraz Island and is designated for large vessels over 1,600 tons drawing 28 feet or less outbound to sea. Most inbound vessels sail south of Alcatraz Island; however, ships with a draft of more than 45 feet sail north of Alcatraz in the deep water traffic lane in order to maintain safe depths in the deeper waters within this area. Blossom Rock is 40 feet below the surface of the water at MLLW and is located approximately one nautical mile to the southeast of Alcatraz Island, posing a potential hazard to navigation for deep-draft vessels transiting Central San Francisco Bay. Harding, Arch, Shag and Blossom Rocks were lowered many decades ago for the shipping lanes, but today's large tankers and container ships have deeper drafts and now must avoid the submerged rocks. Lowering the rocks to accommodate the most modern ships would help create sufficient depths for a new two-way navigation lane north of Alcatraz Island, as well as provide a greater margin of safety for vessels transiting the area between Alcatraz and Treasure Islands.

The San Francisco Central Bay Rock Removal Project was initiated in April 2000 to review potential actions to prevent groundings on these rocks. Removing this hazard would significantly reduce the possibility of a major oil spill resulting from a vessel striking one of the mounds. Although there are other obstructions to navigation within the Bay, these rock mounds are especially dangerous due to their close proximity to the confined shipping lanes.

The U.S. Army Corps of Engineers (CoE), working with the Harbor Safety Committee's Underwater Rocks Work Group and the California State Lands Commission, investigated the economic and environmental feasibility of lowering the rock mounds to depths required for deeper draft vessels. After more than two years of study, the CoE concluded that with current shipping practices in place that are designed to ensure the safe passage of vessels within the Bay, the probability of a vessel actually grounding on the rocks became extremely remote. Non-structural measures (e.g., aids to navigation, tug support, emergency response) are regularly evaluated under the overall navigation safety mission of the Harbor Safety Committee. The low probability of occurrence, when applied to the potential damages that could result from a spill, reduced the project benefits well below the cost to lower the rocks. Therefore, the CoE determined there was not a federal interest in physically lowering some or all of the rocks.

VI. Contingency Routing

Dredging and construction may impact the routing of vessels in the Bay. Dredging of the shipping lanes is essential for safe navigation to the ports and marine terminals because so much of the Bay is shallow and subject to sedimentation. Therefore, maintenance dredging occurs on an ongoing basis. In addition, major projects to deepen various ports have taken place to accommodate the modern deep-draft vessels.

The six major bridges that span San Francisco Bay shipping lanes require regular maintenance of bridge fender systems. In addition, there are projects to strengthen the supports of several bridges for the purpose of seismic safety. Maintenance and construction work on the bridges often impacts navigation lanes.

During the many stages of a dredging or construction project that might impact the navigation of vessels, the project proponent and managers consult with pilots, vessel operators, the U.S. Coast Guard, affected port authorities and appropriate agencies. This ensures that consideration is given to the safety of navigation and any restrictions that may impact the movement of vessels.

The USCG Vessel Traffic Service (VTS SF or VTS) has authority under the Ports and Waterways Safety Act to direct vessel movement in case of emergency to ensure the safety and security of the Port. The Captain of the Port has authority to create Safety Zones and to regulate vessel traffic in the event of an oil spill, disaster or emergency.

San Francisco Vessel Mutual Assistance Plan (SF-VMAP). SF V-MAP is composed of member vessels, the Coast Guard, and passenger vessel operators who came together to develop an emergency response plan that would ensure a sufficient level of safety exists on small passenger vessels and enhance local capabilities to manage a catastrophic, waterborne Search and Rescue incident.

Contingency Routing. Cooperation and consultation between pilots, the USCG, port authorities and appropriate agencies and contractors should continue from the project planning stage through the construction stage of projects that may impact safe navigation in the Bay. The planning stage should include an evaluation of various alternatives to ensure harbor safety. To reduce the risk of accidents occurring during harbor construction, dredging and waterway modification projects, the long-standing permitting procedures of the U.S. Coast Guard, the San Francisco Bay Conservation and Development Commission, the U.S. Army Corps of Engineers, the U.S. Environmental Protection Agency and the San Francisco Bay Regional Water Quality Control Board should be specifically referenced as mandates.

VI.

Contractors are responsible for informing the USCG in advance of their planned and actual construction so that the USCG may advise and establish Safety Zones and/or provide cautionary notices and/or rerouting orders to mariners. A Safety Zone is a directive concerning a water area, a shoreline area or a combination thereof to limit access to authorized vessels. The Captain of the Port is authorized to establish temporary Safety Zones. Planning for alternate contingency routing during a construction project is not the responsibility of the Harbor Safety Committee.

The Oakland -50 foot deepening project is scheduled to be completed during the spring of 2009. The contractor working on this project sends weekly status reports to VTS SF, the S.F. Bar Pilots, the USCG Marine Safety Office and the Army Corps of Engineers.

Additionally, project planning and construction are underway for seismic retrofitting of various major bridges in San Francisco Bay. These seismic retrofit activities will affect mariners on a daily basis for several years. The Coast Guard, with input from the Harbor Safety Committee, has worked with CalTrans, bridge owners and contractors to develop guidelines for construction activity on the bridges. Sector San Francisco, VTS and S.F. Bar Pilots will continue to review the plans for mooring construction equipment at bridge sites to ensure a safe path for navigation. Bridge owners are responsible for ensuring that reliable communications exist between the bridge, the VTS and transiting vessels so they can pass information about the location of construction equipment or other factors affecting navigation.

The Eleventh Coast Guard District, Bridge Section provides information about bridge activities via telephone, letter, Local Notice to Mariners and Broadcast Notice to Mariners as appropriate. Mariners are reminded that heavy rain and high winter flows may result in reduced vertical and horizontal navigational clearances under bridges. Flotsam and drift may accumulate at bridge piers and abutments. Mariners should approach all bridges with caution and due consideration to existing navigational conditions. Notification of bridge-related discrepancies should be provided to the VTS via marine radio or telephone to ensure appropriate Notices to Mariners are issued.

Construction, retrofit and maintenance activities at bridges involve the use of scaffolds, temporary trestles, and marine construction equipment. (See Appendix K, Vehicular Bridge Inventory.) General information about construction activities is provided in the weekly Local Notice to Mariners. Immediate information is provided by Broadcast Notice to Mariners and VTS advisories. Some projects have special considerations such as minimum wake or scaffolding that reduces vertical clearance. The Local Notice to Mariners and VTS provide contact information to the various work sites, allowing mariners access to timely information. Commercial vessels may be asked to provide their "air draft" and their vertical clearance requirement directly to the bridges or to VTS to assist the bridges in anticipating the need for moving scaffolding. Mariners are advised to transit the work site with minimum wake to ensure safe working conditions at the bridge.

VI.

The cooperation of the maritime community during essential bridge work is appreciated.

VII. Vessel Speed And Traffic Patterns

Ship Traffic

A variety of commercial, military and public vessels enter, exit and transit the Bay. Many vessels such as ferries and tugs remain entirely within the Bay. Container ships, oil tankers and bulk carriers account for the greatest percentage of ship arrivals; however, a broad range of cargo transits the region every year. Other categories of ships include vehicle carriers, break bulk, chemical tankers and passenger ships. Occasionally, surface combatants, submarines and naval auxiliaries such as oil tankers and supply ships transit the Bay. Public vessels often encountered on the Bay include those of the U.S. Coast Guard, the Army Corps of Engineers, NOAA, and the Military Sealift Command.

In order to safely transit the shipping channels to marine oil terminals in the North Bay and Carquinez Strait, some large oil tankers lighter oil to barges or to smaller ships. Lightering is the process of transferring oil from a larger ship tanker into smaller vessels to reduce the draft of the larger tanker. The large tanker can then proceed to a marine terminal and continue discharging the balance of its cargo. Lightering operations in the Bay take place in Anchorage 9 just south of the Oakland-Bay Bridge. The California State Lands Commission provides annual reports of the amount of oil shipped through the region (see Appendices).

Speed of Vessels

In the Central Bay, where vessel traffic is heaviest, vessels must make abrupt movements to navigate around Alcatraz Island or transit under the Bay Bridge to the Port of Oakland.

In early 1993, the Coast Guard Marine Safety Office San Francisco Bay proposed that maximum speed limits be set for certain vessels in the Bay to improve safe navigation. The Vessel Traffic Service (VTS), in a two-week survey in early 1993, noted three large commercial vessels traveling at speeds between 18 to 20 knots within the Central Bay. These speeds were considered excessive, taking into consideration the narrow confines of the shipping lanes, the distance required for large vessels to stop, the many hazards and the number of other vessels generally present, such as commercial ships, ferries, recreational boats and tugs. During May 1993, VTS tracked the speed of 206 vessels inbound and outbound within the Central Bay, which included tankers, ships and tugs with tow. From this sample, it was concluded that the vast majority of vessels were traveling 15 knots or less.

VII.

The Captain of the Port requested the Harbor Safety Committee to formally comment on these findings. After a number of public meetings, the Committee agreed that maximum speed limits should be established for the main ship channels based on the operating characteristics of ships transiting the Bay. For example, industry related that lower speeds, such as a 12-knot limit, would unnecessarily restrict the maneuverability of some ships in swift currents. Also, certain ships can operate only in ranges of full ahead and half ahead, which may not coincide with an established upper speed limit. Taking this information into consideration, the Harbor Safety Committee endorsed the 15-knot speed limit. In addition, the Committee recommended that all vessels be in a response mode that would allow an immediate response to an engine order. It was agreed the maximum speed proposed would apply to an unescorted vessel of 1,600 or more gross tons. Vessels required to be escorted would still be governed by the speed at which assistance could be rendered as outlined in the tug escort regulations.

Federal regulation 33 CFR Parts 162 and 165 became effective May 3, 1995 (see Captain of the Port Advisory #05-095 below). These regulations state in part that the maximum speed for all power driven vessels of 1,600 or more gross tons shall not exceed 15 knots through the water from the COLREGS Demarcation Line to the southern tip of Bay Farm Island, Alameda and the Union Pacific Railroad Bridge in Benicia. The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov. This standard also applies to a tug with a tow of 1,600 or more gross tons. Power driven vessels of 1,600 or more gross tons shall in any case have their engines ready for immediate maneuver and shall not operate in control modes or with fuels that prevent an immediate response to any engine order ahead or astern or preclude stopping their engines for an extended period of time.

During the summer of 2004, OSPR received a letter from an environmental group alleging frequent violations of the 15-knot (speed over ground) speed limit. The Navigation Working Group met several times to address the issue, and steps were taken to more closely monitor the speed of vessels in the Bay. VTS conducted several speed surveys and by November 2004 determined there was substantial compliance. Those who were not in compliance were promptly notified.

COTP Advisory #05-095 (4 May 1995): ENFORCEMENT OF NAVIGATION RULES IN SAN FRANCISCO BAY

This advisory provides a listing of the major deep-draft channels in San Francisco Bay and adjacent waters which the Captain of the Port considers to be "narrow channels or fairways" within the meaning of the International and Inland Rules of the Road.

VII.

Rule 9, in both the International and Inland Rules of the Road, provide requirements for vessels navigating in the vicinity of narrow channels or fairways. Vessels and powerboats less than 20 meters (approximately 65 feet), all sailboats and vessels engaged in fishing shall not impede the passage of a vessel that can safely navigate only within a narrow channel or fairway. Additionally, a vessel shall not cross a narrow channel or fairway if such crossing impedes the passage of a vessel that can safely navigate only within that channel or fairway. The term "shall not impede" means a small craft must keep well clear and not hinder or interfere with the transit of larger vessels. Small craft and fishing vessels shall not anchor or fish in narrow channels if large vessels or barges being towed are transiting.

Coast Guard enforcement efforts, combined with a public education and information program, are further intended to draw public attention to the serious hazards created when smaller vessels impede large vessels. This effort should result in an improved level of navigational safety and reduce the risk of collisions, groundings and their potential consequences.

The Captain of the Port considers the following areas to be "narrow channels or fairways" for the purpose of enforcing the International and Inland Rules of the Road. This list is not all-inclusive, but identifies areas where deep-draft commercial and public vessels routinely operate. Included in this list and marked by an asterisk (*) are the Regulated Navigation Areas (RNAs) in San Francisco Bay, which were designated in 33 CFR 162 and 165. [May 1995] The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov.

a. All traffic lanes and precautionary areas in the San Francisco Bay eastward of the San Francisco Approach Lighted Horn Buoy SF (LLNR 360) to the San Francisco -Oakland Bay Bridge and the Richmond -San Rafael Bridge to include:

*1. Golden Gate Traffic Lanes which include the Westbound and Eastbound Lanes west of the Golden Gate Precautionary Area.

*2. Golden Gate Precautionary Area.

*3. Central Bay Traffic Lanes, which include the Deep Water Traffic Lane, The Eastbound Lane (south of Alcatraz Island), and the Westbound Lane (south of Harding Rock).

*4. Central Bay Precautionary Area.

*5. North Ship Channel between North Channel Lighted Buoy "A" and the Richmond -San Rafael Bridge.

*6. Southampton Shoal Channel including the Richmond Long Wharf maneuvering area.

VII.

*7. Richmond Harbor Entrance Channel and the Point Potrero Reach ending at Point Potrero Turn and including the Turn Basin at Point Richmond.

8. Point Potrero Turn.

9. Richmond Harbor Channel in its entirety.

10. Santa Fe Channel in its entirety.

*b. Oakland Harbor Bar Channel including the Outer Harbor Entrance Channel and the Inner Harbor Entrance Channel.

c. Oakland Outer Harbor.

d. Oakland Inner Harbor from Inner Harbor Channel Light "5" (LLNR 4670) to, and including, the Brooklyn Basin South Channel.

e. Alameda Naval Air Station Channel in its entirety.

f. South San Francisco Bay Channels between the central Bay Precautionary Area and Redwood Creek Entrance Light "2" (LLNR 5180).

g. Redwood Creek between Redwood Creek Entrance Light "2" (LLNR 5180) and Redwood Creek Daybeacon "21" (LLNR 5265).

*h. San Pablo Straight Channel from the Richmond-San Rafael Bridge to San Pablo Bay Channel Light "7" (LLNR 5900).

*i. Pinole Shoal Channel in San Pablo Bay between San Pablo Bay Channel Light "7" (LLNR 5900) and San Pablo Bay Channel Light "14" (LLNR 5935).

j. Carquinez Strait between San Pablo Bay Channel Light "14'.' (LLNR 5935) and the Benicia-Martinez Highway Bridge.

k. Mare Island Strait between Mare Island Strait Light "2" (LLNR 6095) and Mare Island Causeway Bridge.

l. Suisun Bay Channels between the Benicia-Martinez Highway Bridge and Suisun Bay Light "34" (LLNR 6655).

m. New York Slough between Suisun Bay Light "30" (LLNR 6585) and San Joaquin River Light "2" (LLNR 6670).

n. Sacramento River Deep Water Ship Channel from Suisun Bay Light "34" (LLNR 6655) to the Port of Sacramento.

o. San Joaquin River from San Joaquin River Light "2" (LLNR 6670) to the Port of Stockton.

Rules of the Road Enforcement: Timely reporting and enforcement of Rules of the Road infractions promotes safer navigation. Vessel masters, pilots, and operators are encouraged to report incidents, which merit investigation. Reports will be fully investigated and may result in license suspension or revocation proceedings or the assessment of civil penalties.

VIII: Accidents And Near-Accidents

Accidents. The Coast Guard compiles reports of marine accidents or reportable casualties of commercial, military and recreational vessels. A "reportable casualty" is defined in Title 46, Code of Federal Regulations, Part 4 (46 CFR 4.05-1) as any accidental grounding or unintended strike of a bridge; loss of primary steering or propulsion or associated control system; an occurrence materially and adversely affecting the vessel's seaworthiness or fitness for service; loss of life; injury beyond first aid; or damages over $25,000. The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov. Sector San Francisco provides accident summaries in monthly reports to the Harbor Safety Committee.

Near-Accidents. The Vessel Traffic Service (VTS), managed by the U.S. Coast Guard, summarizes near-accidents or close calls reported within the area covered by VTS. Incident reports are designed to include near-collisions, vessels impeding progress of other vessels, and violations of any navigation rules. Categorizing an incident as a "near-miss" is a subjective determination based upon available information.

Reporting Requirements. As soon as is practicable, a VTS user shall notify the VTS of any of the following: (1) a marine casualty as defined in 46 CFR 4.05-1; (2) the ramming of a fixed or floating object; (3) a pollution incident as defined in 33 CFR 151.15; (4) a defect or discrepancy in an aid to navigation; (5) a hazardous condition as defined in 33 CFR 160.203; (6) improper operation of vessel equipment required by 33 CFR 164; (7) a situation involving hazardous materials for which a report is required by 49 CFR 176.48; or (8) a hazardous vessel operating condition as defined in 33 CFR 161.2. The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov.

Analysis and Actions Taken to Alleviate Accidents. In 1971, two tankers collided in the Main Ship Channel west of the Golden Gate Bridge, resulting in an oil spill. As a direct result of this accident, the VTS was established for the Bay region. The VTS system is fully described in a separate chapter.

Major bridges span shipping channels, connecting various populated areas of the Bay. The bridges are important traffic connectors under which large vessels must carefully navigate between spans. Vessels have struck all Bay bridges during the past 25 years, resulting in damage to the vessels and/or the bridges. Radar beacons (racons) have been added to most of the region's bridges to enhance the vessel operator's ability to safely navigate between bridge spans in all types of weather.

VIII.

Sector San Francisco investigates all reported marine casualties occurring in the Bay region meeting the criteria set forth in Title 46, Code of Federal Regulations, Part 4. These investigations are conducted to obtain information surrounding the root cause of the casualty so that corrective action can be taken and subsequent casualties of the same nature can be avoided. In accordance with 46 CFR Part 5, investigations are also conducted to ascertain whether personnel misconduct, negligence or drug/alcohol use was a factor in the casualty. In such instances, a personnel investigation would be conducted. Procedures such as these are administrative in nature and can affect a person's Merchant Mariner's License or Merchant Mariner's Document. The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov.

Civil penalty procedures may be warranted in a situation where a law or regulation has been violated. Civil penalty procedures are the only actions appropriate in the following: foreign flag vessel; personnel aboard foreign flagged vessels licensed under the authority of another nation; federally licensed pilots operating aboard a foreign flagged vessel while acting under the authority of a State Pilot's license; and unlicensed U.S. citizens. If a violation is determined to be criminal in nature, such action is reported to and pursued by the U.S. Attorney's Office.

The Harbor Safety Committee has representatives from a broad section of the maritime community and provides a platform for educational efforts and ongoing dialogue. Its work groups and community outreach help to prevent accidents in the Bay. The USCG, NOAA, state agencies, S.F. Bar Pilots, industry and representatives of recreational and environmental groups are all active participants.

In 1992, the Harbor Safety Committee recommended that the Coast Guard and VTS devise a more consistent system of reporting accidents and near-accidents, standardized with other areas, and to analyze the statistics on an annual basis with recommendations for improvements. This recommendation has been essentially accomplished in San Francisco Bay.

As part of this effort, the Harbor Safety Committee worked for adoption of a statewide definition of "near-miss." The following definition was adopted by the five California Harbor Safety Committees:

> A reportable "Near-Miss Situation" is an incident in which a pilot, master, or other person in charge of navigating a vessel, successfully takes action of a non-routine nature to avoid: a collision with another vessel, structure or aid to navigation; the grounding of a vessel; or damage to the environment.

VIII.

The HSC also participated in establishing a system for voluntary reports of near-miss situations for the Coast Guard in order to prevent vessel accidents. A voluntary reporting form was adopted and included in the Vessel Traffic Service, San Francisco, June 1995 User's Manual. In addition, the Captain of the Port included the report form in the Marine Safety Office newsletter, and the San Francisco Bar Pilots Association made the report form available to its members. However, due to the Freedom of Information Act, the Coast Guard determined that anonymity could not be provided to persons making reports.

The USCG considered a program to address near-misses (or non-reportable near casualties); however, the program was put on hold in November 2002 due to a lack of funding.

IX. Communication

Radio Communications

Ship-to-ship and ship-to-shore communication for the maritime community in the San Francisco Bay Area is almost exclusively on marine VHF (very high frequency) radio. The level of usage varies with periods of saturation depending on the time of day and level of vessel traffic. Additional communication modes include telex, fax, internet, cell phones and AIS (Automatic Identification System) messaging.

VHF radio is expected to continue as the primary method for ship-to-ship and ship-to-shore radio communications. Cell phones help to amplify or clarify information that would not normally be passed, or would be limited, over VHF radio. Nonetheless, cell phones are not a substitute for VHF radio as the primary means of communication with and between vessel traffic in the Bay Area.

AIS will help mariners to more quickly identify other vessels thereby reducing the duration and number of radio transmissions.

Please see Chapter XX for brochures that address radio communication and safe vessel operations available from the San Francisco Marine Exchange.

Current Usage

CHANNEL	USE
SAN FRANCISCO BAY COMMON FREQUENCY USAGE	
06	Intership safety. Also often used for non-distress traffic between USCG and other vessels.
10	San Francisco Bar Pilots Pilot Boats Agents San Francisco Marine Exchange Chevron Richmond Long Wharf
12	Vessel Traffic Service San Francisco offshore traffic. Used between outer limit of Offshore Precautionary Area and VTS outer limit (38 nautical mile radius from Mt. Tamalpais).
13	Bridge to bridge navigation
14	Vessel Traffic Service San Francisco in-shore traffic. Use from outer limit of Offshore Precautionary Area, throughout San Francisco Bay, up to Stockton and Sacramento.
16	Hailing/distress/safety.
21A	U.S. Coast Guard reserved working frequency between USCG units only.

IX.

CHANNEL	USE
22	Notice to Mariners U.S. Coast Guard and public working channel
23A	USCG reserved working frequency for communications between USCG units and other vessels.
7A, 11, 77 18A, 19A	Common tug working frequencies.
79A, 80A, 88A	Commonly used by fishing vessels.
7A, 8, 9, 11, 18A, 19A	Port Operations — Commercial intership and ship to shore working channels. Commercial vessel business and operational needs.
9, 68, 69, 71, 72, 78A	Port Operations — Non-commercial; supplies repairs, berthing, yacht harbors/marinas.

TUG COMPANY CHANNELS	
9	Westar Marine Services
10	Crowley Marine Services Foss Maritime Company
18A	AMNAV Maritime Services Baydelta Maritime Brusco Tug & Barge Oscar Niemeth Towing SeaRiver Maritime Seaway Towing Company Starlight Marine Services
MARINE OPERATORS	
26, 84, 87	San Francisco
27, 28, 86	Sacramento, Stockton, Delta
VESSEL TRAFFIC SERVICE RADIO COVERAGE	
VTS has complete radio coverage throughout the region on its designated frequencies.	

Existing Limitations

Due to the many hills in the region that restrict line of sight, VHF Channel 13 has a number of blind spots because of the one-watt transmission limitation on the channel.

Equipment

1. **San Francisco Vessel Traffic Service (VTS)**. VTS communications equipment consists of four remote sites located throughout the region that ensure complete VHF radio coverage of the VTS area.

2. **San Francisco Bar Pilots**. The San Francisco Bar Pilots' headquarters is located at the East end of Pier 9, San Francisco. The antenna for their primary system is located on Mt. Tamalpais.

3. **San Francisco Marine Exchange**. The Marine Exchange is located at Fort Mason Center, San Francisco. The Exchange shares the antenna on Mt. Tamalpais with the Bar Pilots. Their communication equipment includes:

A 50-watt transceiver on Channel 10.

A standard transceiver with a local antenna monitoring Channels 13, 14, & 18A.

History of VTS Channel

Due to increasing congestion on Channel 13, the USCG proposed to shift the primary VTS channel to Channel 14. A Harbor Safety Committee Working Group, consisting of persons from various maritime organizations in the Bay Area, also recommended the change, and the Harbor Safety Committee endorsed the Coast Guard's efforts to improve the communication system. On August 15, 1994, the VTS operating channel was changed to Channel 14 VHF and the change has significantly reduced the amount of radio traffic on Channel 13.

Marine Exchange Communication System

The San Francisco Marine Exchange, a non-profit agency that serves as the Clearing House for tug escorting of regulated tankers and barges, has backup battery systems for its computer, phone, and radio systems.

X. Bridges

The San Francisco Bay Area is crossed by a number of bridges that carry automotive and rail traffic. Most shipping traffic transits through moveable or fixed bridges with adequate vertical clearance for normal passage.

Geographic Boundaries

The boundaries of the area in this chapter are set in the West by the COLREGS Demarcation Line (Between Pt. Bonita and Mile Rocks), and in the East to include the Rio Vista Highway Bridge in the Sacramento River and the Antioch Highway Bridge in the San Joaquin River.

Schedule of Bridge Openings

Oceangoing vessels may transit under two vertical lift bridges, the Benicia-Martinez Railroad Drawbridge and the Rio Vista Highway Drawbridge. Both bridges are operated 24 hours a day and open for vessel traffic upon request. Approximately 30 minutes notice is beneficial and the bridges may be contacted by VHF or telephone.

For vessels intending to transit through the Benicia-Martinez Railroad Drawbridge, there is a well established protocol for requesting a lift. Copies of the protocol are available at the VTS website, www.uscg.mil/D11/vtssf/.

BRIDGE	VHF CHANNELS	PHONE NUMBER
Benicia-Martinez RR Bridge	13	(510) 228-5943
Rio Vista	9, 13, 16	(707) 374-2134

Adequacy of Ship-to-Bridge Communications

Ship to bridge communications takes place via VHF radio on designated channels or as required by drawbridge regulations (Title 33 CFR 117). Communications are considered to be adequate by the local maritime community.

X.

Physical Characteristics of Bridges

When required by the Eleventh Coast Guard Bridge Office, under the provisions of Title 33 Code of Federal Regulations, Part 118, bridges over navigable waterways in the Eleventh Coast Guard District, are lighted and marked as permitted obstructions on the waterway. Standard markings include a range of two green lights marking the center of the bridge, which in the case of drawbridges, will shift from green to red when the drawspan is in anything but the full open-to-navigation position. Bridge piers in or adjacent to the navigational channel may be lighted at night with fixed red lights to identify them as obstructions. When required, bridges are equipped with sound producing devices that are used during periods of reduced visibility.

The region now has 12 Racons mounted on bridges. A racon is a radar sensor (radar beacon) that sends out a radar emission that shows up as a distinctive mark on a ship's radarscope. The racons were installed because there is a high volume of vessel traffic transiting under bridges and the Bay Area has the highest number of foggy days in the nation when visibility is less than one-half mile.

Racons are located on the following Bay Area bridges:

Benicia-Martinez (1)
SF-Oakland Bay Bridge (3)
Richmond-San Rafael Bridge (2)
San Mateo-Hayward Bridge (1)
Antioch Bridge (1)
Rio Vista Bridge (1)
Golden Gate Bridge (1)
I-80 Crocket-Vallejo (2)

Bridge Clearances (See Appendices for most recent list of bridge clearances.)

Benicia-Martinez Railroad Drawbridge

To improve navigational safety for all vessels sailing through the relatively narrow opening of the drawbridge at Benicia, the Coast Guard has completed a number of initiatives:

Established a Regulated Navigational Area (RNA) at the bridge, which prohibits deep-draft vessel transits when visibility is less than 1000 yards. The Coast Guard revised the RNA to change the name of the bridge to the Benicia-Martinez RR Bridge, added a third visibility checkpoint, and clarified the procedures for downbound vessels that are moored or anchored between the Railroad Drawbridge and New York Point (that intend to transit the RNA once underway).

X.

Installed white lights on the main channel piers to better identify the primary navigation channel. The white pier lights recommended for installation on the main channel piers have provided better visibility in foggy conditions and have been made permanent.

Asked the Union Pacific Railroad (UPRR) to change the working frequency of the bridge radiotelephone to VHF Channel 13, to allow vessels and bridge operators to communicate directly instead of using Vessel Traffic Service Channel 14. This change went into effect in 2001.

Investigated bridge malfunctions and created natural working group to find solutions to process and equipment problems.

Had CalTrans make modifications to the RACON on the adjacent highway bridge, which has improved the signal to downbound vessels.

Evaluated the obstructive character of the bridge under the Truman-Hobbs Act of 1940, a long term process to determine if increasing bridge clearances will provide benefits to navigation greater than the costs of modifying the bridge. The outcome of such a study would determine if the bridge should be altered.

Most of the recommended bridge improvement items have been completed by UPRR. UPRR has installed a new auxiliary power system including new generators and transformers, along with a new signal system. New enhancements include replacement of the bridge lift motors, installation of a computerized system to monitor train locations and track conditions and a computer system to track vessels upbound or downbound for the bridge.

To address problems occurring with the operation of the Benicia-Martinez Railroad Drawbridge, industry, the pilots and the Coast Guard continue to work with the bridge owners via the Benicia-Martinez Railroad Drawbridge Natural Working Group. The working group meets semi-annually to discuss problems with the bridge and to develop solutions. The working group is coordinated by the Bridge Section of the Coast Guard's Eleventh District and is regularly attended by representatives from both the rail and marine industries, as well as Coast Guard Sector and VTS. Under the working group's direction Union Pacific has developed a formal training program for bridge operators, which includes ship rides for familiarization and training from VTS on the communications protocol to help avoid potential or near-miss situations. The working group created a mishap matrix to track incidents involving the bridge. Both the Coast Guard and UPRR provide information to the matrix, which is used as a problem-solving tool and historical reference.

XI. Small Vessels

Background

Within the Bay, many recreational boats and commercial fishermen transit navigational shipping lanes and some approaches to port and marine terminal facilities. The central part of the Bay, with the heaviest concentration of population in close proximity to the shoreline, has the largest number of small boat marinas along the San Francisco, Alameda, Contra Costa, and Marin County shorelines. Two-thirds of approximately 20,000 Bay Area marina berths are located in the Central Bay. This number does not include facilities on the Sacramento and San Joaquin Rivers. While only a percentage of boat owners are on the Bay at a given time, on a sunny weekend up to 1,000 boats may participate in races and various events on the Bay.

The last Sunday in April (Opening Day on the Bay), Memorial Day, Labor Day and Fleet Week are times of extreme congestion by small vessels. There are many occasions where six or eight races may be held in the same venue, vessels starting at five minute intervals. This may lead to more racing congestion than a single large popular regatta. Race instructions now carry a warning regarding interference with large vessels.

In addition to sailing and pleasure motor boats and personal water craft, which can attain speeds in excess of 60 mph, non-motorized vessels such as sailboards, kayaks, canoes and rowboats also frequent the Bay.

Coast Guard representatives and ship operators note that small craft are difficult to visually spot during periods of restricted visibility. Because of the size of the vessel, radar images are poor which may create a possible hazard to navigation.

In addition to the Bay's commercial fishing fleet, made up of approximately 1,000 boats, party boats carrying numerous fishermen also fish the Bay and areas west of the Golden Gate Bridge. However, of this number, about 150 to 200 boats are used full-time for commercial fishing, principally berthed in San Francisco, Sausalito and Oakland. Many of the licensed commercial fishermen are essentially part-time operators, fishing on weekends and holidays by trailering small boats to launch ramps. In the Bay the only commercial fish caught are herring and anchovies with herring the most important in-Bay fishery. During the December to March herring season, additional boats from other areas enter the Bay to lay their nets. The State Department of Fish and Game controls the number of boats fishing in the Bay during the herring season and regulates the manner of fishing. The herring fishery is highly competitive because during a short period of time large profits can be realized.

XI.

Vessel Traffic Incidents

Recreational Boats. Thousands of recreational boats are concentrated near the major inbound and outbound Bay shipping lanes. While many sailboats and motorboats are on the Bay, particularly on weekends, few near-misses or accidents are reported to the Coast Guard or Vessel Traffic Service. A number of reported and unreported 'near-misses' occur which might be prevented by small boats properly yielding the right-of-way to large vessels that cannot change course.

Boardsailors. No accidents or near-accidents involving boardsailors and vessels have been reported to the Coast Guard or VTS during the past years. However, many boardsailors cross in front of tankers and container ships off Crissy Field, which is close to the Golden Gate Bridge. Competitive races are sponsored at this location during the year.

Personal Water Craft. While a number of injury accidents involving personal water craft (jet skis) have occurred during the past three years, none involved a collision with a vessel and no fatalities have occurred in the Bay Area.

Fishermen. In 1994 a fatal accident occurred when a fishing vessel collided with an inbound container ship just west of the Golden Gate Bridge. The fishing vessel sank and two lives were lost. Various individuals have recounted possibly dangerous situations involving herring fishermen. A herring fisherman laid a large net around the oil skimmer boat at the Chevron Long Wharf; a herring net impeded a container ship docking in the Oakland harbor; a herring net delayed a pilot boat leaving to meet an inbound vessel; herring nets have been laid around fire boats at the Ports of Oakland and San Francisco. The nets may pose an impediment to emergency response vessels such as fireboats and oil skimmers. Nets near terminal docking areas may possibly cause unsafe ship maneuvers.

Currently, the following boater education programs are available to the boating public in the nine Bay area counties.

	Subjects
U.S. Power Squadrons www.usps.org	Boating Safety Rules of the Road, Basic Rescue (A home video course is available for purchase)
U.S. Coast Guard Auxiliary www.cgaux.org	Boating Safety Rules of the Road, Basic Rescue
California Dept. of Boating and Waterways www.dbw.ca.gov/boatsafecourse.asp	Water Safety/Grades K–12, General

XI.

In addition, the U.S. Coast Guard operates a Boating Safety Hotline (800.368-5647) that dispenses information and reference to local classes.

After reviewing information on licensing of small recreational boat operators, it was agreed that, at this time, emphasis on boater education and enforcement on the waterways would be a more effective approach to deal with unsafe operators rather than instituting the licensing of small boat operators.

XII. Vessel Traffic Service

The U.S. Coast Guard established the Vessel Traffic Service (VTS SF or VTS) in San Francisco Bay in 1972, following a serious collision between two tank vessels that resulted in great environmental damage to the Bay. The Coast Guard continues to operate the VTS system and monitors nearly 400 vessel movements per day. The region is considered a difficult navigation area because of its high-traffic density, frequent episodes of fog and challenging navigational hazards. In 1996 Congress considered reducing the current level of funding for VTS SF. In response, the Harbor Safety Committee voted to support continued federal funding to maintain VTS SF at its current level in order to ensure navigational safety in the Bay.

The VTS for the San Francisco Bay region has six components: (1) Automatic Identification System (AIS), (2) radar and visual surveillance, (3) VHF communications network, (4) a position reporting system, (5) traffic schemes within the Bay, and (6) a 24-hour center that is staffed with specially trained vessel traffic control specialists.

The geographic area served by VTS SF includes San Francisco Bay, its seaward approaches, and its tributaries as far as Stockton and Sacramento.

VTS Mission

The primary mission of VTS San Francisco is to coordinate safe, secure and efficient transit of vessels in San Francisco Bay, including its approaches and tributaries, in an effort to prevent accidents or terrorist actions, which could result in loss of life, damage to property or the environment.

VTS implements and enforces the portions of the Ports and Waterways Safety Act that enhance navigation, vessel safety and marine environmental protection and promote safe vessel movement, by reducing the potential for collisions, allisions and groundings, and the loss of lives and property associated with these incidents.

VTS provides the mariner with information related to the safe navigation of a waterway. This information enhances the safe routing of vessels through congested waterways or waterways of a particular hazard. Under certain circumstances, VTS may issue directions to control the movement of vessels in order to minimize the risk of collision between vessels, or damage to property or the environment.

The owner, operator, charterer, master or other person directing the movement of a vessel remains at all times responsible for the manner in which the vessel is operated and maneuvered and is responsible for the safe navigation of the vessel under all circumstances.

XII.

VTS Authority

VTS regulatory authority comes from 33 CFR 161 Vessel Traffic Service Regulations. These regulations give VTS the authority to manage, control or direct vessel traffic within the VTS area. VTS may issue measures or directions to enhance navigation and vessel safety and to protect the marine environment, including, but not limited to:

1. Designating temporary reporting points and procedures;
2. Imposing vessel operating requirements; or
3. Establishing vessel traffic routing schemes.

The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov.

During conditions of vessel congestion, restricted visibility, adverse weather, or other hazardous circumstances, VTS may control, supervise, or otherwise manage traffic, by specifying times of entry, movement, or departure to, from, or within a VTS area.

Participation is required for all vessels that fall under the Bridge-to-Bridge Radio Telephone Act. Active participation (through a series of reports) is required for all vessels that fall under the Vessel Movement Reporting System (VMRS), defined as: power-driven vessels 40 meters in length or greater; tugs, 8 meters or greater while towing; and passenger vessels certificated to carry 50 or more passengers for hire.

Through the exchange of vessel transit information, VTS provides vessel operators with up-to-date information, thereby facilitating safe transits for vessels interacting on the waterways.

VTS Position Reporting Requirements

Vessel position reporting requirements vary depending on a vessel's ability to transmit AIS information to VTS.

Offshore. Vessels are required to make radio reports on VHF Channel 12 when entering or exiting the offshore VTS reporting area, which extends approximately 30 miles west from the Golden Gate Bridge. Inbound vessels are required to report 15 minutes prior to crossing the offshore boundary, upon entering the respective Traffic Separation Scheme (TSS), and upon entering the precautionary area. Outbound vessels are required to report once at the San Francisco Sea Buoy, again at the TSS entrance buoy, at the terminus of the TSS and finally at the outer boundary of the VTS area. Radio reports include the name and type of vessel, route, course, speed, position and estimated times of arrival to various geographic locations. The VTS broadcasts a traffic report every 30 minutes: at minute 15 and 45 of each hour.

Within the Bay. Vessels report 15 minutes prior to and upon getting underway, docking, mooring, or anchoring or when departing from the VTS area. Position reports are also made when passing under most bridges, when pilots change, when emergencies arise and when deviating from standard procedures. Ferries operating on a scheduled route make one report prior to departure, and do not report again unless they deviate from their schedule or route.

Traffic Routing within San Francisco Bay

On May 3, 1995, the Coast Guard established seven Regulated Navigation Areas (RNAs) to reduce vessel congestion where maneuvering room is limited. These RNAs apply to the waters of the Central Bay, Oakland Harbor, San Pablo Bay, and the Benicia-Marinez Railroad Bridge. There are four VHF radio/communications sites located throughout the Bay which give VTS full radio coverage. VTS operates on channel 14 VHF for inshore traffic and channel 12 for offshore traffic, and monitors channel 13 throughout the VTS area.

VTS Training Program Overview

VTS Operators undergo extensive training. Before these traffic management specialists begin on-the-job training in the Operations Center, they undergo three months of intensive training at the VTS in the classroom and self-study, plus a month of offsite training. Offsite training typically includes a one-week Radar Observer Course, a one-week Automated Radar Plotting Aid (ARPA) course, a one-week Basic Shiphandling course and a one-week course in Bridge Resources Management course. All training is tailored to the individual needs of the trainee.

After this initial classroom and self-study period, new Operators/Traffic Management Specialists then undergo three to four months of closely supervised on-the-job training. This training cycle can be shortened if the person has previous VTS experience; however, the average time for a new employee to become qualified in their primary job is six to seven months. New supervisors can take an additional two to three months before qualification.

Outreach and Partnership

The San Francisco Bar Pilots and the U.S. Coast Guard Vessel Traffic Service San Francisco, as well as other members of the maritime community, continue to share professional information in order to foster a team approach to the issue of navigation safety within the San Francisco Bay Area. VTS participates in the following outreach and partnership programs:

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VTS-Pilots Issue Committee (VPIC). Founded in 1995, the VPIC—comprised of VTS' Operations Director, Operations Administrator, Training Coordinator and members of the San Francisco Bar Pilots—meets approximately every quarter to discuss how VTS and the Bar Pilots can better serve each other. Both agencies might bring in scenarios or review recordings, then discuss the interactions from their respective points of view. For example, VTS may explain why a particular deviation request from RNA regulations was not granted. With the VPIC interaction, VTS can explain the response from a VTS perspective, and the pilots can then explain why a requested deviation seemed safer from the pilot's point of view.

In addition to providing a forum for discussion, VPIC meetings have produced the automation of the transmission of ships' arrival and departure information between VTS and the Pilots, the development of a communication protocol to resolve communication issues around marine construction projects, and the refinement of reporting procedures in order to provide mariners with more accurate reports of ongoing marine construction in the Bay area.

San Francisco Vessel Mutual Assistance Plan (SF-VMAP). SF-VMAP is composed of member vessels, the Coast Guard and passenger vessel operators who came together to develop an emergency response plan that would ensure that a sufficient level of safety exists on small passenger vessels and enhance local capabilities to manage a catastrophic, waterborne Search and Rescue incident. VTS was active in the creation of this plan and continues to participate in annual drills and meetings. The San Francisco Marine Exchange is working in partnership with the Coast Guard to perform the administrative requirements of SF-VMAP.

Benicia-Martinez Railroad Drawbridge Working Group. This group is composed of members of the maritime community, the pilots' organization, various offices within the Coast Guard, the Union Pacific Railroad and major train lines. The group was formed to address the ability of the bridge to consistently provide a prompt response to lift requests or provide timely notification to an approaching vessel if mechanical problems or train movements would cause a delay in the bridge's response.

Outreach. VTS personnel spend many hours with people from various segments of the San Francisco Bay maritime community to learn about mariners' concerns and to educate mariners on how VTS can assist them. VTS personnel have been active participants on the Underwater Rocks Work Group, AIS Joint Planning Partnership, the Prevention through People Work Group, the Tug Escort Work Group, the Ferry Operations Work Group and the Navigation Work Group. Outreach efforts also have included many non-traditional stakeholders in the Bay area, such as the California Department of Transportation bridge engineers responsible for overseeing the various seismic retrofit projects in progress throughout the Bay.

XII.

Fishing Vessel Safety Group. VTS is a participant in the FVSG. A VTS representative meets every other month with this group, which is comprised of representatives of other Coast Guard units, local fishermen groups and state agencies.

Marine Events. San Francisco Bay has more permitted marine events than any other port or city in the United States. VTS has an active outreach program to the boating public, which includes meeting with various recreational boating organizations throughout the year. VTS works closely with other Coast Guard personnel and yachting organizations during the permit process to prevent recreational vessels from impeding commercial traffic. The Coast Guard hosts annual Marine Event Workshops aimed at educating event coordinators about commercial maritime traffic, Rule 9 of the Navigation Rules and VTS operations.

VTS Shipride Program. All VTS personnel are required to participate in approximately six ship rides and/or shore-side visits each year. This, by far, is the best method for direct, person-to-person contact with port stakeholders and the sharing of suggestions. The requirements cover almost all areas of the maritime community: piloted ships, tugs, ferryboats and shore facilities.

VTS Operations and Requirements

Over the years since the inception of VTS San Francisco, the Coast Guard has periodically identified the need for upgrading VTS equipment to include state-of-the-art technology. VTS' system of tracking vessels by computer was initially installed in 1997. In 2000, the software and hardware were upgraded, and a renovation of VTS' communications system was completed. This communication system upgrade involved replacing radios at each of the VTS' high sites, converting them from an analog to a digital microwave system and installing a new radio control system. In December 2004, VTS was upgraded with Automatic Identification System antennas and software.

XIII. Tug Escort / Assist For Tank Vessels

In 1990, Senate Bill 2040 (the Oil Spill Prevention and Response Act) established that tug escorting was beneficial for tanker operations and directed expeditious development of escorting regulations for San Francisco Bay. The requirement is based on the legislative finding that there is a navigational safety advantage of tug escorts. Tug escorts can improve tanker safety in at least two ways. Tug escorts can serve as emergency maneuvering aids in the event of loss of steering or propulsion, and a tug escort may also assist as an independent aid in the navigation of a tanker.

The Final Report of the States/British Columbia Oil Spill Task Force (1990) concluded that the risk of an oil spill could be reduced by eight to 11 percent with the mandatory use of tug escorts. That report, endorsed by the State of California, suggested that the escorts be highly maneuverable, have speed complementary to the tanker with sufficient power to control tanker direction, and that the power and number of escort tugs should be proportionate to the deadweight tonnage of the tanker.

The Harbor Safety Committee (HSC) established a Tug Escort Subcommittee, which created Interim Guidelines for tug escorting in San Francisco Bay. The Interim Guidelines recommended: minimum requirements for tug escort equipment and crews; a formula for matching tugs to tankers; establishing a central Clearing House to measure bollard pull and monitor and document compliance with the regulations; setting tug escort zones in the Bay; and various operational considerations. OSPR caused emergency regulations to be established in the winter of 1992 based on the Interim Guidelines.

In the spring of 1993, the HSC adopted a revised set of Permanent Guidelines to supersede the emergency regulations. The Permanent Tug Escort Guidelines differed from the Interim Guidelines in a number of significant respects. The Permanent Guidelines altered the formula for matching tugs to vessels by changing the bollard pull formula from ahead static bollard pull equal (or greater) than the dead weight tonnage of a regulated vessel to the astern static bollard pull in the same ratio. Additionally, performance standards for stopping a tanker; equipment standards and inspection of tugs; positioning of regulated vessels; and training requirements for tug escort crews were established. During the State’s administrative process, OSPR chose to reject the permanent guidelines on the basis of their lack of rationale and scientific basis for matching tugs to tankers.

XIII.

The subcommittee began what grew into a two-year process of preparing a scientific study of how to match escort tugs to tankers, with the assistance of a consultant and by holding extensive public hearings on the results of the study. Based on state funding concerns and time limitations, industry volunteered to engage a consultant in conjunction with an industry-based Technical Advisory Group and the Tug Escort Subcommittee acting as a policy board. Glosten Associates was hired to prepare a professional study focusing on the specifics of tug escorting on San Francisco Bay. Additionally, the State funded a peer reviewer, Michael M. Bernitsas of the University of Michigan, to review the consultant's work and to mitigate concern regarding bias. Their reports were completed in the winter of 1994.

The Glosten Study had adopted a dual-failure standard (the simultaneous loss of both propulsion and steering) as the basis for measuring the force (tanker demands) required to recover from the tanker machinery failure and remain within the tactical area of performance. Further, the tactical area was based on the ninety-fifth percentile of success in stopping the tanker within the available reach and transfer. After review of the enabling scope of work and industry concerns regarding the likelihood of a dual failure and the attendant tanker demands, the dual standard was thought to be unreasonable. The subcommittee set up various working groups to review failure probability, waterway characteristics, and commercial and navigational safety implications of demand standards and requested that Glosten calculate demands based on single failures.

These efforts resulted in a second Glosten Study and reports on failure probability and waterway specific characteristics. The subcommittee reviewed these reports and adopted a single failure standard for the development of matching criteria.

The process involved close involvement and participation by the interested public and OSPR. On August 10, 1995, the full Harbor Safety Committee reviewed and adopted the Tug Escort Subcommittee's guidelines on a vote of twelve to one. The HSC promptly transmitted the new guidelines and recommendations to OSPR for implementation.

The Committee publicly reviewed the regulatory language proposed by OSPR. During the review of the regulations, several issues were identified as not being in compliance with the Committee's recommendations. The most critical issues were related to the intended use of checklists to review and develop a transit-specific plan versus OSPR's new requirements that plans be filed with OSPR thirty days in advance. OSPR subsequently agreed to modify its proposed language to comply with the intent of the Committee's guidelines, which the Committee adopted in January 1996.

XIII.

OSPR held a public hearing on the proposed permanent tug escort regulations on March 19, 1996. Approximately 15 people testified at the hearing. Most supported the new regulations but a sizable group protested the use of a single-failure standard instead of a dual-failure standard. Many of those who commented also suggested minor modifications to the regulations, such as individualized, company-specific check lists and reducing pilot liability. Written comments were also received.

In addition to the public hearing process on regulations, OSPR is required by law to have regulations reviewed by the State Inter-Agency Oil Spill Prevention Committee, which reviewed and approved the regulations for implementation, and by the OSPR Technical Advisory Committee, which is purely advisory and has no approval or disapproval authority. The issue of dual- versus single-failure standard was again debated and it was concluded to continue with the single-failure standard.

The Tug Escort regulations became effective January 1, 1997. (See Appendices for current list of certified tug escorts, the current Clearing House Report on escorted vessel movements and for Amended Tug Escort Regulations.) There have been no significant issues in implementing the regulations.

It should be noted that the 1997 Tug Escort regulations require that:

> The OSPR Administrator shall review the matching criteria and other program elements within two years of the effective date of this subchapter. The program review will include a survey of the tanker-related incidents in U.S. waters to determine the types of failures that have occurred, an assessment of tug technology and any advances made in design and power, and the tug escort organizations. At the conclusion of the review, the Administrator will determine whether it is necessary to modify the tug/tanker matching criteria or any other provision of the program requirements... .

The OSPR review to determine whether any changes should be made to the tug/tanker matching formula met the January 1, 1999 deadline; however, the regulations did not require a report and none was prepared. Rather than conduct a review every two years, the HSC, on behalf of the Administrator, reviews incidents on an ongoing basis at its monthly meetings. If further evaluation is warranted, issues are referred to the appropriate Work Group for additional analysis. Any findings and recommendations are brought before the full Committee for discussion and vote.

XIII.

Subsequently, in 2001-2002, the HSC Tug Escort Work Group initiated a “sunshine” review of the entire tug escort regulations for the San Francisco Bay Region. The Work Group met for a one-and-a-half year period. The meetings were well attended by representatives of tanker operators, tug operators, the San Francisco Bar Pilots, marine terminal operators, the U.S. Coast Guard, OSPR, State Lands Commission, the San Francisco Marine Exchange and a host of other local maritime professionals.

The cornerstone of the regulatory review was a thorough examination of the tug/tanker matching matrix. The Work Group met with Dr. David Gray, Naval Architect of Glosten Associates from the Seattle-based company that developed the original tug/tanker matching matrix. Dr. Gray reviewed the assumptions upon which the matching formula was based and the present mix of tankers that call in the Bay. After much deliberation, the Work Group concluded that the tug/tanker matrix remains valid and should not be modified (determination made at the January 15, 2002 Work Group meeting and reported to the HSC at its February 14, 2002 meeting).

However, as a result of its study of the tug/tanker matching matrix, the Work Group determined that in order for tug escorts to be effective in an emergency, training of escort tug and ship crews under pilot direction should be addressed. The Work Group concluded that training exercises could not be mandated by regulation, as the training exercises must be individual to the tugs and vessels because of the wide variety of tankers, barges and tugs and variety of conditions on the Bay. The Work Group prepared guidelines entitled “Recommendations for Conducting Escort Training on San Francisco Bay,” which outlines procedures for tug and ship crews, as well as pilots, to participate in live training exercises under agreed-upon, non-emergency conditions. A draft of the Recommendations was circulated to various tug, tanker, and barge companies and to the S.F. Bar Pilots.

The guidelines were adopted by the full Committee on May 9, 2002 (see Appendices). The HSC Secretariat, through the Marine Exchange, then sent a letter to all affected parties in the maritime community, encouraging companies to adopt the Recommendations. The Tug Escort Work Group reports that tug escort emergency maneuvers are being conducted on a voluntary basis in accordance with the HSC’s Recommended Guidelines.

In 2003, the Harbor Safety Committee rescinded its prior recommendation to propose state legislation requiring tug escorts for vessels “carrying certain dangerous chemical cargoes in enough quantities to pose a risk” in San Francisco Bay, based on the following:

- It was extremely difficult to define dangerous cargoes and quantities that could be translated into legislation.

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- Thorough analysis of this category of vessels in the Bay in calendar year 2001 did not reveal a pattern of problems or inadequate ship design.
- The Coast Guard has the authority through Port State Control to require tug escorts and to detain "problem ships" if necessary.

In 2004, State legislation (SB 1480) was proposed that would allow "[t]he OSPR Administrator, in consultation with the harbor safety committees, to adopt regulations governing tugboat escorts for other vessels carrying hazardous materials that are entering, leaving, or navigating in the harbors of the state."

The Harbor Safety Committee opposed SB 1480 and companion legislation AB 2777 because:

1. The Tug Escort Work Group carefully reviewed the nine-year record of Coast Guard Casualty reports for Chemical Tankers, the seven-year record of Coast Guard Captain of the Port (COTP) orders to require Chemical Tankers to be tug escorted, and Chemical Tanker arrivals in the Bay for the year 2003. Of 23 reported casualties, only four were for loss of steering or power; four were for the same ship, and seven were tankers carrying oil. The other casualties were minor in nature because of the broad definition of a reportable Marine Casualty. Similarly, of the COTP orders for seven Chemical Tankers, five vessels carried oil and the other two most likely carried oil. The major increase in the number of Chemical Tankers was due to the change in definition of tankers by Lloyds of London. Also noted was the fact that most chemical tankers are double-hulled ships subject to strict standards and close vetting review.

2. The definition of "hazardous materials" is too broadly written to be meaningful in pinpointing the most dangerous chemicals and quantities hazardous to the public and the environment. As written, the legislation would affect almost every ship in the Bay, from cargo ships to tankers, and would not enhance safety.

3. The Work Group was concerned that, because the definition of hazardous materials is so broadly written, permanent broad powers would be granted to the OSPR Administrator with no criteria or analysis upon which to base his/her decision.

The Harbor Safety Committee sent its recommendation to the OSPR Administrator. The legislation was vetoed by the Governor.

XIV. Pilotage

Pilotage is of primary import to Bay shipping because of complex local conditions consisting of narrow navigation channels, many bridges, swift tides and currents, variable weather patterns, and large numbers of ships and small vessels. For more than one-hundred-fifty years, the State has regulated pilotage over the Golden Gate bar through the State Board of Pilot Commissioners, which was created in 1850.

San Francisco Bar Pilots. This category of pilots is also referred to as Bar Pilots. A state license is required for a Bar Pilot to handle vessels entering the Bay and operating inside the Bay. A federal pilot's license is also required. The State Board of Pilot Commissioners regulates the number, licensing, training and disciplining of Bar Pilots for the Bays of San Francisco, San Pablo and Suisun.

Federal Pilots. Federal pilots are licensed by the U.S. Coast Guard to handle U.S. flag vessels under enrollment. State licenses for these pilots are not required.

Inland Pilots. An inland pilot is required to have both a state license and a federal license to pilot vessels solely inside of the Golden Gate. The State Board of Pilot Commissioners regulates inland pilots.

Pilotage for the Ports of Stockton and Sacramento. The Ports of Stockton and Sacramento have separate pilotage authority from the Board of Pilot Commissioners. In practice, these ports issue commissions to certain pilots licensed by the state.

Docking Pilots. Section 1179 of the Harbors and Navigation Code allows shipping companies who expressed their intent to the Board of Pilot Commissioners before July 1, 1983, to have their own employees used as pilots in lieu of Bar Pilots. In the Bay, a grandfathering clause allows one shipping company to use its own employee(s) who are not subject to State Board of Pilot Commission regulations as pilots for docking. These employees are federally licensed.

Vessel Movements. The decision-making process by the Master and the Pilot to move a vessel should consider all relevant factors, including, but not limited to:

- The characteristics of the vessel, such as maneuverability, size and draft;
- The capabilities of the vessel's navigation equipment;
- Tide, current and wind conditions on the intended route;
- Time of the day in relation to whether the fog may be in a cycle of "burning off" or lifting;

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- Possible hazards along the route, such as bridges, and amount and nature of vessel traffic; and
- Visibility conditions at the dock, en route and at the destination, and assessment of whether these conditions are changing.

Harbors and Navigation Code Preventing Unlicensed Person from Performing Pilotage. State legislation requires the use of pilots on San Francisco Bay and provides penalties to prevent unlicensed persons from performing pilotage. The penalty for acting as a pilot while not holding a pilot license was increased to a maximum of $25,000 (Harbors and Navigation Code Section 1126).

XV. Underkeel Clearance and Reduced Visibility

Many of the navigation channels within the Bay are subject to shoaling because of the nature of the Bay system, which is more fully described in Chapter V, Surveys, Charts and Dredging. Accurate tidal information is essential in order to calculate required underkeel clearances for vessel transit. This is particularly critical in the Bay region where minimal clearances may occur in certain channels. The committee reiterates its support for "real time" accurate measurement of tides, such as the P.O.R.T.S. system recommended in Chapter II, General Weather, Tides and Currents.

Underkeel clearance is the distance between the deepest point on the vessel and the bottom of the channel in still water conditions. Tank vessels carrying oil or petroleum products as cargo should maintain minimum underkeel clearances as listed below. The underkeel clearances are minimum standards during normal, calm conditions. Masters and pilots should use prudent seamanship and should evaluate the need for additional clearance to accommodate squat rolling, listing, sink and pitch.

The following are guidelines for underkeel clearance of tank vessels:

a. Tank vessels west of the Golden Gate Bridge: Ten percent (10%) of the vessel's draft.

b. Tank vessels under way east of the Golden Gate Bridge: Two feet (2).

c. Tank vessels at final approach to berth and at berth: Always afloat.

Regarding single hull tankers, on July 30, 1996, the Coast Guard published the Final Rule (33 CFR 157.455, effective November 27, 1996) on Operational Measures to Reduce Oil Spills for Existing Tank Vessels of 5,000 gross tons or more without double hulls. In part, the regulations require the Master to calculate the vessel's deepest navigational draft, the controlling depth of the waterway and the anticipated underkeel clearance. In addition, the Master and Pilot are to discuss the tanker's planned transit. The regulations can be found on the web in the Code of Federal Regulations at www.gpoaccess.gov.

A Working Group was formed with representatives from the San Francisco Bar Pilots, Coast Guard, Port authorities and the maritime industry to evaluate the process of calculating, in a dynamic condition, underkeel clearances. The above guidelines on minimum clearances for the San Francisco Bay Area were established Captain of the Port.

XVI. Economic And Environmental Impacts

The Harbor Safety Plan must identify and discuss the potential economic and environmental impacts of implementing the provisions of the plan, and describe the significant differences in the restrictions that could vary from port to port within the geographic boundaries of the plan.

Economic Impacts. In order to make an economic assessment of the impacts of implementing the plan, recommendations that have a cost implication are identified with their potential economic impact. The following recommendations have a direct cost and an economic impact:

Tides and Currents. Federal, State and/or local funding is necessary for NOAA to conduct frequent, up-to-date surveys of major shipping channels and turning basins, and for the San Francisco Marine Exchange to operate and maintain the P.O.R.T.S. system.

Harbor Depths, Channel Design and Dredging. Conducting comprehensive annual condition surveys noting depths alongside and at the head of their facilities would be a cost for each facility owner or operator. Conducting more frequent, up-to-date surveys of channels known to shoal rapidly (i.e. Pinole Shoal Channel and Bulls Head Channel) would require an allocation of funds from the U.S. Corps of Engineers (CoE) and NOAA.

A new, two way traffic separation scheme north of Alcatraz was proposed that would require lowering areas such as Arch Rock, Harding Rock, and Shag Rocks to a minimum of -55’ MLLW, and would cost between $25 to $43 million in federal and state (local) funds. The *San Francisco Bay Rock Removal Feasibility Study* was initiated in April 2000. The CoE, working with the Harbor Safety Committee’s Underwater Rocks Work Group and the California State Lands Commission, investigated the economic and environmental feasibility of lowering the rock mounds to depths required for safe navigation. The CoE determined that there was not a federal interest in pursuing a structural alternative (physically lowering some or all of the rocks) as a result of the Feasibility Study. The San Francisco Central Bay Rock Removal Project was officially discontinued.

Bridge Management. The cost or installation and maintenance of energy absorbing fendering systems, bridge clearance gauges, water level gauges at bridge approach points, navigational lighting and racons on bridges over navigable waterways, where needed, would be borne by the individual bridge owners and operators such as the Union Pacific Railroad, CalTrans and the Golden Gate Bridge District.

Tug Escorts. The cost of tug escorts and standby tugs for ships and barges underway carrying more than 5,000 long tons of oil bulk as cargo in tug escort zones defined in the plan are directly borne by the shipper.

Pilotage. Future recommendations for pilotage may have cost implications.

Small Vessels. Federal, State and/or local funding is necessary to maintain and enhance the publication and distribution of pamphlets, brochures, videos, signs and other materials to increase boater education on shipping lanes, rules of navigation and safety guidelines for recreational boaters operating smaller vessels.

Each of the recommendations listed above has a cost that would be incurred by a commercial operator, port facility or government agency if that recommendation were implemented. To that extent, these would be economic impacts of the Harbor Safety Plan. Generally these items of cost are either capital items (such as new navigational equipment on bridges) or additional duties for an established agency.

The economic impact of the Harbor Safety Plan appears to fall equally on government agencies and private industry. The CoE, NOAA, bridge owners and operators, and each port and facility operator would be required to spend money to improve facilities they own or operate in order to meet the recommendations of the Harbor Safety Plan. In addition, private industry would be required to meet the cost of escort tugs and possible increased pilotage.

Differences in Restrictions from Port to Port. Seven ports are within the geographic boundaries of the Harbor Safety Plan: San Francisco, Oakland, Richmond, Redwood City, Benicia, Sacramento and Stockton. Nothing in this plan would create an advantage for any one of these ports as compared to any other port within the plan area.

Environmental Impacts

San Francisco Bay is a unique geographical area. It is the largest estuary on the Pacific Coast between Alaska and the tip of South America, with a shoreline, including sloughs, certain waterways and islands, of approximately 1,000 miles. Sixty-five percent of the rain and snowfall in California drains into rivers and creeks that feed the Bay.

Because of its size, depth and shelter from the open ocean, San Francisco Bay is a major harbor. Reflecting the trend in total U.S. commodities, a large percentage of the material shipped through the harbor is petroleum. The Bay presents a number of challenges to navigation, such as shallow waterways, narrow shipping lanes, vessel traffic, strong tides and currents, and occasional bad weather conditions, such as dense fog and strong winds. The Harbor Safety Plan has increased the level of navigational safety for the San Francisco Bay region, including the Ports of Sacramento and Stockton.

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A major oil spill in the Bay would cause millions of dollars in damage to the marine environment, adversely affecting a variety of natural resources including wildlife habitats, water quality, commercial and recreational fishing, recreational areas, businesses, personal property and human safety. San Francisco Bay is part of the Pacific Flyway; in the winter months over one million birds use the area, which could be severely impacted by a sizeable oil spill. The wetlands, tidal flats, and open water of the San Francisco Bay Estuary provide essential habitat—food, water, shelter and other benefits—for over 500 species of fish, amphibians, reptiles, birds and mammals. A number of these species are threatened or endangered. In addition, there are almost as many invertebrate species in the ecosystem as all other animals combined, bringing the total number of species that use the Estuary to over 1,000. Just outside the Golden Gate, several marine sanctuaries protect some of the most productive coastal waters in the world. Spilled oil and certain clean-up operations can threaten the different types of marine habitats and other Bay resources.

As mentioned above, the Harbor Safety Plan has increased navigational safety throughout San Francisco Bay, thereby reducing the likelihood of a maritime accident that could result in the spill of a hazardous material, such as oil. Further, the Harbor Safety Committee, composed of representatives from the maritime community, port authorities, pilots, tug operators, the U.S. Coast Guard, the Office of Spill Prevention and Response, the petroleum and shipping industries, recreational boaters, the CoE and others with expertise in shipping and navigation, regularly meet to develop additional strategies to further safe navigation and oil spill prevention and to update the Harbor Safety Plan accordingly. As such, the Harbor Safety Plan has an overall beneficial impact on the environment since it furthers navigational safety and oil spill prevention, thereby helping protect the Bay from the adverse environmental impacts of a potential oil spill.

XVII. Plan Enforcement

The Oil Spill Prevention and Response Act (Act) provides for the Harbor Safety Committee to suggest mechanisms to ensure that the provisions of the Harbor Safety Plan be fully, uniformly and regularly enforced. Traditionally, the U.S. Coast Guard has been responsible for the regulation of vessel movements and inspections through the authority vested with the Captain of the Port. Within the geographic boundaries of the Harbor Safety Plan, almost all oil terminals are privately operated and outside of the jurisdiction of local port authorities. The USCG also has been the mainstay of enforcement within the plan boundaries, and it is expected that it will continue in this role.

Under the Act, the State Lands Commission and the California Department of Fish and Game are granted dramatically increased roles and enforcement responsibilities. The State Lands Commission inspects facilities and vessels that are moored alongside the above-mentioned privately operated terminals, and monitors the cargo transfer operations. In the event of a violation, the appropriate state or federal agency is notified. The Department of Fish and Game enforces state regulations under the Act and monitors vessel bunkering operations along with the Coast Guard, and has the power to impose criminal and civil penalties for violations.

Tug Escorts are monitored by the Clearing House (CH), which was established to monitor the tug escort program for the Department of Fish and Game. The Marine Exchange of the San Francisco Bay Region administers the CH. The CH will confirm that all applicable tankers are escorted by an appropriate tug, and that the escort tug is on station prior to the movement of the vessel. In the event that the tug is not on station, the CH contacts the pilot, the master of the vessel, and the shipping company and/or agent and advises them accordingly. The vessel may not proceed until the escort tug is on station. The CH notifies the Department of Fish and Game of suspected violations. In the event that the tug breaks down during an escort, the master and the pilot will determine the safest course of action: whether to stop, to return to dock or to proceed.

Review and update of the Harbor Safety Plan is mandated to take place annually on or before June 30th. At that time, all aspects of the Harbor Safety Plan are assessed and the findings and recommendations for improvements are sent to the Administrator.

2004 Tug Escort Violations

After a four-year lull, 2004 saw a marked increase in violations of tug escort regulations within San Francisco Bay, San Pablo Bay and Suisun Bay. In 2004, the CH contacted the Office of Spill Prevention and Response (OSPR) 23 times in regard to possible violations. Of these, three notifications involved confusion over the alternate compliance status of one tanker operator and were ruled invalid by OSPR. The 20 remaining incidents were determined by OSPR to be infractions.

The majority of the infractions (13) involved tank barge movements in which the line-haul tug failed to notify the CH of the impending movement. Less frequent violations include failure of the escort tug to be certified for escort duties, failure of the escort tug to notify the CH, expired bollard-pull certificates and failure of the tanker pilot to notify the CH**.** Of the 20 infractions, the number of violations per company ranged from three companies with only one violation each to one company with seven violations.

OSPR Enforcement Process

Due to the increase in violations that occurred in 2004, the Committee raised concerns with OSPR's enforcement procedures and requested that OSPR shorten the amount of time between reported violations and their resolution. In response, OSPR has streamlined its procedures as follows: First, the CH will now report violations directly to the OSPR Legal Branch. Second, the OSPR Legal Branch will immediately notify the company of the reported violation. Depending on the severity of the violation and the history of the violator, either a notice of violation (informal) or an administrative civil penalty complaint (formal) will be sent to the owner and/or operator outlining the specifics of the violation, civil penalty assessed and OSPR's costs for investigation.

OSPR will continue to make periodic reports to the Committee on the status of current violations.

Coordination of Enforcement Responsibilities

The Coast Guard and the Department of Fish and Game coordinate policies and procedures to the greatest extent possible with each other and with other federal, state, and local agencies. Cooperation and coordination between agencies minimizes enforcement efforts required for all federal, state, and local regulations. This cooperation is essential since, relative to the Harbor Safety Plan, the Coast Guard is the primary enforcement agency for federal regulations, and the Department of Fish and Game is the primary enforcement agency for state regulations.

XVIII.Substandard Vessel Inspection

Substandard Vessel Examination Program

Beginning May 1, 1994, the U.S. Coast Guard implemented a revised vessel boarding program designed to identify and eliminate substandard ships from U.S. waters. The program pursues this goal by systematically targeting the relative risk of vessels and increasing the boarding frequency on high risk (potentially substandard) vessels. Each vessel's relative risk is determined through the use of a Boarding Priority Matrix, which factors the vessel's flag, owner, operator, classification society, vessel particulars and violation history. Vessels are assigned a boarding priority from I to IV, with priority I vessels being the potentially highest risk. This program also aligns Coast Guard efforts with international initiatives through reliance upon a two-tiered boarding process, where the greatest effort and most detailed examinations are reserved for the highest risk vessels.

The International Maritime Organization adopted an amendment to the 'International Convention for the Safety of Life at Sea (SOLAS), 1974' with provisions entitled "*Special Measures to Enhance Marine Safety*," which became effective January 1, 1996. These provisions allow for operational testing during Port State examinations to ensure Masters and crews are familiar with essential shipboard procedures relating to ship safety.

The USCG Port State Control Branch continues its mission in identifying and eliminating substandard foreign commercial vessels from U.S. waters by use of the USCG's risk-based boarding priority matrix system.

At the HSC monthly meetings, the Sector reports on steering and propulsion casualties and other incidents impacting maritime safety.

XIX. Recommendations Implemented Or Addressed

The Harbor Safety Committee, through its work groups, adopted the following recommendations to reduce the risk of oil spills in the San Francisco Bay Region. The respective chapter of the Harbor Safety Plan includes background discussion of the issues addressed by each recommendation. The following recommendations have been implemented by the responsible agency.

I. Geographical Boundaries

No recommendations.

II. General Weather, Tides and Currents

No recommendations.

III. Aids to Navigation

No recommendations.

IV. Anchorages

It was recommended that the USCG adopt pre-designated anchorage areas within the existing general anchorages throughout the VTS SF area, and in particular within General Anchorage 9, so that safer and more disciplined anchoring practices may be managed by VTS SF. The final resolution was to divide the anchorage into two areas: the western side has been designated for deep-draft vessels and the eastern side for lighter-draft vessels. In addition, VTS requires that vessels not anchor closer than 750 yards from one another.

V. Harbor Depths, Charts and Dredging

1.a. The recommendation to “establish a new two-way Traffic Separation Scheme north of Alcatraz to allow safer navigation of deeply laden tankers” has been implemented, and is now referred to as the “Deep Water Traffic Lane.” (Date established: 1992)

1.b. The recommendation requesting the Corps of Engineers to further evaluate the lowering of Harding, Arch, Shag and Blossom Rocks has been implemented. The COE determined that there was not a Federal interest in pursuing a structural alternative (physically lowering some or all of the rocks) as a result of the Feasibility Study for the proposed project. No further action. (See Ch. V, section on Navigational Issues Associated with Channel Design and Dredging.)

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2. The recommendation to eliminate the dogleg at buoy “C” of the San Rafael main ship channel to maintain proper two-way traffic separation” has been addressed. This action was evaluated and found cost prohibitive. (Date addressed: 1993)

VI. Contingency Routing

No recommendations.

VII. Vessel Speed and Traffic Patterns

For the San Francisco main ship channels from the COLREGS Demarcation Line to and between the southern tip of Bay Farm Island and the Dumbarton Railroad Bridge:

a) The maximum speed for all power driven vessels of 1,600 or more gross tons shall not exceed 15 knots through the water from the COLREGS Demarcation Line to and between the southern tip of Bay Farm Island and Dumbarton Railroad Bridge; and

b) Power driven vessels of 1,600 or more gross tons shall in any case have their engines ready for immediate maneuver and shall not operate in control modes or with fuels that prevent an immediate response to any engine order ahead or astern or preclude stopping their engines for an extended period of time.

VIII. Accidents and Near-Accidents

1. The Committee adopted a definition of a reportable ‘Near Miss’ situation to standardize reporting along the California Coast. However, after consulting with the other California Harbor Safety Committees, the idea to establish a systematic reporting of a ‘near miss’ was abandoned because of the issue of potential liability by the reporting party. The USCG considered a program to address non-reportable near casualties on a national and international level, but put the program on hold in November 2002 because of lack of funding. (Date addressed: 2002)

IX. Communication

1. The recommendation to alleviate congestion on Channel 13 was implemented when the USCG shifted the primary VTS channel to Channel 14. The Harbor Safety Committee endorsed the Coast Guard’s efforts to improve the existing system. (Date addressed: 1994)

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2. The Harbor Safety Committee recommends the acquisition of adequate backup power supplies for the San Francisco Bar Pilots and San Francisco Marine Exchange communications systems. At a minimum, portable diesel generators obtainable commercially should be procured and arrangements made to provide means of powering minimal lighting and communications circuits.

X. Bridges

1. Bridge clearance gauges should be installed where needed, particularly drawbridges. (Note: USCG requires bridge clearance gauges. Please notify CG District 11 Bridge Administration of any discrepancies.)

2. Water level gauges should be installed at approach points to bridges. (Note: Water level gauges are not under the jurisdiction of the USCG. However, proposals to install gauges or other items on bridges will require permission from the bridge owner, followed by review and approval from the CG District 11 to ensure permitted bridge structures are not altered without approval.)

3. Request the Golden Gate Bridge Highway and Transportation District to install a RACON (radio beacon) to mark the center of the channel between the towers of the Golden Gate Bridge to better serve the mariner, particularly during periods of restricted visibility and heavy seas. (Note: RACONS were installed some time ago. Please notify CG District 11 Bridge Administration of any discrepancies.)

4. Request the Department of Transportation (CalTrans) to install racons on the D-E span of the San Francisco-Oakland Bay Bridge (instead of the G-H span), and the A-B span because the spans vary in height and width and currents can reach considerable velocities running parallel to the towers. (Note: RACONS were installed some time ago. Please notify CG District 11 Bridge Administration of any discrepancies.)

5. Request CalTrans and the Golden Gate Bridge District to shield bridge floodlights to reduce the glare for ships. (Note: Completed)

XI. Small Vessels

1. A meeting should be convened by the Harbor Safety Committee with the state OSPR, Fish and Game officials, herring fishermen, Coast Guard, and representatives of the Ports to discuss ways to avoid problems such as nets impeding navigation lanes or berthing areas, nets blocking the egress of fire boats, oil spill response boats and pilot boats, etc. This meeting could result in yearly pre-season meetings with fishermen, Fish and Game mailers to the fishermen informing them of spill prevention concerns, or other actions.

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2. Pilots, Masters, and other interested parties should be invited to witness a series of races from the St. Francis Yacht Club race deck to obtain a view of events from the competitors' level.

3. Race officials and other interested parties should be invited aboard a large tanker while underway to get the pilot's perspective of racing vessels.

4. The Yacht Racing Association of San Francisco Bay should furnish full annual race schedules to all interested shippers, and, in particular, the Harbor Safety Secretariat for distribution.

5. The Yacht Racing Association should furnish optional courses and rounding marks used by participating entities. The race committee for each day's event should choose a course compatible with anticipated large vessel traffic.

6. The Coast Guard Auxiliary should observe and report infractions. The U.S. Coast Guard suggested that a mailer be prepared, to be inserted with vessel license renewal notices, advising owners of Inland Steering and sailing rules, Rule 9.

7. Expand the distribution of existing educational pamphlets available from the U.S. Coast Guard. These pamphlets provide information regarding the above-mentioned courses and the phone number for the Boating Education Hotline at (800) 336-2628 that would provide information regarding the scheduling of these classes. Distribute these educational pamphlets by: enclosing them in the boat registration renewal notices sent to boat owners by the Department of Motor Vehicles in the State of California (a follow-up mailing might also be considered to remind boat owners of these courses); enclosing them in local boat marina mailings to slip renters; requesting marinas to offer a one-time slip rental rebate for completion of a safe boater course.

8. Encourage vessel operators to document and report violations of the Rules of the Road to the local U.S. Coast Guard office. This would include a direct request to the San Francisco Bar Pilots to assist in this reporting effort.

9. Make public by publishing punitive actions taken against offenders by the U.S. Coast Guard. This information should be distributed to local yachting and boating magazines and marina newsletters. In addition, the California Department of Motor Vehicles should distribute a summary of punitive activities to registered boat owners.

10. Encourage the ongoing efforts of the local U.S. Coast Guard Auxiliary and Power Squadron organizations in their boating education and safety efforts.

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XII. Vessel Traffic Service

1. Scope of Coverage

   a. Develop standard VTS traffic management procedures for U.S. ports that conform to international standards.

   b. Make mandatory for civilian and military vessels the current voluntary participation in VTS and extend required participation to include vessels certified to carry 49 passengers or more (i.e., ferries).

   c. Incorporate the provisions of International Rule 10 in the federal regulations regarding VTS.

   d. Expand the area of sensor coverage by VTS SF to monitor the navigable waters of San Pablo Bay north of the San Rafael-Richmond Bridge and east of the Carquinez Straits to New York Point and Antioch. It is anticipated by this committee that San Pablo Bay may be covered by radar surveillance alone while television monitors, in addition to radar, may be needed in the area of the Strait where continuous change of heading could make radar monitoring alone difficult. Sensor coverage expansion has been repeatedly requested.

2. Changes in VTS Operations and Requirements

   a. Adopt a dedicated VHF working frequency, Channel 14, for the exclusive use of VTS SF ship/shore communication system. Channel 13 should continue to be monitored and used for ship/ship communications.

   b. Upgrade the current equipment used by VTS SF to include state-of-the-art technology (U.S. Coast Guard, *Port Needs Study:* Vessel Traffic Services Benefits, Volume I: Study Report and Volume II, Appendices, Part 2).

3. The Harbor Safety Committee supports continued federal funding for VTS San Francisco in order to ensure navigational safety in the San Francisco Bay Area.

XIII. Tug Escort/Assist for Tank Vessels

Over a period of five years, the Harbor Safety Committee took the following steps to establish tug escorting in the Bay:

   1) Adopted Interim Tug Escort Guidelines in 1992.

   2) Adopted Permanent Tug Escort Guidelines in 1993.

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3) Adopted Revised Permanent Tug Escort Guidelines in 1995.

4) Amendments to Revised Permanent Guidelines Adopted January 1996 (Revised tug escort regulations effective January 1, 1997).

5) Recommended establishing a technical pilotage committee to review waterways specific maneuvers of tankers and tugs.

XIV. Pilotage

1. The recommendation that the California Harbor and Navigation Code be amended to add requirements for shipping company employees eligible to pilot vessels in the Bay Area has been addressed by State and Federal regulation. (Date addressed: 1996)

2. The recommendation that Coast Guard regulations be amended for pilotage has been deleted as not under the purview of the Harbor Safety Committee.

XV. Underkeel Clearance

1. The recommendation that "guidelines for underkeel clearances of tank vessels carrying oil or petroleum products as cargo" be established has been implemented by establishing the following minimum clearances:

- Tank vessels west of the Golden Gate Bridge: Ten percent (10%) of the vessel's draft.
- Tank vessels under way east of the Golden Gate Bridge: Two feet (2).
- Tank vessels at final approach to berth and at berth: Always afloat.

2. Because it may be more dangerous for a vessel to remain offshore in the Pacific Ocean in the approaches to the Bay during periods of restricted visibility, vessels inbound from the Pacific Ocean should continue to proceed from the Pilot Area into the Bay to a safe anchorage.

3. Ships within the Bay at a dock or at a safe anchorage should not commence movement if visibility is less than .5 nautical miles throughout the intended route, unless the Pilot's assessment of all variables listed under general principles is that the vessel can proceed safely. The Pilot's local knowledge should include knowledge of historic weather patterns during that time of year, current weather reports, and checking with reporting stations along the route.

XVI. Economic and Environmental Impacts

No recommendations.

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XVII. Plan Enforcement

The Coast Guard and the State Department of Fish and Game should coordinate policies and procedures to the greatest extent possible with each other and with other federal, state, and local agencies.

XVIII. Substandard Vessel Inspection Program

Support the U.S. Coast Guard vessel inspection program of targeting substandard vessels in the Bay.

XX.

XX: Harbor Safety Committee Educational Materials

The Harbor Safety Committee has produced a number of educational materials in an effort to increase safe use of the Bay. Copies of the following are available by contacting the San Francisco Marine Exchange at 415.441-6600.

Your Guide to Recreational Marine Radio Communications for San Francisco Bay. Brochure. July 2001.

Where The Heck Is Collinsville? Brochure. February 2002.

Mariners, Do You Speak Channel 14? Brochure. April 2003.

Sharing the Bay. Video, also available in CD and DVD format. Early 2004.

Rules 9 & 5....Laws To Live By. Brochure. May 2004.

P.O.R.T.S. (*Physical Oceanographic Real-Time System*) Brochure. December 2004.

Kayakers, Be Alert! Safety Sticker. April 2006.

Knowledge for Novice Boaters. Laminated safety placard. January 2007

The Harbor Safety Committee of the San Francisco Bay Region consists of the following members as of June 8, 2006:

MEMBERS	**ALTERNATES**
Port Authorities	
Term expire on June 13, 2010	
Len Cardoza Manager, Port Dredging Programs Port of Oakland 530 Water Street Oakland, California 94607 Phone: (510) 627-1307 Fax: (510) 763-8287 E-mail: lcardoza@portoakland.com	Michael McMillan Environmental Health and Safety Compliance Department Port of Oakland 530 Water Street Oakland, California 94607 Phone: (510) 627-1406 Fax: (510) 451-5916 E-mail: mmcmilla@portoakland.com
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MEMBERS	**ALTERNATES**

Term expire on December 8, 2007

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Term expire May 11, 2008

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MEMBERS **ALTERNATES**

Tanker or Marine Oil Terminal Operators

Term expire January 12, 2008

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Terms expire November 9, 2008

Term expire on November 9, 2008

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Term expires on July 12, 2009

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Vacant

Vacant

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Term expires on January 12, 2008

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Vacant

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Organization of the Harbor Safety Committee of the San Francisco Bay Region

Chair.....Joan Lundstrom
San Francisco Bay Conservation
and Development Commission

Vice Chair .....Rich Smith
Westar Marine Services

Executive Secretary .....Captain Lynn Korwatch
Marine Exchange of the San Francisco Bay
Region

Harbor Safety Committee Work Groups - 2007 Assignments

P.O.R.T.S. Work Group:
Mark Bayer, Chair
Joan Lundstrom
Bruce Horton
Gerry Wheaton/Becky Smyth: NOAA
Lt. Stephen Walters, USCG

Tug Escort Work Group:
Fred Henning, Chair
Pete Bonebakker
Joan Lundstrom
Rich Smith

Navigation Work Group:
Bruce Horton, Chair
Len Cardoza
John Berge
Pete Bonnebakker
Fred Henning
LCDR Kevin Mohr, USCG
Gerry Wheaton, NOAA

Ferry Operations Work Group:
John Davey, Chair
Pat Murphy
Keith Stahnke
Pete McIsaac
Sue Cauthen
Scott Humphries, USCG VTS
Marina Secchitano
Gerry Wheaton, NOAA

Prevention Through People Work Group:
Margot Brown, Chair
Bill Needham
Sean Kelley/Scott Humphrey, USCG
Linda Scourtis

HARBOR SAFETY COMMITTEE OF THE SAN FRANCISCO BAY REGION INCLUDING THE PORTS OF SACRAMENTO AND STOCKTON

BYLAWS

Article I: Name

Section 1. The Harbor Safety Committee of the San Francisco, San Pablo and Suisun Bays, including the Ports of Sacramento and Stockton (hereinafter referred to as the Committee).

Article II: Purpose

Section 1. The Committee is established pursuant to Section 8670.23 of the Government Code and Title 14, California Code of Regulations, Sections 800-802; and is responsible for planning for the safe navigation and operation of tank ships, tank barges, and other vessels within the harbor, and making recommendations to the Administrator of the Office of Spill Prevention and Response (OSPR), hereinafter referred to as the Administrator.

Article III: Membership

Section 1. Membership Categories

a. Members shall be selected from local representatives of organizations or companies in the San Francisco Bay Area region (including the Ports of Sacramento and Stockton) whenever possible.

b. The Committee shall consist of members appointed by the Administrator as follows:

1. Four designees representing Port authorities: One representative shall be selected from the Port of San Francisco and one from the Port of Oakland. The other two representatives shall be selected from any two of the remaining ports: Richmond, Redwood City, Benicia, Stockton or Sacramento;

2. One representative of tank ship operators, and one representative of either a tank ship operator or a marine oil terminal operator;

3. One designee of the San Francisco Bar Pilots Association;

4. Two representatives of dry cargo vessel operators;

5. One representative of commercial fishing;

6. One representative of pleasure boat operators;

7. One representative of a recognized nonprofit environmental organization that has as a purpose the protection of marine resources;

8. One designee of the San Francisco Bay Conservation and Development Commission;

9. One representative from a recognized labor organization involved with waterborne operations of vessels;

10. One representative of tug operators and one representative of tank barge operators, neither of whom shall also be engaged in the business of operating either tank ships or dry cargo vessels.

11. One designee from each of the following: Captain of the Port from the U.S. Coast Guard; U.S. Army Corps of Engineers, U.S. National Oceanic and Atmospheric Administration (NOAA), and the U.S. Navy, to the extent that each consents to participate on the Committee as a non appointed member.

c. Appointees filling membership categories identified in items b1 through b10, above, are specified as appointed members.

Section 2. Membership Qualifications

The members appointed from the categories listed in Section 1b (2), (3), (4), and (10) above shall have navigational expertise. An individual is considered to have navigational expertise if the individual meets any of the following conditions:

a. Has held or is presently holding a Coast Guard Merchant Marine Deck Officer's license;
b. Has held or is presently holding a position on a commercial vessel that includes navigational responsibility;
c. Has held or is presently holding a shore side position with direct operational control of vessels;
d. Has held or is currently holding a position having responsibilities relating to the safe navigation of vessels.

Section 3. At-Large Members

The Harbor Safety Committee may petition the Administrator to request up to five at-large membership categories that are needed to conduct the Harbor Safety Committee's business and which reflect the make-up of the local maritime community. One at-large member shall represent ferry operators who shall have navigational expertise as defined in Section 2, above, and who is specified to be an appointed member consistent with Section 1c, above. The Committee may also petition the Administrator for the removal of any at-large membership category. The approval of such petitions shall be at the sole discretion of the Administrator.

Section 4. Term of Membership for Appointed Members and their Alternates

a. A member shall be appointed for a three-year term.
b. A member's appointment shall be terminated as a result of any of the following circumstances:
    1. The member retires from, or otherwise leaves employment under which he was appointed. Members who leave their employer may, if qualified under their new employment, apply for the seat they vacated or, if qualified, apply for another Committee seat that becomes vacant.
    2. The member undergoes a change in work responsibilities, which alters the constituency that he represents, or alters his qualifications for the position.
    3. The member voluntarily resigns for any reason.
    4. A member is removed by the Administrator for any reason under Section 7, below.
c. A member impacted by any of the conditions identified in items 1-4 above is expected to submit his resignation to the Chair (with a copy to the Administrator) within five working days.
d. Any incumbent completing his three-year term may re-apply.
e. Except as noted in Section 5c, below, an alternate's term expires when the primary member leaves service for any reason.

Section 5. Alternates for Appointed Members

a. The alternate representative shall be appointed and sworn by the Administrator in a manner similar to the primary member. Only one alternate shall be appointed for each primary member, and only the appointed alternate is accorded proxy powers. The alternate shall be selected from the same membership category as the primary member, and shall meet the same qualifications. The appointed alternate may vote, participate in, or take any other action on behalf of the primary member consistent with the Committee's bylaws and any applicable statutory or regulatory provisions.
b. An alternate may vote only in the absence of the primary member.
c. When a primary member resigns or is removed, his alternate may continue to serve until such time as the new primary member is appointed and sworn in.

d. The Committee offers the Administrator the following guidelines for appointing alternates:
   1. When possible, the primary member should be allowed to recommend his alternate;
   2. If there is more than one applicant for a position, the primary member and Administrator should consider the other applicants when selecting alternates. The Committee requests the Administrator consider diversity of organizations within each membership category when selecting alternates.

Section 6. Attendance of Appointed Members

a. Attendance of scheduled Committee meetings is expected. The standard of attendance is determined as follows:

   1. For each appointed membership category team consisting of a primary member and alternate, meeting either condition (a) or (b) is considered to be not meeting the standard of attendance:

   (a) The primary member of the team missing four consecutive meetings, or a total of six meetings in a calendar year.

   (b) The team missing three consecutive meetings, or a total of four meetings in a calendar year.

   2. For a primary member with no alternate, meeting condition (a) is considered to be not meeting the standard of attendance:

   (a) Missing four consecutive meetings, or a total of six meetings in a calendar year.

b. The Committee Chair shall review the meeting attendance records on a regular basis and shall inquire about members and teams with excessive absences.

c. The Chair may make an exception to the attendance standards for a member experiencing extenuating circumstances.

Section 7. Appointed Member Removal

a. Circumstances may arise which require that a Committee member voluntarily resign or be removed from their position. Such events include:

   1. Failing to meet the attendance standards, as set in Section 6,
   2. Falsifying application materials,

3. The member's term ending prematurely due to meeting one of the conditions described in Article III, Section 4, items b1 and b2.

b. A member who demonstrates any of the three criteria listed above is expected to voluntarily tender his written resignation to the Chair (with a copy to the Administrator) within five working days of being informed of this condition. If the expected resignation is not forthcoming, the Chair shall privately contact the member, explain which bylaw(s) has been violated, and seek the member's written resignation. If the request is not honored within ten working days, the Chair shall write to the member (with a copy to the Administrator), explaining which bylaw(s) has been violated and, again, request a written resignation. If the resignation is not offered within 15 working days the Chair shall notify the Administrator in writing (with a copy to the member) of the situation, identify which bylaw(s) has been violated, and seek the Administrator's assistance in removing the recalcitrant member.

c. The Chair shall announce at the next full meeting the resignation or removal or any member.

Article IV: Officers

Section 1. The Administrator shall appoint a Chairperson for the Committee from the membership specified in Article III.

Section 2. The Administrator shall appoint a Vice-chairperson for the Committee from the membership specified in Article III, from a membership category other than that of the Chairperson.

Section 3. An Executive Secretary (Secretariat) for the Committee shall be contracted by the Administrator. The Secretariat shall serve as the Administrative staff to the Committee.

Article V: Subcommittees and Work Groups

Section 1. The Committee may establish Subcommittees and Work Groups, as it deems necessary. Meetings shall be duly noticed and open to the public in accordance with Article VII to receive maximum participation.

Section 2. The Chair of the Harbor Safety Committee shall appoint the chairperson of Subcommittees and Work Groups. The Chair may appoint Subcommittee members.

Section 3. Subcommittees should be composed of an uneven number of voting Committee members with no fewer than three people on a subcommittee. Vote by the majority of the subcommittee members present shall be necessary to pass a recommendation of the subcommittee. If a majority of Committee members are voting at a subcommittee meeting, that meeting should be noticed as a meeting of the full Harbor Safety Committee.

Section 4. Work Groups may be composed of any number of participants. Work Groups should operate by consensus of those present, including interested members of the public.

Section 5. Subcommittees and Work Groups may make recommendations to the full Committee, which will vote on the recommendations as detailed in Article VIII. Recommendations should be made in writing and provided to the Committee prior to any vote on the matter.

Article VI: Recommendations from Committee

Section 1. The Committee shall make recommendations or requests to the Administrator on rules, regulations, guidelines and policies on Harbor Safety. The Committee may make recommendations or requests to other federal, state or local agencies.

Section 2. The Committee shall prepare and submit a Harbor Safety Plan and annual updates to the Administrator by July 1 of each year or as directed otherwise by the Administrator.

Article VII: Meetings

Section 1. Governing rules for meetings shall be the Ralph M. Brown Act (Open Meetings for Local Legislative Bodies), the San Francisco Bay Region HSC bylaws, and Robert's Rules of Order.

Section 2. Each Committee member and alternate shall be provided a copy of the San Francisco Bay Region HSC bylaws and the Harbor Safety Plan. Upon request, Committee members and alternates, as well as interested parties, shall be provided a copy of the Brown Act.

Section 3. The Committee normally meets at 10:00 a.m. on the second Thursday of each month and rotates meeting locations to include the Ports of Oakland, Richmond and San Francisco or other relevant locations within the San Francisco Bay Region.

Section 4. Quorum

In order for a meeting to take place, a quorum of appointed members or their alternates consisting of nine (9) individuals shall be present. Should a quorum not be present, the Committee can proceed as a committee of the whole, take public testimony, receive input on any agenda item duly noticed, but cannot take action on any item.

Section 5. Agenda for Meetings:

a. An agenda drafted by the Secretariat in consultation with the Committee Chair shall be prepared for each meeting of the Committee. The agenda shall be distributed to members, alternates, and interested parties no fewer than seven (7) days prior to the scheduled meeting and shall comply with all provisions of the Brown Act.
b. In accordance with the Brown Act, agendas for full Committee meetings, and the schedule of upcoming workgroup and subcommittee meetings shall be posted 72 hours in advance at the Secretariat Offices. Postings shall be visible from the outside of building.
c. Agendas shall include a brief general description of each item to be discussed, including whether a voting action is to be taken on an item.
d. Each agenda item that requires Committee action shall include time for public comment.
e. The Committee may take action on an item not appearing on the agenda by determining that an immediate need exists and it came to the attention of the Committee after the agenda was distributed. This determination must be approved by a two-thirds (2/3rd) vote of all appointed Committee members or, if less than two-thirds (2/3rd) of all appointed members are in attendance, by a unanimous vote of those appointed members present.
f. A Committee member or member of the public may discuss an item not on the agenda under New Business/Public Comments. However, no action by the Committee can be taken until such time as the item is duly noticed at a regular or special meeting, and time has been allotted to receive public input prior to Committee action.

Article VIII: Voting

Section 1. Voting

a. The San Francisco Bay Region Harbor Safety Plan annual review shall be approved by two-thirds (2/3rds) of the appointed Committee members or their alternates.

b. With the exception of items specified in Section 1a of this Article, Article VII, Section 5 e, and Article IX, passage of any item subject to a vote by Committee members shall require a simple majority of appointed members, or their alternates, present at a meeting. No action shall be taken on any item that is not on the agenda provided pursuant to Article VII, Section 5, except as allowed by Article VII, Section 5e.
c. Due to the advisory nature of the Committee and its selected representatives, members shall not be excused from voting in case of potential conflict of interest.

Article IX: Bylaws Review, Acceptance and Amendments

Section 1. Enactment or Amendment of Bylaws

To enact or amend the bylaws, the proposed bylaws must be:

a. Included as an agenda item at a regular meeting.
b. Noticed to the public in accordance with provisions of Article VII, Section 5, of these bylaws.
c. Be approved by two-thirds (2/3rds) of the appointed Committee members or their alternates.

Section 2. Bylaws Status

a. The bylaws shall become effective after Committee approval and shall continue in force until amended or repealed.

Article X: Certification

I certify that these bylaws were approved by the Harbor Safety Committee of the San Francisco, San Pablo and Suisun Bays, including the Ports of Sacramento and Stockton, on October 9, 2003, at Richmond, California, by a vote of 16 yea to 0 nay. This document is true and correct, and constitutes the official bylaws governing the Committee. These bylaws shall remain in force until amended or repealed in accordance with Article IX.

CALIFORNIA CODE OF REGULATIONS
TITLE 14, DIVISION 1
SUBDIVISION 4, OFFICE OF OIL SPILL PREVENTION AND RESPONSE
CHAPTER 3. OIL SPILL PREVENTION AND RESPONSE PLANNING
SUBCHAPTER 1. HARBOR SAFETY COMMITTEES AND HARBOR SAFETY PLANS

SECTIONS 800 - 802

Effective 2/9/05

800. DEFINITIONS

In addition to the definitions in Chapter 1, Section 790 of this Subdivision, the following definitions shall govern the construction of this subchapter. Where similar terms are defined, the following will supersede the definition in Chapter 1:

(a) "Vessels" means any watercraft or ship of any kind, including every structure adapted to be navigated from place to place for the transportation of merchandise or persons.

NOTE: Authority cited: Section 8670.23, Government Code.
Reference: Sections 8670.3, 8670.21 and 8670.23, Government Code.

800.5. HARBOR SAFETY COMMITTEES

(a) The Administrator shall create harbor safety committees for the harbors and adjacent regions of San Diego Bay; Los Angeles/Long Beach Harbor; Port Hueneme; San Francisco, San Pablo, and Suisun Bays; and Humboldt Bay. In consultation with each harbor safety committee, the Administrator shall determine its geographic region of responsibility which shall be clearly reflected in the committee's plan as described in Section 802(b)(2) of this Subchapter.

(b) In the event that a designee of a port authority is not able to participate as a harbor safety committee member due to military affiliations, the civilian counterpart for that harbor may serve in place of the port authority designee.

(c) All meetings of harbor safety committees, their subcommittees, workgroups or organizations, as defined in Government Code Section 54952, are subject to the open meeting requirements contained in Government Code Sections 54950 through 54962.

NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code. Reference: Section 8670.23, Government Code.

800.6. HARBOR SAFETY COMMITTEE MEMBERSHIP

(a) The Administrator shall appoint to each harbor safety committee, for a term of three years, all of the following members and their alternates:

(1) A designee of each of the port authorities within the region, except that the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region shall have four designees.

(2) A representative of dry cargo vessel operators, except that the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region may have two representatives.

(3) A representative of tank ship operators, except that the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region shall have one additional representative of either tank ship operators or marine oil terminal operators.

(4) For the harbor safety committees for the Los Angeles/Long Beach Harbor region, Port Hueneme region, and Humboldt Bay region a representative of marine oil terminal operators.

(5) A representative of tug or tank barge operators, who is not also engaged in the business of operating either tank ships or dry cargo vessels, except that the harbor safety committees for the San Francisco, San Pablo and Suisun Bay region and Humboldt Bay region shall have one representative of tug operators and one representative of tank barge operators, neither of whom is also engaged in the business of operating either tank ships or dry cargo vessels.

(6) For the harbor safety committees for the San Francisco, San Pablo and Suisun Bay region, Los Angeles/Long Beach Harbor region and San Diego Bay region, a representative of scheduled passenger ferry or excursion vessel operators.

(7) A representative of the pilot organizations within the region, except that the harbor safety committee for the Los Angeles/Long Beach Harbor region shall have two pilot representatives: one a designee of the Port of Los Angeles pilot organization and one a designee of the Port of Long Beach pilot organization. Additionally, the harbor safety committee for the Los Angeles/Long Beach Harbor region shall have one representative of mooring masters who represents all mooring masters operating within the committee's geographic area of responsibility.

(8) A representative of a recognized labor organization involved with operations of vessels.

(9) A representative engaged in the business of commercial fishing.

(10) A representative of pleasure boat operators or a recreational boat organization.

(11) A representative of a recognized nonprofit environmental organization that has as a purpose the protection of marine resources, except that the harbor safety committee for the Los Angeles/Long Beach Harbor region may have two representatives .

12) The United States Coast Guard Captain of the Port and a designee of each of the following federal agencies to the degree that each consents to participate on the committee: the United States Army Corps of Engineers, the National Oceanographic and Atmospheric Administration, and the United States Navy.

(13) A designee of the California Coastal Commission, except for the harbor safety committee for the San Francisco, San Pablo and Suisun Bay region, where the Administrator shall appoint a designee of the San Francisco Bay Conservation and Development Commission.

(b) A harbor safety committee may petition the Administrator with a request for new or additional membership positions for special needs to conduct ongoing harbor safety committee business and which reflect the makeup of the local maritime community. The qualifications for such positions shall be set either in committee bylaws or on the petition. The approval of such petitions shall be at the sole discretion of the Administrator.

(c) A harbor safety committee may petition the Administrator for the elimination of new or additional membership positions requested and approved pursuant to Subsection (b). The approval of such petitions shall be at the sole discretion of the Administrator.

(d) The members appointed from the categories listed in Subsections (a)(2), (3), (4), (5),(6), and (7) above shall have navigational expertise. An individual is considered to have navigational expertise if the individual meets any of the following conditions:

(1) Has held or is presently holding a United States Coast Guard Merchant Marine Deck Officer's license.

(2) Has held or is presently holding a position on a commercial vessel that includes navigational responsibilities.

(3) Has held or is presently holding a shoreside position with direct operational control of vessels.

(4) Has held or is currently holding a position having responsibilities for permitting or approving the docking of vessels in and around harbor facilities.

(e) The Administrator shall appoint a chairperson and vice chairperson, for a term not to exceed the balance of their current membership appointment, for each harbor safety committee from the membership specified in Subsection (a) above. The Administrator may withdraw such appointments at his or her sole discretion.

(f) Upon request of the committee chairperson, pursuant to the committee's bylaws, the Administrator may remove a member or alternate appointed under authority of Subsection (a) above.

NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code. Reference: Section 8670.23, Government Code.

801. GENERAL PROVISIONS

(a) Each harbor safety committee shall be responsible for planning for the safe navigation and operation of vessels within its geographic region of responsibility. As part of meeting this responsibility, each committee shall prepare and submit to the Administrator its harbor safety plan which encompasses all vessel traffic within its region and addresses the region's unique safety needs.

(b) All harbor safety plans shall be consistent with both the California Oil Spill Contingency Plan and the National Contingency Plan.

(c) All harbor safety plans shall be in writing and shall include a reference to any federal, state or local laws or regulations if those laws or regulations were relied upon to develop the plan.

(d) Harbor safety plans which meet the requirements of this subchapter shall be implemented by the Administrator in consultation with the respective committee.

(e) On or before July 1 of each year, each harbor safety committee shall assess maritime safety or security within its region, including tank vessel safety, and shall report its findings and recommendations for improvements to the Administrator by amending its current harbor safety plan or instituting other alternatives to address its findings. All plans shall be reviewed by the Administrator to ensure their compliance with this subchapter.

(f) The Administrator may direct a harbor safety committee to address any issue affecting maritime safety or security, as appropriate, and to report findings and recommendations on those issues.

NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code. Reference: Section 8670.23, Government Code.

802. HARBOR SAFETY PLAN CONTENT

(a) All harbor safety plans shall be written in consideration of the best achievable protection standard as that term is defined in Chapter 1 of this subdivision.

(b) Each harbor safety plan shall include, at a minimum, a discussion of the following:

(1) Tug Escorts

(A) One section of the plan shall be dedicated to the usage of tug escorts in the committee's geographic region of responsibility.

(B) This section shall allow for a case-by-case determination of tug escort usage or need based on specified criteria which include, but are not limited to, all of the following factors:

1. the physical limitations of the tugs;

2. an analysis of commonly encountered weather and sea conditions including, but not limited to, wind, tidal and ocean currents;

3. the type of cargo carried by the tank vessel;

4. a determination of whether or not tug escorts are needed for unladen tank vessels; and

5. the effectiveness of tug escorts in steering and/or stopping assistance for heavily laden tank vessels given the geographic and navigational limitations of that region.

(C) This section shall also include, but not be limited to, all of the following:

1. an outline discussing tug boat capabilities when assisting a tank vessel;

2. a recommendation determining when tank vessels must be escorted by

3. a determination of sufficient size, horsepower, and pull capacity of the tug(s) to assure maximum assistance capability;

4. a comprehensive inventory of the number and types of tugs available for tank vessel escort in each geographic region; and

5. an analysis, including factual data and studies relating to the analysis, which specifies the incidence and location of accidents and the effects of the absence or presence of tug escorts at the time of those accidents.

(D) Each plan shall address its method for performing a continued study of tug escorts, which will rely in part on relevant information solicited by the harbor safety committee from pilots, masters, representatives from towing industries and builders, and other interested parties.

(2) Geographic Region of Responsibility

This section shall provide a written description of each committee's geographic region of responsibility and shall include a large scale chart, or chartlet, illustrating the entire region. The geographic region of responsibility described and illustrated shall be the one approved by the Administrator as outlined in Section 800.5(a) of this Subchapter.

(3) Regional Harbor Conditions

This section shall provide:

(A) a description of existing and expected conditions of weather, tidal ranges, tidal currents (directions and velocities) and other factors which might impair or restrict visibility or impact vessel navigation;

(B) a description of the procedures for routing vessel traffic, and any contingency or secondary routing plans which may be used during construction and dredging operations;

(C) a description of limitations of current anchorages (designations, proximity to heavily used fairways or channels) and any plans, if developed, to address those limitations; and

(D) a description of the current channel design (navigable channel width and advertised dredged depth) and any proposed changes to these plans.

(4) Vessel Traffic Patterns

This section shall provide, to the greatest extent possible:

(A) A description of the types of vessels which call on the ports or facilities within the region; and

1. identification of the types of cargo transported on the vessels; and

2. a determination of the amount of oil annually (using a three year average) shipped into or from the ports or facilities within the region.

(B) a history and types of all accidents and near-accidents which have occurred within the region during the past three years and any corrective actions or programs taken to alleviate recurrences. For purposes of this subsection, "near-accident" shall mean all situations where a risk of collision as defined by 33 USC 2007 existed;

(C) an assessment of current safety problems or conflicts with small vessels, sailing vessels, or vessels engaged in fishing as it relates to violation of Rule 9 (Narrow Channels Rule) of the Inland Navigational Rules Act (33 USC 2009);

(D) current procedures for routing vessels during emergencies or other contingencies which impact navigation;

(E) a review of existing and proposed federal, state and local laws, regulations or ordinances affecting the region to determine a need for any change;

(F) an assessment of the need for establishing or upgrading existing educational or public awareness programs for all waterway users.

(5) Aids to Navigation

This section shall:

(A) describe any fixed navigational hazards specific to the region and aids to navigation systems in place to minimize risk of contact with these hazards;

(B) evaluate the existing aids to navigation systems available to each region as established and maintained by the United States Coast Guard or other navigational aids as permitted by the United States Army Corps of Engineers, and determine the need for any changes; and

(C) evaluate current programs to determine accurate depth information in navigable channels, anchorages and berths used by tank vessels, and make recommendations necessary to increase the accuracy of such information.

(6) Communication

This section shall:

(A) review and evaluate the adequacy of current ship-to-ship and ship-to-shore communication systems used in the region;

(B) identify any low propagation, or silent areas within the region;

(C) if communication deficiencies exist, develop a strategy to address such deficiencies.

(7) Bridge Management Requirements

(A) This section shall assess the current schedule for bridge openings, the adequacy of ship-to-bridge communications, and the physical limitations affecting vertical and horizontal clearance.

(8) Enforcement

(A) This section shall include suggested mechanisms that will ensure that the provisions of the plan are fully, uniformly and regularly enforced.

(9) Project Funding

This section shall:

(A) provide recommendations for funding projects that the committee intends to recommend or initiate; and

(B) consider the imposition of user fees, and assess existing billing mechanisms as potential funding sources.

(10) Competitive Aspects

This section shall:

(A) identify and discuss the potential economic impacts of implementing the provisions of the harbor safety plan; and

(B) describe the significant differences in the restrictions that could vary from port to port within the region.

(11) Miscellaneous

(A) This section shall address any additional issues deemed necessary by the harbor safety committee that could impact safe navigation in the region including, but not limited to:

1. vessel pilotage;

2. vessel ballast procedures or requirements;

3. vessel mooring requirements;

4. navigation in reduced or restricted visibility; and

5. maintenance dredging necessary for safe vessel operation.

NOTE: Authority cited: Sections 8670.23 and 8670.23.1, Government Code. Reference: Section 8670.23, Government Code.

Annual Work Group Reports

Ferry Work Group

John Davey, Chair
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Accomplishments 2006/2007

1. The Ferry Operations Work Group worked with a ferry routing model developed by George Washington University to identify risks associated with proposed ferry traffic lanes, and developed protocols for safe approach and berthing at the Ferry Building. The work group also developed communications protocols. The agreed routes will create greater predictability for the captains and VTS.
2. Routes and waypoints were developed in conjunction with USCG/VTS and WTA and electronic overlay of routes was produced for Ferry Capt/Vessel to use on board all scheduled ferry services to/fm the SF Ferry Terminals
3. Testing of electronic routes commenced Nov 2006 and continues to date to develop data set on performance and suggested modifications.
4. Workgroup has met 4 times in 2006 with Ferry Operators and Captains to gain lessons learned and input on refining routes. Maneuvering zone and communications protocol. These meetings continue in 2007.

Future Goals for 2007

1. Establish maneuvering zone radius at San Francisco Ferry building- Ferry terminals.
2. Agree on naming conventions for zone, communication waypoints and route to/fm outlaying destinations.
3. Codify Maneuver Zone and Communications protocol into format for vote/publication in the HSC plan.
4. Identify and produce the maneuvering zone routes on nautical charts.

Prevention through People Work Group

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Accomplishments 2006/2007

1. The "Sharing the Bay" video enjoys international distribution.

2. Wrote kayak warning sticker, “Kayakers, Be Alert” and began distribution.

3. Conferred at length with all participants in bunkering procedure. Adopted suite of documents detailing instructions and procedures for safe bunkering practices.

4. Produced and began distribution of “Knowledge for Novice Boaters” laminated placard.

Future Goals

1. Continue to work with paddlesport groups, meet and confer about safety issues.

2. Produce safety documents for paddlesport groups as needed or desired.

3. Update "Where The Heck Is Collinsville" brochure, to indicate new dock nomenclature.

4. Continue distribution of video and kayak safety materials.

Tug Escort Work Group

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Accomplishments 2006/2007

The Tug Escort Work Group met several times during the year to discuss the following topics as referred by the full Harbor Safety Committee.

1. Bollard Pull testing for Escort tugs:

   OSPR demonstrated the new Escort tug inspection program to the workgroup. It has been generally well received.

2. Review of the Escort tug regulations:

   Escort tug equipment lists were reviewed and discussed. No substantive changes were made.

   A review of the crew working hours has begun and continues at this time.

Future Goals

1. Continue to monitor legislation in Sacramento, especially regarding new escort regulations and/or requirements. Continue work on any changes needed to regulations regarding crew hours in order to meet the needs of the maritime community as a whole.

Navigation Work Group

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Accomplishments 2006/2007

1. The Navigation Workgroup had a relatively quiet year. We met to discuss the safety aspects of the new CARB regulations and offered some suggestions that were added to the final draft of the regulations.

2. The Ferryboat operators expressed concern about organized swimming events in the vicinity of the San Francisco Ferry Terminal. This was a matter that was going to be discussed in a Navigation Workgroup meeting. However, the swim members became aware of the concern and addressed it internally, thereby resolving the matter.

Future Goals

1. Continue to work with the ACOE for timely and accurate surveys in SF Bay.

2. Continue to work with NOAA.

3. Meet with the CARB folks to discuss the safety aspects of future regulations.

PORTS Work Group

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Accomplishments 2006/2007

1. Developed with other California Harbor Safety Committees legislation approving statewide PORTS to be administered by OSPR.

2. Continued re-activation of San Francisco PORTS.

3. Developed in conjunction with NOAA and SF Bar Pilots a cellular PORTS reporting system that can be accessed through a toll free phone number.

4. Developed a plan to install additional PORTS sensors throughout the San Francisco Bay to support large vessel navigation and the marine community.

Future Goals

1. Obtain permanent statewide funding for PORTS to be administered by OSPR.

2. Develop fully operational PORTS to support the San Francisco Bay marine transportation system.

TITLE 14, CALIFORNIA CODE OF REGULATIONS
SUBDIVISION 4. OFFICE OF SPILL PREVENTION AND RESPONSE
CHAPTER 4. VESSEL REQUIREMENTS
SUBCHAPTER 1. TANK VESSEL ESCORT REGULATIONS
FOR THE SAN FRANCISCO BAY REGION
SECTIONS 851.1 through 851.10.1
Amended September 15, 2006
Effective October 15, 2006

"851.1 Effective Date of this Subchapter"

This subchapter, as amended, shall be effective on June 9, 2004.

Note: Authority: Sections 8670.17.2(a), and 8670.23.1(d), Government Code.
Reference: Sections 8670.17.2(b), 8670.23.1 (d), (e)(1) and (h) Government Code.

"851.2 Purpose and Scope"

This subchapter sets forth tank vessel escort requirements for the San Francisco, San Pablo and Suisun Bays. These requirements specify that tank vessels carrying 5,000 or more long tons of oil in bulk as cargo shall be escorted by a suitable escort tug or tugs. The escort tugs will be available, and shall respond as needed to influence the speed and direction of travel of the tank vessel in the event of a casualty, or steering or propulsion failure, thereby reducing the possibility of groundings or collisions and the risk of oil spills from these tank vessels. This subchapter establishes the criteria for matching tugs to tankers and barges. Tankers will be matched according to a matrix that correlates a tanker's displacement with the braking force of a tug(s). Barges must be matched based on a one-to-one correlation of the deadweight tonnage of the barge to the braking force of the tug(s).

The Administrator shall review the matching criteria and other program elements within two years of the effective date of this subchapter. The program review will include a survey of the tanker-related incidents in U.S. waters to determine the types of failures that have occurred, an assessment of tug technology and any advances made in design and power, and the tug escort-related rules and policies that are implemented by other coastal states and maritime organizations. At the conclusion of the review, the Administrator will determine whether it is necessary to modify the tug/tanker matching criteria or any other provision of the program requirements.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1(d), Government Code.
Reference: Sections 8670.17.2(b) and 8670.23.1(e)(1), Government Code.

"851.3 Definitions"

Definitions governing the construction of this subchapter can be found in Government Code Section 8670.3, and Chapter 1 of this subdivision.

Note: Authority: Sections 8670.3, 8670.17.2(a) and 8670.23.1(d), Government Code. Reference: Section 8670.3 and 8670.17.2(a), Government Code.

"851.4 Applicability"

(a) This subchapter shall apply to all tank vessels capable of carrying 5,000 or more long tons of oil in bulk as cargo when these vessels are underway on waters in the San Francisco, San Pablo and Suisun Bays, as follows:

(1) tank vessels carrying 5,000 or more long tons of oil as cargo shall be required to comply with all the requirements in this subchapter;

(2) tank vessels carrying less than 5,000 long tons of oil as cargo shall only be required to comply with the reporting requirement as stated in Subsection 851.7

(b) The escort requirements of this subchapter shall not apply to tank vessels that are only shifting location within an anchorage. Any tug used during such a shifting maneuver need not be an escort tug registered with the Clearing House.

(c) This subchapter shall not apply to tank vessels otherwise covered by the requirements of this subchapter in the event of an emergency. The master of the tank vessel shall report to the Clearing House any deviation from the requirements outlined in this subchapter as soon as practicable, and in no case later than the departure of the tank vessel from the marine waters of the state. For purposes of this section, an emergency shall include, but not be limited to, any of the following:

(1) imminent and immediate danger to the vessel, its cargo, or its crew; or

(2) imminent and immediate danger to a marine terminal, or to the escort tug; or

(3) imminent and immediate danger to a vessel in close proximity to the tank vessel; or

(4) any emergency declared by the Captain of the Port.

(d) This subchapter (except for this Subsection 851.4(d)) shall not apply to tankers with double hulls, as that term is defined in 33 CFR 157.03(kk), when the tanker also has the following:

(1) Fully redundant steering and propulsion systems to include:

(A) two independent propulsion systems each with a dedicated propeller, engine (or motor), electrical generation system, electrical system (including the switchboard), fuel system, lube oil system, and any other system required to provide the vessel with independent means of propulsion; and

(B) two independent rudders each with separate steering systems; and

(C) the propulsion and steering components, as described in Subsection (A) and (B) above, shall be arranged in separate spaces, such that a fire or flood in one space will not affect the equivalent system in the other space(s); and

(D) a bow thruster with an assigned power source;

(2) A Navigation System in compliance with the federal navigational equipment requirements set forth in 33 CFR Sections 164.35, 164.37, 164.38(b), 164.40, 164.41, 164.42, and 164.43.

(3) No exemption to this subchapter shall be allowed for a tanker requesting a U.S. Coast Guard Captain of the Port letter of deviation, pursuant to 33 CFR Sections 164.51, 164.53, and 164.55.

(4) The Administrator may require tankers that are exempt from this subchapter under the conditions outlined in Subsection (d) to periodically demonstrate the tanker and crew=s ability to maneuver in response to a partial or total loss of propulsion and/or steering at a level of safety at least equal to that of an escorted tanker.

(e) This subchapter shall apply to all tugs being used to escort tank vessels in waters identified as escort zones.

(f) The tank vessel master remains responsible for the safe navigation and maneuvering of the vessel in all circumstances. The requirements outlined in this section are in addition to, and not a limitation of, any other responsibility created by custom, law, or regulation.

Note: Authority: Sections 8670.17.2(a) and 8670.23.1(d), Government Code.
Reference: Section 8670.23.1, Government Code.

"851.5 Escort Zone Requirements"

(e) Six tank vessel escort zones are established as follows:

(1) Zone 1: All waters in the area encompassed by a straight line drawn between Point Bonita Light, through Mile Rocks Light to the shore (the COLREGS Demarcation Line), and eastward to the Golden Gate Bridge;

(2) Zone 2: All waters from the Golden Gate Bridge, south to a line drawn between the southern tip of Bay Farm Island and the southeastern tip of Point San Bruno Peninsula, and north to a line drawn from Point San Pablo to San Pablo Bay Light 4 (Light List number 5880), to San Pablo Bay Channel Light 5 (Light List number 5885), to Point San Pedro;

(3) Zone 3: All waters from the southern end of Zone 2 to one mile north of the San Mateo Bridge;

(4) Zone 4: All waters in the navigable channel from one mile north of and to one mile south of the

San Mateo Bridge;

(5) Zone 5: All waters from the eastern boundary of Zone 2 to the western approaches of the Carquinez Bridges at Light 15;

(6) Zone 6: All waters from Light 15, through the Carquinez Strait, north on the Sacramento Ship Channel to one mile beyond the Ryer Island Ferry Terminal and east on the San Joaquin River to one mile beyond the Antioch Bridge;

(f) Tank vessels required to have escorts under this subchapter shall be escorted in the zones as specified below:

(1) Escort tugs are required for tank vessels operating within Zones 1, 2, 4, or 6;

(2) Escort tugs will not be required in Zones 3 or 5, or in areas outside of Zones 1 through 6;

(3) No tank vessel may transit in a zone that requires an escort tug unless escorted by a tug or tugs of sufficient size and capability, as specified in sections 851.9 (for tankers) and 851.9.1 (for barges).

o In Zone 1, escort tugs shall be stationed as follows:

(A) on an inbound transit, the escort tug shall be in Zone 1 prior to the tank vessel's arrival to the area bounded by an arc eight nautical miles seaward of and centered on Mile Rocks Light; and

(B) on an outbound transit, the escort tug shall remain in Zone 1 until the tank vessel leaves the area bounded by an arc eight nautical miles seaward of and centered on Mile Rocks Light.

Note: Authority: Sections 8670.17.2(a) and 8670.23.1(d), Government Code.
Reference: Section 8670.17.2(a), Government Code

"851.5.1 Escort Plans"

(a) All tank vessel masters shall use an Escort Plan for transits through zones 1, 2, 4, or 6. The tank vessel shall not continue or commence a transit through any Escort Zone without an Escort Plan that is complete and adequate. The plan shall document the steps that the tank vessel owner/operator and/or master will take to comply with the requirements of this subchapter. The Escort Plan requirements set forth in this section are only planning standards and may not reflect the exigencies of an actual incident response. However, the Escort Plan must demonstrate that the vessel master is prepared to take the actions necessary to assure a reasonable level of success in providing the protection intended by this subchapter, as stated in section 851.2. The Escort Plan shall include:

(1) the tank vessel's intended route(s);

(2) the intended transit speed(s);

(3) a communication plan, to include the radio frequencies that will be used and any other means of electronic communication;

(4) the following characteristics of the tank vessel:

(A) the location and strength of the bitts and chocks to be used by the escort tugs,

(B) the location of the pushing surfaces on the hull that are strong enough to sustain the forces that can be exerted by the escort tug(s),

(C) the number of crew assigned to escort-related duties,

(D) any pertinent performance characteristics and related limitations of the steering and propulsion system(s);

(4) the escort tugs to be used during the transit as required in section 851.9 (for tankers) or 851.9.1 (for barges);

(5) the response actions that will most likely be implemented in the event of an emergency, taking into account the available bitts and chocks, pushing surfaces, line type, and expected tides and currents.

(b) Escort Plans shall be prepared using one of the following:

(1) a format as designed, completed and submitted by the tank vessel owner/operator; or

(2) a Checklist as recommended by the Harbor Safety Committee of the San Francisco Bay region, and approved by the Administrator. The vessel owner/operator shall assure that the vessel master completes the Checklist according to the requirements in this subchapter.

(g) Review, approval and use of an Escort Plan designed and submitted by the tank vessel owner/operator:

(1) a tank vessel owner/operator may develop an Escort Plan for a vessel or vessels, and submit that plan to the Administrator for review and approval prior to using the plan for escorted transits;

(2) the Escort Plan developed by the vessel owner/operator shall include all the information required in subsection 851.5.1(a). The requirement for information regarding the tug(s) to be used during the transit may be met by stating the size and braking force capacity of the tug(s) needed for each of the vessels covered by the plan.

(3) each plan shall be either approved, approved with conditions, or denied within 60 days after the Administrator receives the plan. Approval, once given, may be revoked if it is found that the plan submitter is not complying with the requirements of this subchapter;

(A) to be approved, the plan must comply with the requirements in this section, must match tug(s) to the tank vessels in accordance with the requirements in this subchapter, and must demonstrate that the tank vessel owner/operator and/or master maintains a level of

readiness that will allow for effective implementation of the plan. The plan submitter shall be notified in writing when a plan has been approved.

(B) approval shall be denied or revoked if the plan, or the implementation of the plan, does not comply with the requirements of this subchapter. If a plan is denied or revoked, the Administrator shall notify the owner/operator in writing of the reasons for denial or revocation, and provide an explanation of those actions necessary to secure approval. The Checklist form of escort plan, as prescribed in this section, shall be used unless and until a new or revised escort plan is submitted and approved by the Administrator.

(4) once approved, the master and pilot shall use and comply with the Escort Plan on each escorted transit:

(A) the details of the Escort Plan shall be reviewed and discussed as part of the pre-escort conference (section 851.7);

(B) as part of the pre-escort communications, the pilot or, if there is no pilot on board, the master shall notify the Clearing House that the plan has been reviewed, and shall inform the Clearing House of the tugs that have been chosen for the escort.

(5) the Checklist format, as described in this section, shall be used for all escorted transits unless or until an Escort Plan is submitted by the vessel owner/operator, and approved by the Administrator.

(d) Completion, review and use of Escort Plans prepared using the Checklist format developed by the Harbor Safety Committee:

(2) the Checklist shall include all the items enumerated in subsection 851.5.1(a), as well as a schematic drawing of a tank vessel sufficient to illustrate the location of the bitts and chocks, and those areas on the hull that are capable of withstanding the forces exerted by the escort tug(s). The Administrator shall provide a copy of the approved Checklist to the Clearing House for distribution to tank vessel owner/operators, masters and/or pilots.

(3) the master shall complete the Checklist, and shall verify that all the requisite elements have been included. The master shall sign the Checklist to indicate that, to the best of the master's knowledge, the information on the Checklist is correct, and is in compliance with the requirements of this subchapter. If there is no pilot on board, the master shall notify the Clearing House when the Checklist has been completed and shall inform the Clearing House of the tugs that have been chosen for the escort. The Administrator may request a copy of any Checklist at any time to determine if the planning process has been completed adequately.

(3) the Checklist shall be completed by the tank vessel master at the following points during a transit operation;

(A) for vessels arriving from sea, the Checklist shall be completed prior to entering Zone 1;

1. Alternatively, the agent or owner/operator may complete the Checklist and electronically send the completed form to the master and the Clearing House:

   a. before the vessel=s estimated time of arrival to the San Francisco Bay Pilotage area, or

   b. before the vessel=s arrival at the San Francisco Bay Precautionary Area, or

   c. after the vessel=s departure from its last Port of Call.

(B) for in-bay movements or for departures, the Checklist shall be completed prior to beginning the transit.

(4) if a pilot is on board, the pilot shall review the Checklist as cited in subsection 851.5.1(d) and shall verify that all the elements have been completed adequately. The pilot shall sign the Checklist after reviewing and verifying its adequacy. The pilot shall then notify the Clearing House that the planning process has been completed, and shall inform the Clearing House of the tugs that have been chosen for the escort.

(A) the pilot shall determine that the Checklist is adequate if the following are met:

1. all the items on the Checklist have been addressed completely; and

2. the information provided demonstrates that the tank vessel master is prepared to take the actions necessary to assure a reasonable level of success in using the escort tug(s) in response to a vessel casualty.

(B) if the pilot determines that the Checklist is not adequate, the pilot shall notify the Clearing House, and explain the reason(s) for such determination. The Clearing House shall then immediately notify the Administrator that a Checklist has been determined to be inadequate by the pilot.

(C) The Administrator shall review all inadequacy determinations made by a pilot and shall decide whether the determination is appropriate. The Administrator may affirm or overturn such determination, or may provide for conditional approval of a Checklist, as follows;

1. the Checklist will be considered adequate if it is complete, if the tug to tanker match has been done in accordance with this subchapter, and the information provided demonstrates that the tank vessel master is prepared to take the actions necessary to assure a reasonable level of success in using the escort tug(s) in response to a vessel casualty. If a Checklist is determined to be inadequate, the

vessel may be ordered to discontinue operations until an adequate Checklist is completed;

2. a Checklist may be approved conditionally if there is a minor deficiency in one or more of the requisite elements. Conditional approval may require that the tank vessel operate under specified precautionary measures (such as operating at a slower speed). If the owner/operator of a tank vessel fails to comply with the requirements of the conditional approval, the Administrator may order the tank vessel to discontinue operations until an acceptable Checklist for that vessel has been completed and approved.

(D) The pilot is not responsible for delaying or stopping the transit solely because of a plan=s inadequacy.

(5) The tank vessel owner/operator or the master shall ensure a copy of the completed, signed Checklist is submitted to the Clearing House within 14 days after the transit covered by the Checklist. The master, pilot, ship=s agent or vessel owner/operator may send the copy to the Clearing House. A copy of the Checklist shall also be maintained aboard the vessel for a period of one year after the transit. A copy of the Checklist shall be made available to the Administrator upon request.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1(d), Government Code.
Reference: Sections 8670.17.2(b) and 8670.23.1(e)(1), Government Code

"851.6 Clearing House Responsibilities."

(h) The Administrator shall establish a Clearing House which shall be responsible for performing escort compliance and monitoring duties, to include the following:

(1) monitor, verify, and record the braking force of each escort tug that will be used to comply with this subchapter;

(2) ensure that the braking force measurement is certified by the American Bureau of Shipping (ABS) or by any member in the International Association of Classification Societies;

(A) the braking force measurement shall be monitored by the Clearing House for those escort tugs that are tested in the San Francisco Bay region;

(B) escort tugs may be tested in another port if the braking force measurement is conducted in a manner consistent with the ABS (or equivalent) standards as used by the Clearing House. The tug owner/operator shall register such measurement with the Clearing House, and shall provide verification that the measurement complies with the ABS (or equivalent) standards.

(3) maintain and publish a register which lists the following for each escort tug whose braking force is measured under this section:

(A) the tug's name;

(B) the tug operator;

(C) the length of the tug;

(D) for tractor tugs, bollard pull ahead or astern, or the braking force determined by an alternate compliance model developed in accordance with the requirements of this subchapter;

(E) for conventional tugs, bollard pull astern;

(F) type and configuration of the propulsion system;

(G) type and configuration of the steering system;

(4) receive notification of a tank vessel's arrival and/or movement as required under section 851.7;

(5) receive notification of the displacement of a tanker, and the tug(s) chosen for an escorted transit. The Clearing House shall use this reported information to determine if the tanker is correctly matched to the escort tug(s) as required in this subchapter, and shall immediately report to the Administrator when such a match has not been done correctly. The verification shall be made prior to the tanker's arrival and/or movement. The Clearing House shall also be responsible for verifying the tug vessel=s stability when these tugs are operating westward of the Golden Gate Bridge as specified in Section 851.8(f);

(6) receive notification of the deadweight tonnage of a barge and the tug(s) that have been chosen for the escorted transit. The Clearing House shall use this reported information to determine if the barge is correctly matched to the escort tug(s) as required in this subchapter, and shall immediately report to the Administrator if the match has not been done correctly. The verification shall be made prior to the arrival and/or movement of the barge;

(7) maintain copies of blank Checklists for distribution upon request to tank vessel owner/operators, masters and/or pilots;

(8) receive notification of the completion of an Escort Plan, or the completion and adequacy of a Checklist, and report to the Administrator when a pilot makes a determination that a Checklist is not adequate;

(9) maintain copies of the completed Checklists submitted by the tank vessel owner/operators or masters. Copies must be kept for a period of 3 years from the date of the transit covered by the Checklist. A copy of any Checklist shall be made available to the Administrator upon request;

(10) receive reports from tug owners, operators or agents of any tug casualty that occurs during an escorted transit, and develop and maintain a database of all such casualty reports;

(11) monitor compliance with the requirements of this subchapter and report all violations to both the Office of Spill Prevention and Response and the Harbor Safety Committee for the San Francisco Bay Region.

(i) The Administrator shall ensure that the duties of the Clearing House are performed in an effective and impartial manner. The Administrator may enter into a contract or establish a memorandum of understanding to designate an individual, organization, corporation or agency to operate as the Clearing House.

(j) The Clearing House shall be authorized to assess and collect a fee to cover the costs incurred in complying with the tug escort requirements of this subchapter. The owner/operators of all escort tugs and all tank vessels required to have a tug escort shall pay the fee assessed by the Clearing House.

Note: Authority: Sections 8670.17.1, 8670.17.2(a) and 8670.23.1(d), Government Code.
Reference: Section 8670.17.1 and 8670.23.1(e)(1), Government Code

"851.7 Communication and Reporting Requirements Before, During and After an Escorted Transit"

(k) No more than one hour prior to entering or transiting the marine waters of the San Francisco, San Pablo or Suisun Bays, the pilot or, if there is no pilot onboard, the master of a tank vessel shall report the vessel's name and position to the Clearing House, and shall report the status of the vessel as follows:

(1) tank vessels carrying 5,000 or more long tons of oil as cargo shall report as "*Escort Required*"; or

(2) tank vessels carrying less than 5,000 long tons of oil as cargo and requiring no escort need not be reported.

(l) After completing the review of the Checklist or the Escort Plan, as specified in section 851.5.1, the pilot or, if there is no pilot onboard, the master of the tank vessel shall report the following to the Clearing House:

(1) a statement that the Escort Planning process has been completed;

(2) if a pilot is onboard, a statement from the pilot as to whether the Checklist is completed, and whether the Checklist is or is not adequate;

(3) a listing of the tugs that were chosen for the escort during the Escort Planning process;

(4) for a tanker, the vessel's displacement;

(5) for a barge, the vessel's deadweight tonnage.

(m) Pre-Escort Conference: Before commencing an escorted transit, the pilot or, if there is no pilot onboard,

the master of the tank vessel shall initiate communications with the escort tug(s). During this pre-escort conference, all parties shall plan and discuss the details of the escorted transit as specified on the Checklist or in the Escort Plan, including, but not limited to, the following:

(1) the intended route;

(2) the intended destination;

(3) the speed of the vessel;

(4) the positioning of the escort tug(s) relative to the tank vessel being escorted;

(5) the manner in which an emergency connection would be made between the escort tug and tank vessel;

(6) radio communications, including primary and secondary frequencies; and

(7) anticipated weather and tidal conditions.

(n) The master of the escort tug(s) shall report the name of the tug(s) and the name of the tank vessel to the Clearing House upon arrival at the following locations:

(1) for inbound tank vessel movements; when passing Alcatraz, and when on-station;

(2) for in-bay and outbound tank vessel movements; when on-station at the tank vessel prior to movement of the tank vessel.

(o) At all times during the escorted transit, the master or pilot of the tank vessel shall maintain direct, two-way radio communication with the master or pilot of the escort tug. The radio communication shall be on a channel agreed to by both the master or pilot of the tank vessel and the master or pilot of the escort tug.

(f) Reporting tug casualties during and after an escorted transit:

(1) the master of the escort tug shall immediately notify the master or pilot of the escorted vessel of any casualty that occurs to the tug during the escorted transit. A casualty shall include any loss of main propulsion, primary steering, or any component or system that reduces the maneuverability of the tug, or any other occurrence that adversely affects the tug's ability to perform the escort function;

(2) the tug owner, operator or agent shall file a written casualty report with the Clearing House within 72 hours of occurrence. The Clearing House shall maintain a database of these reports for three years.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1(d), Government Code.
Reference: Section 8670.23.1(e)(1), Government Code.

"851.8 Requirements for Escort Tugs; Braking Force Measurement, Crew and Training Standards, Equipment and Stationing Criteria."

(p) Braking force measurement:

(1) any escort tug used to comply with the requirements of this subchapter must have its braking force verified and registered with the Clearing House, as follows;

(A) for tractor tugs escorting in an ahead position the braking force is measured as the ahead bollard pull;

(B) for tractor tugs escorting in an astern position the braking force is measured as the astern bollard pull;

(C) for conventional tugs the braking force is measured as the astern bollard pull.

(2) The braking force shall be re-measured after any modifications and/or repairs to the main engines, hull, shaft-drive line, or steering, that could affect the bollard pull. The new measurements must be verified and registered with the Clearing House.

(3) The Clearing House shall publish procedures and standards to be followed when conducting braking force measurement. These procedures, entitled ASan Francisco Bay Region Clearing House, Rules for Bollard Pull Tests@, dated May 19, 2000, are incorporated by reference. These procedures and standards shall be made available upon request to the Clearing House.

(4) Any escort tug used to comply with the requirements of this subchapter shall also meet one of the following:

(A) the escort tug shall have its braking force re-measured within 3 years of its last bollard pull test, or;

(B) the escort tug shall submit to an Escort Tug Inspection Program, as follows:

1. Escort tugs 150 gross tons or greater, and classed escort tugs shall be made available for inspection by the Administrator twice in five years during their dry dock examination. The period between inspections shall not exceed three years.

2. Escort tug maintenance records shall be made available for inspection by the Administrator.

3. If dry dock examination extensions are necessary, escort tugs shall comply with the direction of the cognizant Officer in Charge, Marine Inspection, or American Bureau of Shipping principal surveyors' direction.

4. For classed escort tugs, a copy of the Class Surveyor's report confirming that the condition of the drive train (shafts, propellers, nozzles or other type drive) and main engines are in the same state as when the builder's or last bollard pull certificate was issued, shall be forwarded to the Administrator.

5. Escort tug companies shall participate and have a certificate of compliance from one of the following Management Systems:

   i. American Waterways Operators Responsible Carrier Program;

   ii. International Safety Management;

   iii. ISO 9000 (quality management).

6. Escort tugs of less than 150 gross tons shall be made available for inspection by the Administrator once in five years during their dry dock examination. These escort tugs shall use a certified Marine Surveyor and shall comply with subsections 2, 3, and 4, above.

(C) Escort tugs that submit to the Escort Tug Inspection Program, as described above, can perform escort duties in any port in the state, if the tugs meet the requirements of the appropriate subchapter (i.e., Subchapter 1, San Francisco Bay Region; Subchapter 2, Los Angeles/Long Beach Harbor; Subchapter 3, Port Hueneme Harbor; Subchapter 4, Humboldt Bay; Subchapter 5, San Diego Harbor), of this Chapter 4 of the California Code of Regulations.

(q) Any escort tug used to comply with the requirements of this subchapter, must meet crew standards as follows:

(1) An escort tug shall have a minimum of four persons on board including one certified tug master and two certified deck hands. The fourth person shall be a crew member capable of resolving mechanical difficulties aboard an escort tug in the event of an emergency;

(2) The requirement for four crew members does not preclude additional deck hands who are gaining experience for certification;

(3) The certified deck hands required under this subsection shall at all times be awake, alert and ready to respond during an escorted transit. The fourth person must be immediately available to respond to any mechanical difficulties aboard the escort tug. Immediate response may be assured by an alarm or other signaling device to wake or alert the fourth person to the emergency.

(A) The Administrator may review the equipment and crew on an escort tug to assure compliance with this provision. The Administrator may require that the fourth person be awake and alert and ready to respond if the tug operator does not provide adequate mechanism to assure that the fourth person is immediately available to respond to a mechanical difficulty.

(4) Working hours for escort crew members shall be limited to 15 hours in any 24-hour period, not to exceed 36 hours during any 72-hour period except in an emergency or a drill. Working hours shall include any administrative duties associated with the tug whether performed on board the tug or on shore.

(r) Training requirements for the crew of any escort tug used to comply with the requirements of this subchapter are as follows:

(1) to qualify for certification as the master or deck hand on an escort tug, an applicant must do all of the following;

(A) possess a current and valid U.S. Coast Guard Merchant Mariner's Document;

(B) show proof of at least 960 hours on duty of prior service aboard a tug, at least 240 hours of which must have been in the San Francisco Bay region;

(C) successfully complete an approved education program which covers the following topics;

1. basic tugboat seamanship;

2. line handling skills;

3. communication systems;

4. emergency response to the loss of steering or propulsion on an escorted tank vessel and on the escort tug itself.

o in addition to the requirements of subsection 851.8(c)(1), certification as the master of an escort tug requires that the applicant also do the following:

(B) possess a U.S. Coast Guard license appropriate to the escort tug in service; and

(C) show proof of an additional 240 hours on duty of service aboard a tug in the San Francisco Bay region (for a total of 480 of the requisite 960 hours of service); and

(D) successfully complete an approved education program which covers knowledge of local waters, basic seamanship, and the use of the escort tug in reducing the risk of an escorted vessel's grounding or collision.

(2) individuals may be considered to have satisfied certain educational requirements without attending an education program, if they meet the following criteria:

(A) an individual with a U.S. Coast Guard rating of Able Seaman Special (OSV) is considered to have met the educational requirements in subsection 851.8(c)(1)(C) 1 and 2;

(B) an individual with any Coast Guard license appropriate for the escort tug in service is considered to have met the educational requirements in subsections 851.8(c)(1)(C).

(3) the Administrator shall review and approve the educational programs for masters and deck hands

of escort tugs, and shall establish and maintain a list of all such approved programs:

(A) an educational program shall be approved if it provides the coursework required by this section, and can adequately train students in the requisite skills;

(B) a request for approval of a program shall be submitted to the Administrator in writing and shall include the following:

1. a description of the course content and materials;

2. the qualifications of the instructors;

3. the estimated cost of the program to the students;

4. a description of the site(s) where the course will be held, both classroom and field locations.

(C) the Administrator shall notify the applicant of approval or denial within 30 days of the submittal of the application;

1. if the educational program is denied, the applicant will be notified of the reasons for denial and may resubmit the program for review after the deficiencies have been remedied;

2. once approved, the educational program must be submitted for re-evaluation at least once every 5 years or when a significant change occurs in the course content or materials. The 5-year re-submittal shall include an updated description of course content, materials, cost, and instructor qualifications, as well as copies of student evaluations from classes conducted during the previous year;

3. the Administrator may audit the course at any time to assure compliance with the requirements of this section.

(4) The Administrator shall assure compliance with tug crew training and qualification requirements. Compliance with crew training and qualification requirements shall be verified as follows:

(A) tug owner/operators shall establish and maintain adequate documentation to verify the training and qualifications of individual crew members, and shall make this information available to the Administrator upon request;

(B) the Administrator may review the owner/operator's documentation annually to assure compliance with this section;

(C) the Administrator may request this documentation at any time.

(s) The following equipment must be onboard an escort tug and in operable condition during all escorted

transits;

(1) a line-throwing gun for use in Zone 1, with 300 feet of tag line. The tag line shall be of suitable strength and size for deploying the tow line;

(2) power line-handling equipment fore or aft for rapid, mechanically assisted deployment of lines. The primary line-handling equipment shall be in the position (fore or aft) best suited for the design of the particular tug in escort service;

(3) tow line with a breaking strength that is 2.5 times the certified braking force of the escort tug;

(4) a quick release device to be used when an escort tug is in a tethered mode;

(5) one working radar;

(6) fendering appropriate to absorb impact in skin-to-skin operations, and located at both the bow and stern to act as pivot points when pulling away from the tank vessel. In addition, the fendering must be sufficient to assure that there are no exposed corners, large holes or metal parts which could inflict damage on the escorted vessel, and must cover sufficient surface area to minimize sliding when working at an angle to the tank vessel.

(t) Annual inspection of the escort tug's equipment:

(1) the owner/operator shall assure that the required equipment is on board and operable during all escorted transits;

(2) the Administrator shall verify that the required equipment is on board each escort tug, and in operable condition. This verification may be obtained by an annual inspection which may be announced or unannounced. In conducting such inspections, the Administrator shall be guided by the standards established by the American Waterways Operators (AWO) in their Responsible Carrier Program, Sections III and IV, dated 2/21/95.

(f) Stability requirements for all escort tugs that operate westward of the Golden Gate Bridge are as follows:

(1) an escort tug shall have a load-line certificate; or

(2) an escort tug shall have a letter verifying stability issued by the American Bureau of Shipping or any member in the International Association of Classification Societies. The letter shall establish that the escort tug complies with the stability requirements outlined in federal Load Line Regulations at 46 CFR, Sections 42.09-10(a), 42.09-15(a), (b), and (c) except subparagraphs (1) and (2), and 42.09-25 (a) and (b) except for the portion of the last line of (b) that reads "...and meeting applicable requirements in this subchapter"; and 46 CFR Sections 173.090, 173.095 and 174.145. A copy of this letter shall be kept on file with the Clearing House.

(g) Stationing requirements for escort tugs:

(1) an escort tug shall not simultaneously engage in the escort of more than one tank vessel;

(2) escort tugs shall maintain a station-keeping distance of no more than 1000 feet ahead or aside, or 500 feet astern of the tank vessel while engaged in escort activity;

(3) escort tugs shall standby as the tank vessel transits Zones 3 and/or 5, as follows:

(A) the escort tug(s) shall standby in Zone 2 or 6 as the tank vessel transits Zone 5; and

(B) the escort tug(s) shall standby in Zone 2 or 4 as the tank vessel transits Zone 3; or

(C) the escort tug(s) may accompany the escorted tank vessel through Zone 3 and/or 5 in lieu of standing by.

o in Zone 1, the escort tug(s) shall be stationed as follows:

(D) on an inbound transit, the escort tug shall be in Zone 1 prior to the tank vessel's arrival to the area bounded by an arc eight nautical miles seaward of and centered on Mile Rocks Light; and

(E) on an outbound transit, the escort tug shall remain in Zone 1 until the tank vessel leaves the area bounded by an arc eight nautical miles seaward of and centered on Mile Rocks Light.

(h) Escort transit log:

(1) escort tug masters shall keep a record in the ship's log of every escorted transit;

(2) the record of the escorted transit in the ship's log shall include information regarding the sequence of events during the transit, the crew assignments, any casualties that may occur, and any drills conducted.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1, Government Code.
Reference: Section 8670.23.1, Government Code.

"851.9 Tanker and Tug Matching Criteria, and Tanker Crew and Equipment Requirements"

(a) Default Matrix Option for Matching Tugs to Tankers: The tug or tugs used for an escorted transit shall be able to provide sufficient braking force to stop the escorted tanker from a speed of 5 knots through the water. The braking force of the tug(s) shall match the tanker's displacement, as indicated in the following matrix:

	Zones 1 and 2					Zones 4 and 6				
Assisting Current	slack	1 kt	2 kts	3 kts	4 kts	slack	1 kt	2 kts	3 kts	4 kts

Displacement*	Braking Force in kips (1,000 pounds of force)									
0 to < 20	20	20	30	40	40	40	50	70	90	110
20 to < 30	20	30	40	50	60	50	70	90	120	160
30 to < 40	30	40	50	60	70	60	90	120	160	210
40 to < 50	30	40	60	70	90	70	110	150	200	250
50 to < 60	40	60	70	90	110	100	140	190	250	320
60 to < 80	50	70	90	120	140	120	180	250	330	420
80 to < 100	60	80	110	140	180	150	220	300	400	520
100 to < 120	70	100	130	170	210	180	270	370	500	650
120 to < 140	80	110	150	190	240	210	310	430	580	760
140 to < 160	90	140	190	240	310	240	350	490	660	860
160 to < 180	100	150	210	270	350	260	390	550	740	970
180 to < 200	110	170	230	300	390	**	**	**	**	**
200 to < 220	120	180	250	330	420	**	**	**	**	**

* 1,000 long tons

** The channel depths in zones 4 and 6 limit vessels that may use the channel to those drawing less than 35 feet. This table does not address vessels in zones 4 and 6 with a displacement greater than 180,000 long tons because such vessels would draw more than 35 feet and would thus not be allowed into these zones.

(1) Applicable current velocity: The current velocities shall be determined using the published tide and current tables developed and maintained by NOAA, and used by the pilots. The current velocity used shall be the one published for the estimated time of arrival at the points noted below. The estimated time of arrival shall include a window of 30 minutes before and after the scheduled arrival to account for possible delays or changes. Tank vessel operators are responsible for adjusting the estimated arrival time when it appears that it will fall outside of the originally estimated one hour window.

(2) Location of current readings: The specific current velocity to be used in conjunction with the matrix shall be the published readings for the following locations:

(A) The Golden Gate Bridge - the predicted current velocity at the Golden Gate Bridge shall apply to vessels in zones 1 and 2 that are west of a north-south line drawn through the eastern tip of Alcatraz Island and terminating at Angel Island or to vessels in zones 1 and 2 that are west of the eastern entrance to Racoon Strait.

(B) The Bay Bridge; west of Yerba Buena Island - the predicted current velocity at the Bay Bridge shall apply to vessels in zone 2 that are south of an arc drawn from Alcatraz

Island east to Treasure Island and east of the north-south line drawn through Alcatraz Island.

(C) 1.25 miles north of Point Chauncey - The predicted current velocity at 1.25 miles north of Pt. Chauncey shall apply to vessels in zone 2 that are north of an arc with a radius of 2.7 nautical miles centered at the intersection of the Bay Bridge and the San Francisco Peninsula drawn from Alcatraz Island east to Treasure Island and east of the north-south line drawn through the eastern tip of Alcatraz Island.

(D) The San Mateo Bridge The predicted current velocity at the San Mateo Bridge shall apply to vessels while in zone 4.

(E) The Carquinez Bridge - the predicted current velocity in Carquinez Strait shall apply to vessels in zone 6.

How to use the Default Matrix Option for Matching Tugs to Tankers: The matrix provides current velocities for slack water, 1, 2, 3, and 4 knots. The slack water column shall be used only when the water is truly slack. The 1 knot column shall be used for any velocity above 0 and equal to 1. The 2 knot column shall be used for any velocity above 1 and equal to 2, and so on up to the 4 knot maximum.

In those situations where the current velocity is above 4 knots, such as may occur at the Golden Gate, the tank vessel requiring an escort tug shall reschedule the transit to a time when the current velocity drops to 4 knots or below.

(b) Alternative To The Default Matrix for Matching Tugs to Tankers: Measurement methodologies other than those used to establish the Default Matrix may be used instead of, or in addition to, the Matrix as follows;

(1) Alternate Compliance Model for Escort Tugs: Tug owner/operators may propose an alternate method for measuring the braking force of any tug (in kips). Such alternate method may be used to demonstrate that the tug can provide higher steering or braking forces (in kips) than the simple bollard pull measurement would indicate. An alternate measurement may only be submitted once in any 12 month period and shall comply with the following:

(A) the owner/operator shall assure that the following are included when developing a methodology for calculating an alternate braking force for a given escort tug:

1. the alternate measurement is conducted from a starting speed of 10 knots for zones 1 and 2, and 8 knots for zones 4 and 6;

2. the escort tug is not required to exceed the limits of its ability to generate the forces, and in no instance submerges the deck edge to achieve the alternate measurement;

3. the escort tug operates all its equipment at or below the manufacturer's recommended guidelines for the safe working load of the tug;

4. unless demonstrated otherwise by full scale testing, all machinery shall be assumed to operate at or below performance levels published by the manufacturer;

5. any current bollard pull values registered with the Clearing House shall be utilized where appropriate in any formulas or models;

6. any known condition that would impair the escort tug's ability to perform shall be included in the calculation.

(B) the measurement must be conducted by a marine architect or engineer approved by the Administrator;

1. the tug owner/operator shall submit the name of the marine architect or engineer to the Administrator for approval prior to having that individual or his/her company conduct an alternate measurement.

2. the Administrator shall approve a marine architect or engineer if that person has demonstrated the education, knowledge and experience necessary to conduct the testing and modeling of tug capabilities and braking force.

(C) the alternate model and the resultant measurements shall be approved by the Administrator before the alternate model may be used to match a tanker to a tug or tugs. The Administrator shall approve the alternate model if it provides both of the following:

1. a higher force (in kips) than the simple bollard pull measurement would indicate; and

2. at least the same level of protection as the braking forces established in the default matrix.

(D) after an alternate model is approved, the Administrator shall provide the Clearing House with the new braking force measurements for the subject tug(s). The new measurements shall be used with the Default Matrix established in this section.

(2) Alternate Compliance Model for Tankers: Tanker owner/operators may develop a model for the vessels in their fleet relative to the steering and braking demands of the vessels, and the braking capabilities of tugs. The steering and braking demands established by the alternate model may be used instead of the Default Matrix to match escort tugs to the tankers. An alternate compliance model may only be submitted once in any 12-month period and shall comply with the following:

(A) the measurement must be conducted by a marine architect or engineer approved by the Administrator. The tanker owner/operator shall submit the name of the marine architect or engineer to the Administrator for approval prior to having that individual or his/her company conduct an alternate model;

1. the Administrator shall approve a marine architect or engineer if that person has demonstrated the education, knowledge and experience necessary to conduct the testing and modeling of tug capabilities and braking force.

(B) the alternate model and the resultant measurements shall be approved by the Administrator before the alternate model may be used to match a tanker to a tug or tugs. The Administrator shall approve the alternate model if the following conditions are met:

1. under the alternate model the tanker can complete a safe transit, staying within the 95th percentile of constraint as established in "The San Francisco Bay Tanker Escort Study", dated 7/95, prepared by Glosten Associates; and

2. the alternate model provides at least the same level of protection as the braking forces established in the Default Matrix, and can be achieved using no more than three tugs as required in subsection 851.9(d).

(C) After an alternate model is approved, the Administrator shall provide the Clearing House with the tanker demand in kips which corresponds to the tanker's displacement and speed under the approved alternate model.

(c) The Administrator may allow deviations from compliance for the matching of tugs to laden tankers when these vessels make short transits from berth to berth within a zone and are assisted by docking tugs and transiting at speeds less than 8 knots.

(1) The tanker master or owner/operator shall make a request for such deviations to the Administrator through the Clearing House at least 24 hours prior to the desired shift.

(2) The Administrator shall approve or deny the deviation request by verbally notifying the Clearing House within 12 hours of the request. A written confirmation shall follow within 24 hours.

(d) Maximum number of tugs to be used during an escorted transit:

(1) the tanker must be accompanied by a sufficient number, but no more than three tugs to provide the braking forces specified in this section;

(e) Speed limits for tankers are as follows:

(1) tankers that use the Default Matrix as provided in this section, shall not proceed at a speed in excess of 10 knots through the water in Zones 1, 2, 3 and 5, nor more than 8 knots through the water in Zones 4 and 6, with the following qualifications:

(A) the speed or speeds selected by the tanker for the transit must permit stationing the escort tug(s) to allow the tug(s) to effectively influence the tanker's movement in the event of a casualty;

(B) the tanker shall proceed at a safe speed. The determination of a safe speed shall include, but not be limited to;

1. environmental factors such as the depth of the water, visibility, wind conditions, and the speed of the tidal currents; and

2. proximity of other vessel traffic and any other vessels at anchor.

(C) Tankers shall in any case have their engines ready for immediate maneuver and shall not operate in any control modes or with fuels that prevent an immediate response to an engine order.

(2) tank vessels may be exempt from the speed limits specified in subsection 851.9(e)(1) if they establish and use an approved alternate compliance model for determining the steering and braking demands of their vessels, as provided in this section. In such cases, the speed limit will be that used to establish the alternate compliance model, and must be specified in the Escort Plan, or on the Checklist.

(f) Crew requirements:

(1) a tanker shall have sufficient and qualified line-handling-capable crew members standing by and available to immediately receive lines from each escort tug. These crew shall be stationed proximate to the lines, and shall not be assigned duties that would interfere with their ability to immediately respond to an emergency situation;

(2) the tanker shall comply with all applicable federal regulations relating to anchor readiness;

(3) tankers shall have sufficient and qualified supervisors to provide direct supervision of line-handling crew operations. Supervisors shall have direct radio communication capability with the bridge of the tanker.

(g) Equipment requirements:

(1) each tanker shall have deck chocks and bitts that are of sufficient size, strength, and number to accommodate the anticipated braking force of the escort tug(s);

(2) the tanker owner/operator shall indicate the location and strength of the bitts and chocks in the Escort Plan for each vessel.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1(d), Government Code.
Reference: Section 8670.23.1(e)(1), Government Code

"851.9.1 Barge and Tug Matching Criteria, and Barge Crew and Equipment Requirements"

(u) A barge must be accompanied by a sufficient number, but no more than three tugs to provide the braking force specified in this section;

(1) the line-haul tug which provides the power to push or tow a barge shall not become an escort tug during the course of a transit unless the line-haul tug has been relieved of its duties as the primary towing vessel, and replaced with another tug that serves as primary towing vessel.

(2) any line-haul tug that does become the escort tug after being relieved of all line-haul duties, must meet all the requirements for escort tugs as specified in this subchapter.

(v) The tug or tugs used to escort a barge must be able to provide sufficient braking force to stop the barge, measured as follows:

(1) the braking force shall be measured as the escort tug's astern static bollard pull;

(2) the escort tug shall have total astern static bollard pull in pounds equal to, not less than, the barge's deadweight tonnage;

(w) A barge shall not exceed 8 knots through the water during an escorted transit.

(x) Crew Requirements:

(1) A barge shall have sufficient and qualified line-handling-capable deck hands onboard the barge, standing by and available to receive lines from each escort tug;

(A) the deck hands for the barge shall be made available from the line-haul tug;

(B) in the interest of crew safety, when entering or leaving Zone 2 bound to or from the sea (Golden Gate Bridge), crew transfers to or from the barge may be made in the vicinity of Alcatraz Island;

(C) when a barge is fitted with an emergency tow wire, or comparable mechanical device of sufficient strength and handling characteristics to control the barge, or the escort tug is made fast to the barge, deck hands shall not be required on board the barge.

(2) Barges shall have sufficient and qualified supervisors to provide direct supervision of line-handling crew operations. Supervisors shall have direct radio communication capability with the bridge of the tug that is towing the barge.

(y) Equipment requirements:

(1) each barge shall have deck chocks and bitts that are of sufficient size, strength and number to accommodate the anticipated braking force of the escort tug(s);

(2) the barge owner/operator shall indicate the location and strength of the bitts and chocks in the

Escort Plan for each vessel or on the Checklist for each transit.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1(d), Government Code.
Reference: Section 8670.23.1(e)(1), Government Code

"851.10 Penalties

Any person who knowingly, intentionally or negligently violates any provision of this subchapter shall be subject to criminal, civil, and/or administrative civil actions as prescribed in Article 9, Government Code, beginning with Section 8670.57.

Note: Authority: Sections 8670.17.2(a) & 8670.23.1, Government Code.
Reference: Sections 8670.23.1 and Sections 8670.57 through 8670.69.6, Government Code.

"851.10.1 Requests for Redetermination"

The owner/operator of a tank vessel or an escort tug may request redetermination of an action taken relative to an inadequacy decision or conditional approval of an Escort Plan or Checklist, denial or revocation of approval of an educational program, or application for use of an alternative compliance model. A request for redetermination must be submitted in writing and shall be processed as follows:

(z) the request must be submitted to the Administrator within 15 calendar days from the date of the decision being disputed;

(aa) the request must contain the basis for the redetermination and, if available, provide evidence which rebuts the basis for the decision;

(bb) within 15 calendar days following the receipt of the request for redetermination, a notice shall be sent indicating that the Administrator shall adhere to the earlier decision or that the decision has been modified or rescinded.

Note: Authority: Sections 8670.17.2(a) and 8670.23.1, Government Code.
Reference: Sections 8670.23.1 and Sections 8670.57 through 8670.69.6, Government Code.

OSPR
TUG ESCORT VIOLATION DISPOSITION
SUMMARY REPORT FOR 2006

VIOLATIONS TOTAL	
Failure to Notify the M.E.	9
Bollard Pull Certificate expired	2
Current Velocity violation	1
	12

DISPOSITION TOTAL	
Violation Dismissed	4
Hearing Waived / Case settled	8
	12

San Francisco Region Certified Escort Vessels

Tug	Boat ID	LOA	Propulsion System	Number	Rudders	Flanking Rudders	Kips Zones 1 & 2	Kips Zones 4 & 6	Certification Expires
AmNav Maritime Services									
AVENGER	ANAV	94.8	Conventional, Open	2	2	0	36.49	36.49	01-Jan-2103
CAPTAIN MIKE	ANCM	97	Conventional, Open	2	2	0	59.17	59.17	02-Jun-08
DEFIANT	ANDF	97.7	Conventional, Open	2			46.20	46.20	01-Jan-2103
ENTERPRISE	ANEN	110	Conventional, Open	2	2	0	61.46	61.46	01-Jan-2103
GRIZZLY	ANGZ	98	Conventional, Open	2	2	0	60.62	60.62	27-Mar-09
LIBERTY	ANLB	95.2	Z-Drive	2	0	0	79.47	79.47	01-Jan-2103
PATRIOT	ANPT	87.9	Conventional, Open	2	2	0	52.56	52.56	01-Jan-2103
REVOLUTION	ANRV	78	Z-Drive	2	0	0	131.73	131.73	01-Jan-2103
Baydelta Maritime									
DELTA DEANNA	BDDD	105	Z-Drive	2	0	0	188.00	171.00	21-Apr-08
DELTA LINDA	BDLA	105	Z-Drive	2	0	0	188.00	171.00	21-Apr-08
Crowley Marine Services									
GOLIAH	CMGA	105	Z-Drive	2	0	0	188.00	171.00	01-Jan-2103
GUARDIAN	CMGD	136	Conventional, Open	2	3	0	61.05	61.05	27-Mar-09
RESOLUTE	CMRL	110	Z-Drive	2	0	0	215.00	197.00	01-Jan-2103
SEA ROBIN	CMSR	126	Conventional, Open	2	2	0	65.21	65.21	12-Dec-08

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Vessels with an expiration date of January 1, 2100 are participants in the Escort Tug Inspection Program. So long as a vessels standing in the Escort Tug Inspection Program is maintained, its certification will not expire. The Escort Tug Inspection Program.

Tug	Boat ID	LOA	Propulsion System	Number	Rudders	Flanking Rudders	Kips Zones 1 & 2	Kips Zones 4 & 6	Certification Expires
TIOGA	CMTI	85	Z-Drive	2	0	0	133.00	115.00	01-Jan-2103
Foss Maritime									
ARTHUR FOSS	FMAR	102	Cycloidal	2	0	0	188.00	153.00	07-Dec-08
KEEGAN FOSS	FMKF	110	Conventional, Kort	2	2	4	73.31	73.31	31-Aug-09
LYNN MARIE	FMLM	98	Z-Drive	2	0	0	210.00	200.00	30-Sep-07
MARSHALL FOSS	FMMF	92.2	Z-Drive	2	0	0	210.00	200.00	05-Oct-08
PACIFIC EXPLORER	FMPE	105	Z-Drive	2	0	0	188.00	171.00	01-Jan-2103
POINT VICENTE	FMPV	105	Conventional, Open	2	3	0	47.05	47.05	29-Jun-08
RICHARD FOSS	FMRF	104	Conventional, Open	2	2	0	44.83	44.83	07-Dec-08
Greger Leasing									
CAPT. REINO MATTILA	GLRM	76	Z-Drive & Conventional, Open	2	1	0	22.65	22.65	24-Aug-08
NOELANI	GLNL	109	Conventional, Open	1	1	0	38.71	38.71	24-Aug-08
Marine Express									
DELTA CAPTAIN	MEDC	83	Conventional, Kort	2	2	0	25.67	25.67	30-May-10
GWENDOLYN GRACE	MEGG	56	Conventional, Open	2	2	0	5.96	5.96	21-Jan-08
Oscar Niemeth Towing									
AMERICAN EAGLE	ONAE	117	Conventional, Open	2	2	0	56.68	56.68	19-Jan-08
SEA EAGLE	ONSE	93.9	Conventional, Open	2	2	0	26.49	26.49	19-Jan-08
SILVER EAGLE	ONSI	102.5	Z-Drive	2	2	0	113.56	113.56	14-Feb-09

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Vessels with an expiration date of January 1, 2100 are participants in the Escort Tug Inspection Program. So long as a vessels standing in the Escort Tug Inspection Program is maintained, its certification will not expire. The Escort Tug Inspection Program.

Tug	Boat ID	LOA	Propulsion System	Number	Rudders	Flanking Rudders	Kips Zones 1 & 2	Kips Zones 4 & 6	Certification Expires
Seaway Towing Company									
MARIN SUNSHINE	SWSU	80	Conventional, Open	2	2	0	24.76	24.76	11-Jul-09
SOUTHERN CROSS	SWSC	81	Conventional, Kort	1	0	0	23.38	23.38	11-Jul-09
VEGA	SWVE	104	Conventional, Open	2	2	0	45.61	45.61	14-Mar-08
Seaworthy Projects LLC									
HERO	SPHR	69	Z-Drive	2	0	0	16.90	16.90	24-Aug-08
Starlight Marine Services, Inc.									
HMS FRONTIER	STFR	104	Z-Drive	2	0	0	97.75	97.75	18-Jun-07
JOHN QUIGG	STJQ	76	Z-Drive	2	0	0	88.11	88.11	15-Dec-07
MILLENNIUM FALCON	STMF	105	Z-Drive	2	0	0	181.00	168.00	20-Mar-09
Z-FIVE	STZ5	95	Z-Drive	2	0	0	128.00	132.00	14-Dec-07
Z-FOUR	STZ4	95	Z-Drive	2	0	0	128.00	132.00	14-Dec-07
Westar Marine Services									
APOLLO	WSAP	87	Conventional, Open	2	2	0	24.83	24.83	14-Jul-09
BEARCAT	WSBC	69	Conventional, Open	2	2	0	18.04	18.04	28-Feb-10
ORION	WSOR	100	Conventional, Open	2	2	0	43.86	43.86	14-Jul-09
SAGITTARIAN	WSSA	79	Conventional, Open	2	2	0	39.50	39.50	30-Nov-07

Vessels with an expiration date of January 1, 2100 are participants in the Escort Tug Inspection Program. So long as a vessels standing in the Escort Tug Inspection Program is maintained, its certification will not expire. The Escort Tug Inspection Program.

San Francisco Bay Region Totals

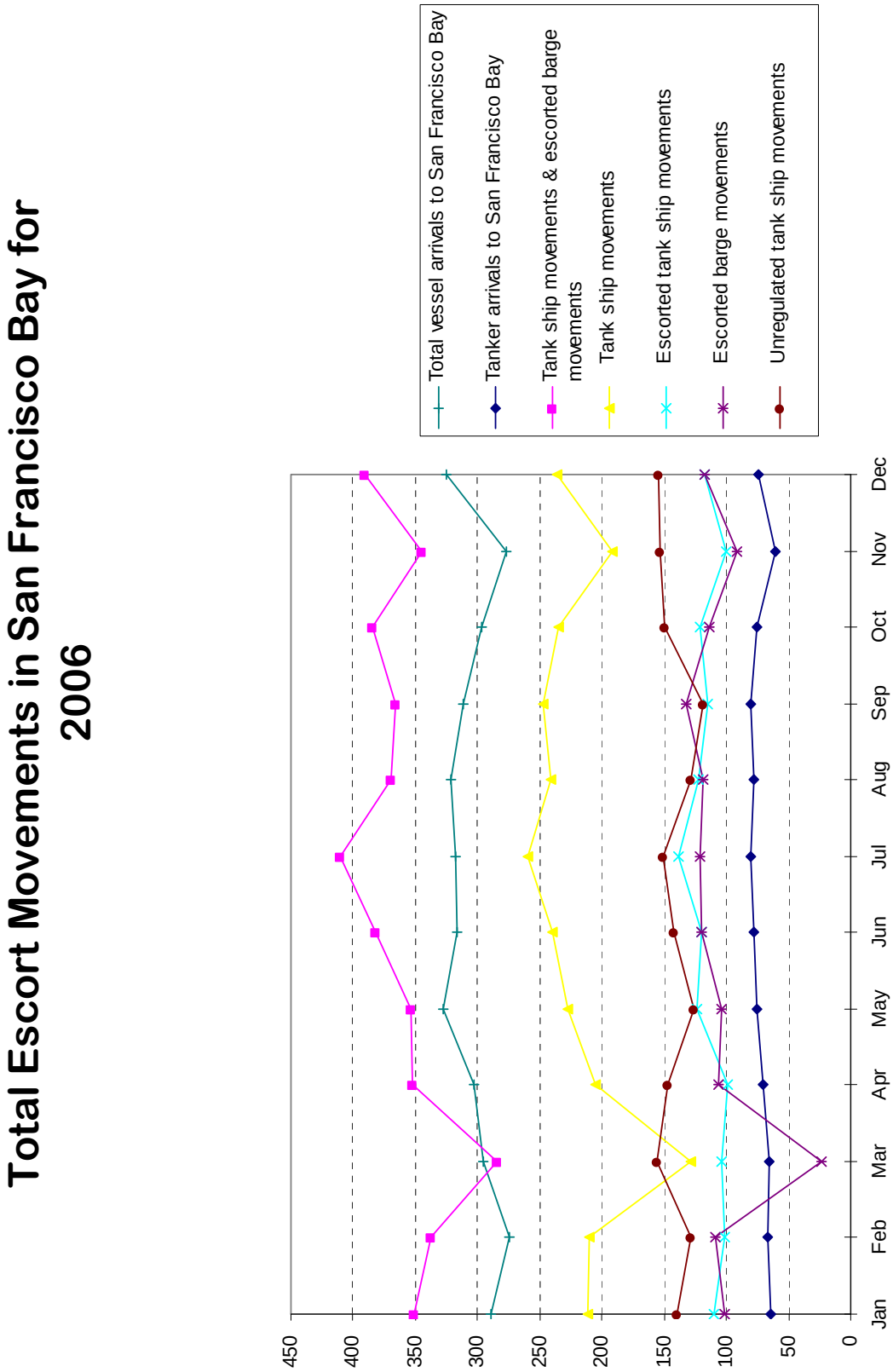
			2005
Tanker arrivals to San Francisco Bay	868		718
Tank ship movements & escorted barge movements	4,327		3,650
Tank ship movements	2,632	60.83%	2,149
Escorted tank ship movements	1,372	31.71%	997
Unescorted tank ship movements	1,260	29.12%	1,152
Tank barge movements	1,695	39.17%	1,501
Escorted tank barge movements	877	20.27%	760
Unescorted tank barge movements	818	18.90%	741

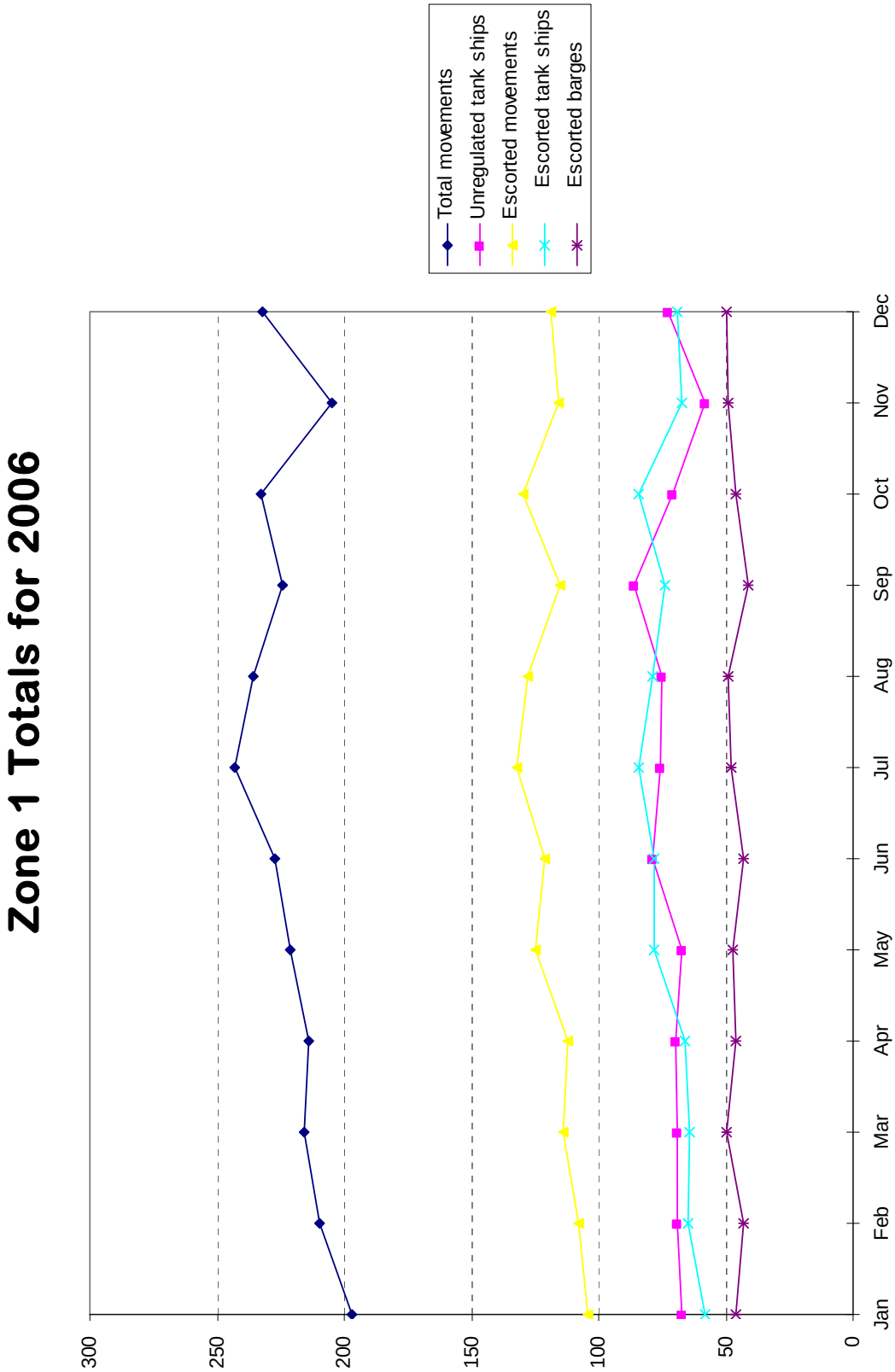
Percentages above are percent of total tank ship movements & escorted barge movements for each item.

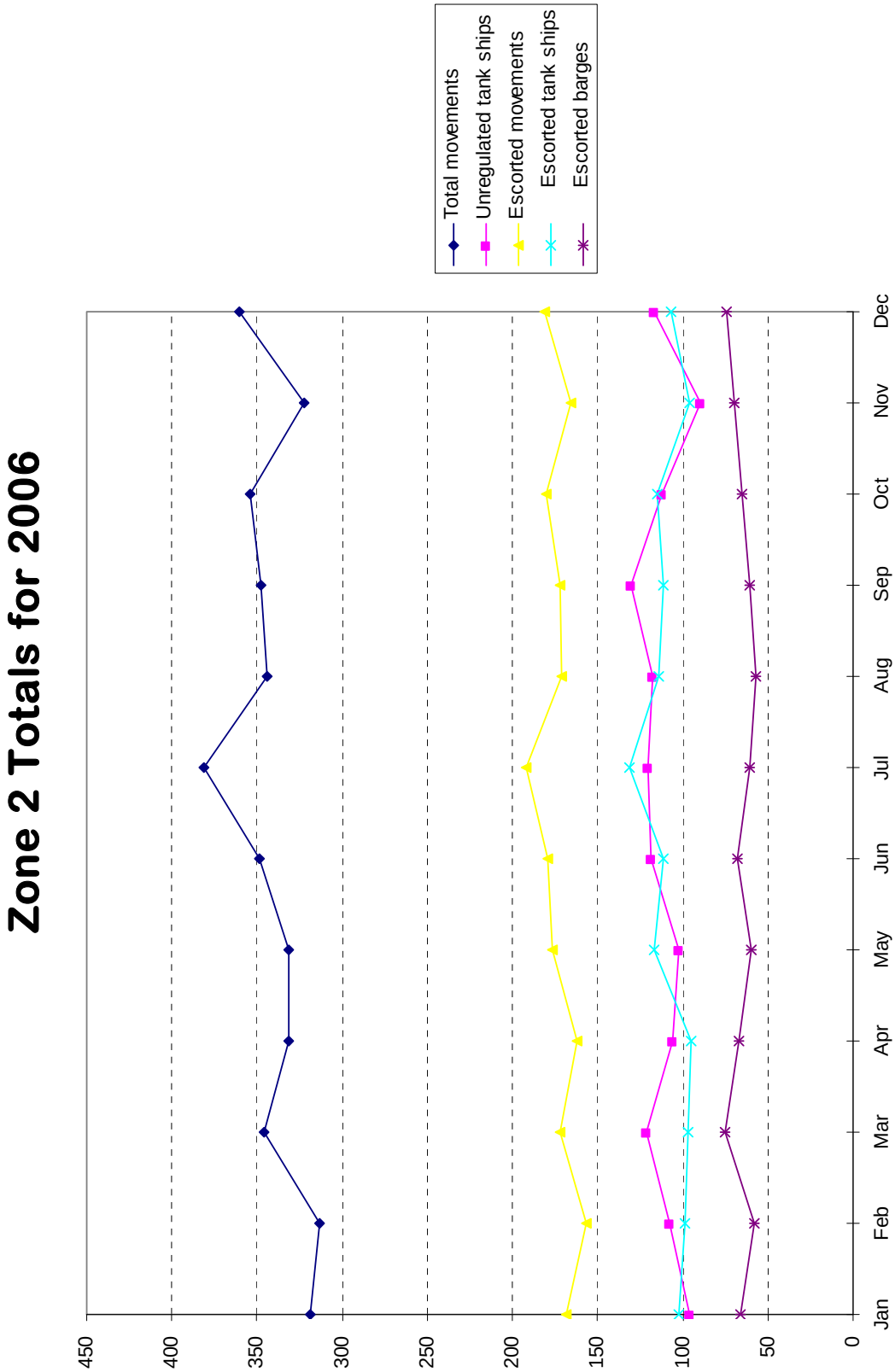
Escorts reported to OSPR	12		16

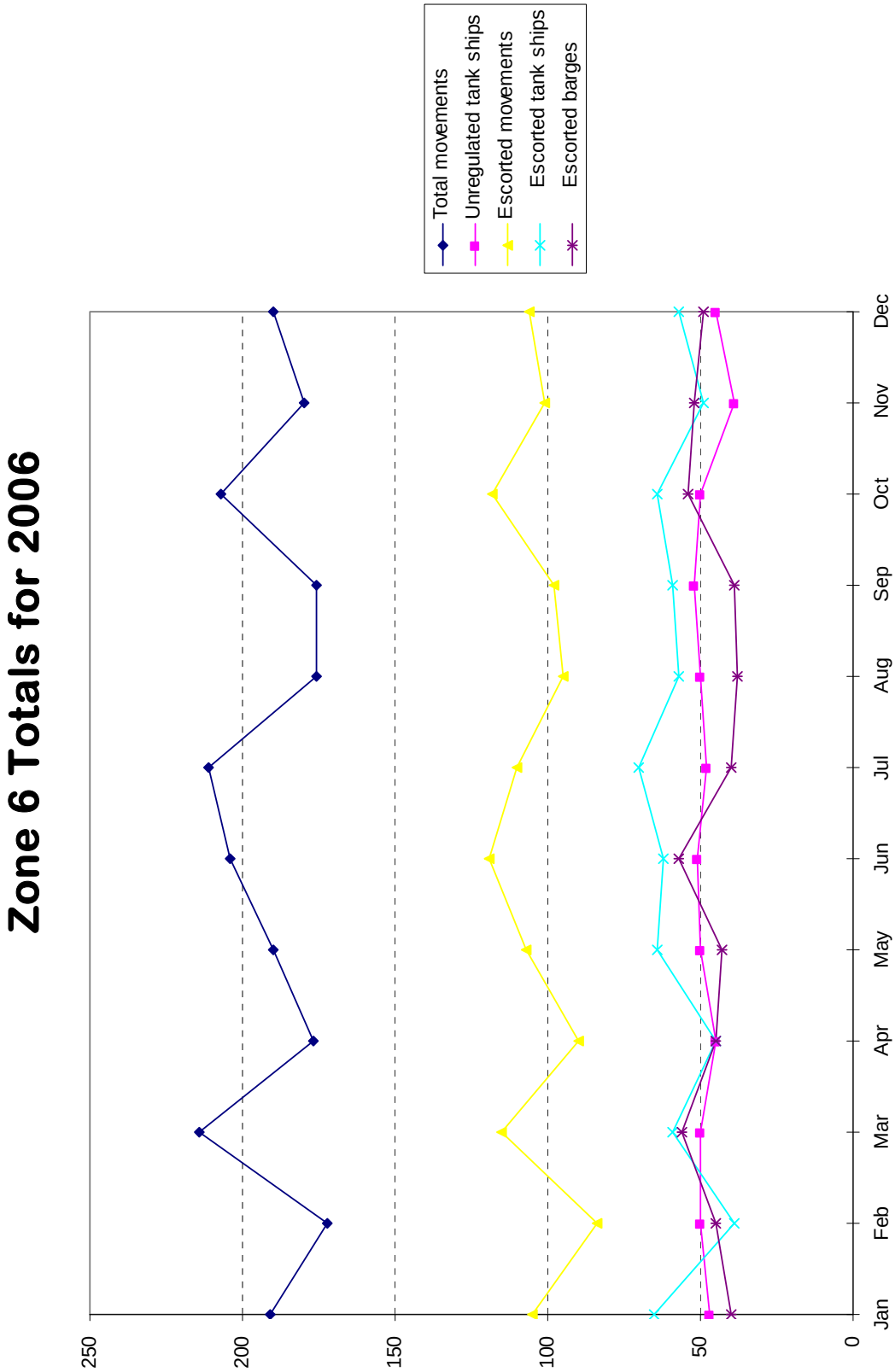
Movements by Zone	Zone 1	%	Zone 2	%	Zone 4	%	Zone 6	%	Total	%
Total movements	2,658		4,098		0		2,288		9,044	
Unescorted movements	1,234	46.43%	2,021	49.32%	0	0.00%	1,040	45.45%	4,295	47.49%
Tank ships	860	32.36%	1,339	32.67%	0	0.00%	577	25.22%	2,776	30.69%
Tank barges	374	14.07%	682	16.64%	0	0.00%	463	20.24%	1,519	16.80%
Escorted movements	1,424	53.57%	2,077	50.68%	0	0.00%	1,248	54.55%	4,749	52.51%
Tank ships	866	32.58%	1,295	31.60%	0	0.00%	690	30.16%	2,851	31.52%
Tank barges	558	20.99%	782	19.08%	0	0.00%	558	24.39%	1,898	20.99%

Notes:
1. Information is only noted for zones where escorts are required.
2. All percentages are percent of total movements for the zone.
3. Every movement is counted in each zone transited during the movement.
4. Total movements is the total of all unescorted movements and all escorted movements.


Total Escort Movements in San Francisco Bay for 2006
Total vessel arrivals to San Francisco Bay
Tanker arrivals to San Francisco Bay
Tank ship movements & escorted barge movements
Tank ship movements
Escorted tank ship movements
Escorted barge movements
Unregulated tank ship movements
450
400
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Zone 1 Totals for 2006
Total movements
Unregulated tank ships
Escorted movements
Escorted tank ships
Escorted barges
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Zone 2 Totals for 2006
Total movements
Unregulated tank ships
Escorted movements
Escorted tank ships
Escorted barges
450
400
350
300
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec


Zone 6 Totals for 2006
Total movements
Unregulated tank ships
Escorted movements
Escorted tank ships
Escorted barges
250
200
150
100
50
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Comparative Deep Draft Vessel Movement Totals

	2005	2006	Change
Total vessel arrivals	3,314	3,657	0.1%
Total vessel inter-bay shifts	1,420	1,632	0.1%
Total tanker arrivals	787	868	0.1%
Total tanker inter-bay shifts	795	1,005	0.3%

Total Tanker Arrivals for 2006 in the San Francisco Bay Region

Vessel	Flag	Length	Deadweight	Number of Arrivals
AEGEAN TRADER	NIS	170	31,374	2
AKADEMIK SEMENOV	CYP	151	17,485	1
ALABAMA	LBR	225	74,002	1
ALASKAN EXPLORER	USA	287	185,000	5
ALASKAN FRONTIER	USA	287	193,050	2
ALBUM	KW	234	105,857	1
ALESSANDRA BOTTIGLIERI	ITA	176	40,165	2
AMORE MIO	BHS	244	103,153	1
ANASAZI	USA	208	39,384	3
ANDES	GRC	228	68,467	4
ANGELICA SCHULTE	LBR	243	106,433	1
ANTIPOLIS (TPD)	GRC	229	74,543	2
ARCHANGELOS GABRIEL	GRC	229	72,292	1
ASOPOS	LBR	229	63,381	1
ASPROPYRGOS	BHS	229	72,854	1
ASTREA	GRC	248	84,999	1
ATHENS STAR	DE	229	74,500	1
AZALEA GALAXY	PA	148	19,999	1
AZTEC	GRC	228	68,439	2
BAIZO (TCO)	PA	183	32,000	1
BALTIC SUN II	ML	183	37,305	2
BALTIMORE	USA	210	828	12
BARENTS SEA	LBR	183	47,431	1
BARENTS SEA (SGP)	SGP	248	99,500	1
BOW PRIDE	GRC	177	45,655	1

Vessel	Flag	Length	Deadweight	Number of Arrivals
BRITISH BEECH	IOM	241	106,138	1
BRITISH LAUREL	IOM	240	106,500	3
BRITISH OAK	IOM	240	106,500	1
BRO PRIORITY	SW	176	31,265	6
BRUGGE VENTURE	HK	169	26,777	1
BRUSSELS	BEL	169	26,943	1
BUM EUN	HK	145	19,500	4
BUM SHIN	PA	147	19,000	4
BUM YOUNG	KO	149	19,200	5
BUNGA KANTAN DUA	SGP	144	19,766	1
CABO HELLAS	MH	228	69,636	4
CABO PILAR	PA	228	69,250	5
CABO SOUNION	MH	228	69,636	7
CAPE AVILA	CYP	244	105,237	2
CAPE BAKER	MH	275	16,472	1
CAPE BANTRY	MH	274	152,592	1
CAPE BEIRA	MH	176	40,047	1
CAPETAN COSTIS	BHS	182	39,542	1
CAPTAIN H.A.DOWNING	USA	207	39,385	14
CAPTAIN X.KYRIAKOU	MH	274	159,113	1
CARIBBEAN SPIRIT	PA	186	46,383	1
CEDAR GALAXY	PA	144	19,983	1
CHACONIA	BEL	165	29,271	2
CHALEUR BAY	CY	229	71,345	4
CHAMPION (TCO)	NO	182	36,955	2
CHAMPION ADRIATIC	NIS	171	33,187	1
CHAMPION PACIFIC	NIS	169	30,990	2

Vessel	Flag	Length	Deadweight	Number of Arrivals
CHAMPION TRADER	NIS	169	30,990	1
CHAMPION VENTURA	NIS	182	45,576	1
CHANCE	GRC	183	47,106	1
CHEMBULK BARCELONA	PHL	174	32,345	1
CHEMBULK CASABLANCA	BHS	141	19,399	1
CHEMBULK SINGAPORE	LBR	132	13,681	1
CHEMSTAR ACE	PA	147	19,481	1
CHEMSTAR PRINCESS	PA	147	19,430	1
CHEMTRANS MOON	LBR	225	74,500	1
CHEMTRANS RAY	LBR	227	71,637	4
CHEMTRANS STAR	LBR	228	63,331	1
CHEMTRANS SUN	LBR	227	71,675	1
CHERRY GALAXY	PA	147	19,364	3
CHIMBORAZO	ECU	228	66,138	6
COLORADO VOYAGER	USA	198	39,842	44
COTOPAXI	ECU	228	66,100	2
COURCHEVILLE	BEL	166	29,171	2
CSK SHELTON	HK	248	106,029	1
CYGNUS VOYAGER	BHS	275	156,836	47
DAEDALOS	BHS	229	72,825	3
DANUBIA	LBR	228	68,600	1
DAWN (TCO)	MH	117	11,668	1
DENALI	USA	290	191,117	3
DESH GAURAV	IND	244	10,500	2
DILIGENCE	USA	199	39,959	1
EAST POINT	ITA	183	50,922	2
ELISE SCHULTE	IOM	240	105,500	1

Vessel	Flag	Length	Deadweight	Number of Arrivals
ELM GALAXY	PA	148	19,305	1
ENERGY CENTURY	IOM	228	70,201	2
ENERGY CHAMPION	IOM	228	70,500	1
ENERGY CHANCELLOR	IOM	228	70,558	3
ENERGY CONQUEROR	IOM	228	70,616	4
EUPEN	LUX	180	29,121	1
EURONIKE	GRC	274	164,565	4
EVROTAS (TPD)	LBR	213	61,281	1
FAIRCHEM COLT	PA	146	19,998	1
FAIRCHEM DANUBE	SGP	147	19,399	1
FAIRCHEM GENESIS	PA	134	14,281	2
FAIRCHEM PEGASUS	MH	145	19,822	1
FAIRCHEM STALLION	PA	146	19,992	1
FAIRCHEM STEED	PA	146	19,992	1
FAIRCHEM UNICORN	MH	144	19,817	1
FAITH IV	SGP	229	63,765	2
FALCON CARRIER	LBR	224	68,960	2
FEDOR	MH	228	70,156	3
FIDELITY (GRC)	GRC	240	106,548	1
FORMOSA FOURTEEN	LBR	180	45,694	1
FORMOSA SEVEN	LBR	167	35,657	2
FORMOSA SIX	LBR	167	35,622	1
FORMOSA TEN	LBR	175	36,233	1
FORTIUS	MH	229	73,400	1
FOUR KETCH	CY	228	72,909	4
FUJIGAWA	PA	149	17,845	1
GAZ MILLENNIUM	PA	154	16,897	1

Vessel	Flag	Length	Deadweight	Number of Arrivals
GENMAR ORION	MH	274	152,400	1
GEORGIS NIKOLOS	GRC	228	72,341	1
GINGA EAGLE	PA	154	19,999	1
GINGA FALCON	PA	153	19,998	4
GINGA KITE	PA	148	18,700	1
GINGA LANNER	PA	148	19,000	1
GINGA LION	PA	154	25,451	1
GINGA MERLIN	PA	147	19,999	3
GOLDEN ELIZABETH	PA	138	15,500	1
GREEN PARK	GBR	145	19,500	1
GREEN POINT (TCO)	LBR	183	49,511	1
GROTON	USA	197	48,075	6
GULF OF PARIA	LBR	140	14,326	1
HAMANE SPIRIT	BHS	236	105,203	1
HELLESPONT TATINA	MH	239	105,535	3
HELLESPONT TRINITY	MH	274	120,000	1
HELLESPONT TRIUMPH	LBR	274	14,999	3
HIGH CENTURY	HK	180	48,400	1
HIGH VENTURE	LBR	183	51,302	1
HMI BRENTON REEF	USA	189	45,671	1
HOUSTON	USA	179	33,095	2
HRVATSKA	HR	280	166,739	1
HUNTESTERN	IOM	184	37,179	2
IBLEA	LBR	240	10,584	2
ICE ENERGY	LBR	229	70,377	1
ICE VICTORY	LBR	229	70,372	1
IKAROS	BHS	229	72,000	3

Vessel	Flag	Length	Deadweight	Number of Arrivals
INCA	GRC	228	68,467	3
IONIAN TRADER	NIS	178	40,632	1
ISLAND MONARCH	CA	41	0	2
ISOLA MAGENTA	ITA	178	36,457	1
JAG ANJALI	IND	229	66,203	1
JAG LEELA	IND	243	105,148	1
JAG PANKHI	IND	182	46,272	2
JAG VAYU	IND	192	28,400	1
JILL JACOB	CY	228	72,909	5
JOHANN JACOB	CY	228	73,072	1
JUNIPER	BHS	182	47,465	2
KAEDE	PA	155	22,635	2
KAMOGAWA	PA	149	17,712	5
KENAI	USA	265	125,089	1
KINUGAWA	PA	160	24,743	2
KISOGAWA	PA	140	17,739	4
KODIAK	USA	252	124,822	6
KUROSHIO EXPRESS	PA	179	48,400	1
KWK ESTEEM	SGP	256	105,342	12
LADY 1	PA	170	33,650	2
LAPTEV SEA	LBR	175	47,314	1
LATGALE	LV	228	68,467	1
LAUREL GALAXY	PA	143	19,805	2
LMZ ARTEMIS	CYP	228	69,714	1
LMZ NAFSIKA	CYP	228	69,431	1
LODESTAR GRACE	PA	134	14,298	1
LOTUS EXPRESS	PA	180	45,789	1

Vessel	Flag	Length	Deadweight	Number of Arrivals
LOUKAS 1	CYP	183	45,999	2
LUZON SPIRIT	BHS	245	98,629	2
MAERSK BERING	SGP	176	29,058	2
MAHARSHI BHAVATREYA	SGP	185	25,999	1
MAHARSHI MAHATREYA	IND	185	25,999	1
MANUELA BOTTIGLIERI	ITA	176	40,165	1
MARCELA LADY	LBR	182	46,683	1
MARITIME TUNTIGA	MY	180	44,508	1
MATSUKAZE	PA	150	17,676	1
MAYA	GRC	228	68,500	2
MINERVA JULIE	GRC	182	46,270	1
MONTE LUNA	LBR	173	39,742	1
MONTREUX	LBR	183	35,953	1
MOUNT FUJI	CYP	182	40,055	1
NAUTIC	LBR	274	150,812	1
NEAPOLIS (TPD)	GRC	229	75,000	1
NESTOS	LBR	214	61,000	2
NEW AMITY	LBR	241	106,120	1
NEW CONFIDENCE	MH	228	73,897	1
NEW YORK	USA	41	48,895	13
NOEMI	MH	228	64,999	3
NORCA	HK	183	47,094	1
NORD STREAM	PA	179	45,974	2
NORDIC VOYAGER	NIS	271	149,591	1
NORTHERN DAWN	PA	180	47,994	1
OAK GALAXY	PA	148	19,990	1
OCEAN I	PA	168	31,500	1

Vessel	Flag	Length	Deadweight	Number of Arrivals
OLYMPIC SERENITY	GRC	232	96,733	1
OMEGA LADY MIRIAM	MH	228	71,522	1
ORIENTAL ROSE	PA	134	14,351	1
ORIENTAL WISTERIA	PA	123	12,498	1
OVERSEAS ALCMAR	MH	183	45,800	1
OVERSEAS ANTIGMAR	MH	183	46,168	1
OVERSEAS ARIADMAR	MH	183	45,800	2
OVERSEAS GOLDMAR	MH	228	69,684	2
OVERSEAS JADEMAR	MH	228	69,697	3
OVERSEAS PEARLMAR	MH	219	69,250	4
OVERSEAS PUGET SOUND	USA	200	50,860	21
OVERSEAS REGINAMAR	MH	228	70,312	10
OVERSEAS REYMAR	MH	219	69,636	4
OVERSEAS ROSEMAR	MH	32	70,000	6
OVERSEAS RUBYMAR	MH	228	69,334	4
OVERSEAS SILVERMAR	MH	228	69,609	2
PACIFIC ALLIANCE	PA	244	105,941	1
PACIFIC SUNSHINE	PA	180	45,994	1
PANAM CARIBE	BHS	134	14,246	1
PANAM FLOTA	PA	117	11,642	1
PINE GALAXY	BHS	148	19,997	1
POLAR ADVENTURE	USA	272	141,740	8
POLAR ALASKA	USA	290	191,459	13
POLAR CALIFORNIA	USA	290	127,003	7
POLAR DISCOVERY	USA	272	141,740	5
POLAR ENDEAVOUR	USA	273	141,740	9
POLAR RESOLUTION	USA	273	140,320	10

Vessel	Flag	Length	Deadweight	Number of Arrivals
PORT MOODY	MH	183	44,999	1
POSAVINA	PA	184	44,063	1
PRINCE WILLIAM SOUND	USA	268	122,941	1
PUGET SOUND	USA	200	50,860	2
RATNA PUJA	IND	244	104,583	1
RELENTLESS	CYP	183	47,081	1
ROMO MAERSK	DIS	171	34,806	13
S/R BAYTOWN	USA	238	59,625	7
S/R COLUMBIA BAY	USA	291	191,120	2
S/R GALENA BAY	USA	201	50,116	3
S/R LONG BEACH	USA	301	214,862	18
SANKO BREEZE	PA	239	105,721	1
SANKO CONFIDENCE	LBR	228	71,024	1
SANKO DYNASTY	MH	243	99,998	4
SCARLET	PA	171	32,397	1
SCF URAL	LBR	274	159,314	1
SEABULK AMERICA	USA	181	4,312	10
SEABULK ARCTIC	USA	183	46,094	5
SEABULK CHALLENGE	USA	191	45,350	25
SEABULK MARINER	USA	183	46,094	3
SEABULK PRIDE	USA	183	46,069	9
SENATORE	MH	228	72,514	1
SHAMROCK MOON	PA	125	10,303	1
SHINOUSSA	GRC	183	46,538	2
SIERRA	USA	264	124,777	5
SINGAPORE VOYAGER	SGP	240	105,850	2
SIRIUS VOYAGER	BHS	275	156,382	45

Vessel	Flag	Length	Deadweight	Number of Arrivals
SITEAM PANTHER	MH	171	46,100	1
SKOPELOS	GRC	228	70,146	2
SMT CHEMICAL EXPLORER	USA	40	46,617	6
SONANGOL GIRASSOL	BHS	274	149,994	1
SONANGOL KASSANJE	BHS	274	158,706	2
SONGA ANABEL	MH	176	42,662	1
SOUTH SEA	LBR	274	149,393	1
SPRING LYRA	PA	138	15,200	4
SPRING URSA	PA	131	15,265	4
SPRING VIRGO	PA	139	15,247	5
ST.JACOBI	LBR	182	43,760	1
ST.PETRI	LBR	182	47,228	1
STAVANGER VIKING	NIS	239	105,670	1
STENA COMANCHE	ITA	229	72,296	1
STENA COMPANION	BM	229	72,637	1
STENA COMPASS	BM	230	72,000	3
STENA COMPATRIOT	BM	229	72,736	1
STENA CONCORD	BM	183	47,171	1
STENA VENTURE	MH	229	70,392	1
SUN RIVER	HK	228	62,348	2
SUNNY EXPRESS	PA	179	47,999	1
SYNNOVE KNUTSEN	NO	142	17,071	1
TEAM ANEMONIA	CYP	176	40,296	1
THE MONSEIGNEUR	USA	207	38,861	23
THEO T.	BHS	227	69,999	2
TONEGAWA	PA	149	17,722	6
TORBEN SPIRIT	BHS	245	98,622	1

Vessel	Flag	Length	Deadweight	Number of Arrivals
TORM CAMILLA	DN	183	44,990	3
TORM HELVIG	DIS	183	44,999	1
TORM RAGNHILD	DN	183	45,940	1
UMLMA	QA	244	106,005	1
VELOPOULA	GRC	228	66,895	1
VOIDOMATIS	LBR	213	61,000	5
WALNUT EXPRESS	PA	180	45,729	2
WASHINGTON VOYAGER	USA	199	39,795	21
XANTHOS	LBR	213	61,000	3
YAMAMAH	NO	171	28,053	1
ZIRKU	ARE	244	105,846	4
			Total	868

Recommendations for conducting Escort Training on San Francisco Bay

1.0 OVERVIEW

The members of the San Francisco Harbor Safety Committee recognize that for the Tug Escort System to perform as anticipated, all phases of its operation should be exercised. By training, pilots and tug operators will practice using the escort command language. They will also expand their knowledge of the capabilities and limitations of the various tugs employed in escorting operations, and how best to utilize that tug in an emergency. Further, the user of the service, the ship's crew, will also gain valuable knowledge that they can apply in other ports by observing and participating in these training exercises.

Each organization is encouraged to participate in this training opportunity and to internally document their exercises.

2.0 PURPOSE

To outline and define the process by which pilots, escort tug and ship crews can arrange for and participate in live escort training exercises. This process will enable training to be conducted under agreed upon conditions to promote the safety of all involved. This training process will allow opportunities for demonstration, practice and skill enhancement for emergency response maneuvers. Lessons learned and best practices developed during these training sessions should be shared between the participants.

3.0 SCOPE

These voluntary recommendations are for the use of all pilots and tug crews actively offering their services as escorts in the Bay. By extension, the users of the services, the escorted vessel crews will also be included in the scope of these recommendations.

4.0 RESPONSIBILITIES AND AUTHORITIES

The pilot, tug captain and ship master have the responsibility to evaluate prior to each training session if it is appropriate to conduct training under the current environmental conditions, which maneuvers are to be demonstrated, where the training will be conducted and at what speed. If all three parties cannot agree, the training will not proceed.

5.0 SCHEDULING EXERCISES

It is intended that these training exercises may be conducted when weather conditions and / or vessel scheduling allows. It is expected that the pilot will initiate the request to conduct these exercises, however the shipmaster or escort tug captain may initiate them.

Each may decline to participate with no negative consequences should he or she feel that it is inappropriate.

Tug escort captains and / or mates qualified to conduct escort operations are to be pre-authorized by their companies to make the decision on board if requested by the pilot.

Prior to agreeing to conduct the training, the participants should consider weather, sea conditions, the degree of training of the participants, the speed of the escorted vessel and the maneuvers to be executed. Only when all parties agree that it is appropriate will the training proceed. Each party may also halt the training exercise if he or she becomes concerned for any reason.

6.0 TRAINING EXERCISES

When a training exercise is agreed to, the pilot and tug operator should carefully discuss the maneuvers that they want to demonstrate. The tug operator should be the one to specify at what speeds he will be comfortable performing the maneuvers in question based on his personal experience level and training. Escort training sessions should be logged.

7.0 ESCORT LANGUAGE

In order to work towards a stronger bridge team, this training will encourage all participants to use a standardized tug command language.[1]

8.0 CROSS DECK TRAINING

The San Francisco Bar Pilots, the Chevron Pilots and the independent pilots of the Bay recognize the benefit of understanding how the tug crews operate their vessels during an escort. Towards that end the pilots will be encouraged to ride on board a tug during an escort.

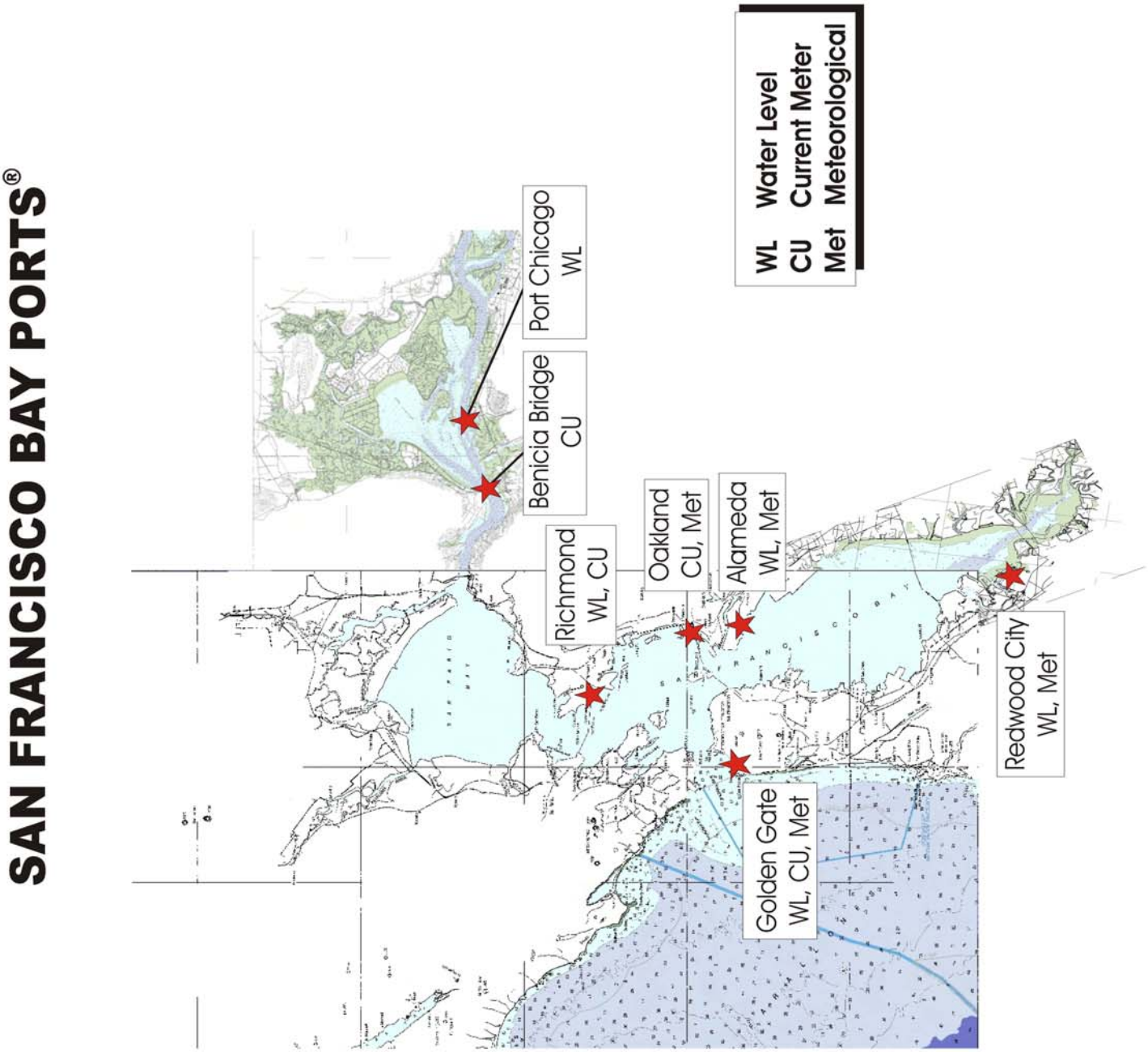
Tug crews are also encouraged to ride on board a tanker during an escort whenever possible. While it may be more difficult to arrange, training exercises should also be open to interested ship crews also.

9.0 TRIALS / TRAINING INFORMATION

The participants recognize that less than perfect performance may occur as part of this training process. Further, as new employees are brought on board this learning-by-doing process will continue into the future.

[1] The US Coast Guard NAVSAC Committee has endorsed a command language, and it is in use in many ports around the United States.

The participants shall not use the outcome of other organization's exercises as part of their own commercial activities. It will be acceptable to discuss one's own organization's training activities as part of your advertising if desired.


SAN FRANCISCO BAY PORTS®
WL Water Level
CU Current Meter
Met Meteorological
Port Chicago
WL
Benicia Bridge
CU
Richmond
WL, CU
Oakland
CU, Met
Alameda
WL, Met
Golden Gate
WL, CU, Met
Redwood City
WL, Met

Vehicular Bridges: Characteristics and Construction

Significant bridge projects presently underway in the San Francisco Bay Area:

- The over water portion of the San Francisco-Oakland Bay Bridge seismic retrofit west of YBI, has been completed. Work continues over land at San Francisco. Caltrans is considering a proposal to install scaffolding and containment between YBI and San Francisco to paint the bridge. When submitted, the 11th. Coast Guard District will review the proposed plan for navigational impacts & coordinate w/ waterway users and interested parties prior to approval. The replacement of the east section of the bridge between YBI and Oakland is in progress. The reasonable needs of navigation are being met during the work. Updates continue via Local Notices to Mariners and Broadcast Notices to Mariners.

- The Richmond-San Rafael Bridge seismic retrofit has been completed.

- The I-80 Carquinez Suspension Bridge and seismic retrofit of the upstream bridge were completed in 2004. The north and south channel spans of the replaced (1927) bridge have been removed. Demolition of the cantilevered sections and support piers is scheduled to continue through 2007 with minimal navigational impacts. Updates continue via Local Notices to Mariners and Broadcast Notices to Mariners.

- The new I-680 Benicia-Martinez Highway Bridge construction continues. The reasonable needs of navigation are being met during the work. Updates continue via Local Notices to Mariners and Broadcast Notices to Mariners.

- The Union Pacific Railroad is considering a proposal to replace additional worn lifting cables on the Benicia-Martinez Railroad Drawbridge during 2007. When submitted, the 11th. Coast Guard District will review the proposed plan for navigational impacts & coordinate w/waterway users and interested parties prior to approval.

Vehicular Bridge Inventory

Vehicular Bridge Management

Bridges Encountered By Ocean Going Vessels

(For up to date clearance information refer to the latest NOAA chart or the USCG Bridge Section)

BRIDGE NAME AND LOCATION		TYPE	CLEARANCES Horz/Vert MLLW-MHW
1. **Golden Gate Bridge**		SUS	4028/238-232
San Francisco Bay			
2. **San Francisco-Oakland**		SUS	
San Francisco Bay, Westerly Reach			
Span A-B,	Pier A		2229/180-174
	Pier B		229/223-217
Span B-C,	Pier B		1072/224-218
	Pier C		1072/227-221
Span C-D,	Pier C		1079/226-220
	Pier D		1079/224-218
Span D-E,	Pier D		2210/224-218
	Pier E		2210/181-175
Span E-YB Isl,	Pier E	F	870/176-170
3. **Richmond-San Rafael**		F	
San Francisco Bay			
Main Channel,	Center Span		1000/190-185
	Left and Right Span		480/173-168
East Channel,	Center Span		970/140-135
4. **Carquinez**		F	
Carquinez Strait, Vallejo			
Upstream Bridge:			
South (left) Span,	South Pier		998/141-135
South (left) Span,	North Pier		998/151-145
North (right) Span,	South Pier		1000/152-146
North (right) Span,	North Pier		1000/157-151
Downstream Bridge:			
South (left) Span,	South Pier		1030/140-134
South (left) Span,	North Pier		1030/150-144
North (right) Span,	South Pier		1030/153-147
North (right) Span,	North Pier		1030/158-152
5. **Martinez, Highway Bridge**		F	
Martinez/Benicia			440/141-135
6. **Martinez, Union Pacific RR Bridge**		V/L	
Martinez/Benicia,		Raised	291/140-135
		Lowered	291/75-70
7. **Antioch**		F	
Antioch, CA – San Joaquin River			400/142-138

Sector San Francisco - Port Safety Statistics: 2006

Total Reported Marine Casualties By Type/Month for 2006 - Chart 1

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Avg per month
Allision / Collision	1	0	4	0	2	1	1	1	2	2	1	1	16	1.33
Groundings / Sinkings	1	1	2	2	2	0	2	0	1	0	0	0	11	0.92
Fire	0	0	0	0	1	0	0	0	0	0	0	0	1	0.08
Propulsion / Electrical	1	2	3	1	1	1	2	2	2	2	2	0	19	1.58
Steering	1	1	1	0	1	0	1	0	0	0	1	0	6	0.50

Total Reported Marine Casualties By Type/Year - Chart 2

	2005 Year	2006 Year	Total	Avg
Allision / Collision	20	16	36	18
Groundings / Sinkings	19	11	30	15
Fire	3	1	4	2
Propulsion / Electrical	33	19	52	26
Steering	4	6	10	5

Total Reported Marine Casualties By Vessel Type/Year - Chart 3

	2005 Year	2006 Year	Total	Avg
Tank Vessel	7	1	8	4
Freight Vessel (Bulk or Container)	28	19	47	23.5
Passenger Vessel	9	5	14	7
Towing Vessel / Tug / Barge	9	21	30	15
Fishing Vessel	7	4	11	5.5

Total Reported Marine Casualties By Vessel Type/Month for 2006 - Chart 4

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Avg per month
Tank Vessel	0	0	0	0	0	0	0	0	1	0	0	0	1	0.08
Freight / Container Ship	2	2	3	1	1	1	2	1	2	2	2	0	19	1.58
Passenger (Deep Draft or T-Boat)	1	1	0	0	1	0	1	1	0	0	0	0	5	0.42
Towing Vessel or Tug / Barge	1	1	2	2	5	0	2	1	2	2	2	1	21	1.75
Commercial Fishing Vessel	0	0	1	0	0	1	1	0	1	0	0	0	4	0.33

Total Letters of Deviation (LODs) Issues Due to Navigational Deficiencies/Month for 2006 - Chart 5

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Avg per month
Radar	3	1	3	0	2	4	3	1	3	0	1	2	23	1.92
Gyro Compass	0	0	3	1	1	0	0	0	0	1	0	0	6	0.50
Steering	1	0	0	0	0	0	0	0	0	0	0	0	1	0.08
Echo Depth Sounder	0	0	1	0	0	0	0	0	1	0	0	0	2	0.17
AIS	1	2	5	1	1	0	8	3	0	1	0	3	25	2.08

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Totals	Avg per month
Reported Navigation Rule 9 Violations	0	1	1	1	1	1	0	0	2	1	0	0	8	0.67

*Note: Coast Guard Sector San Francisco - Port Safety Marine Casualty Data includes marine casualty reports within the inshore and offshore COTP SF Bay Zone. The data does not weigh impact, casualty severity, time, location, or effects and the casualty data is correlated to subject categories as accurate as possible.

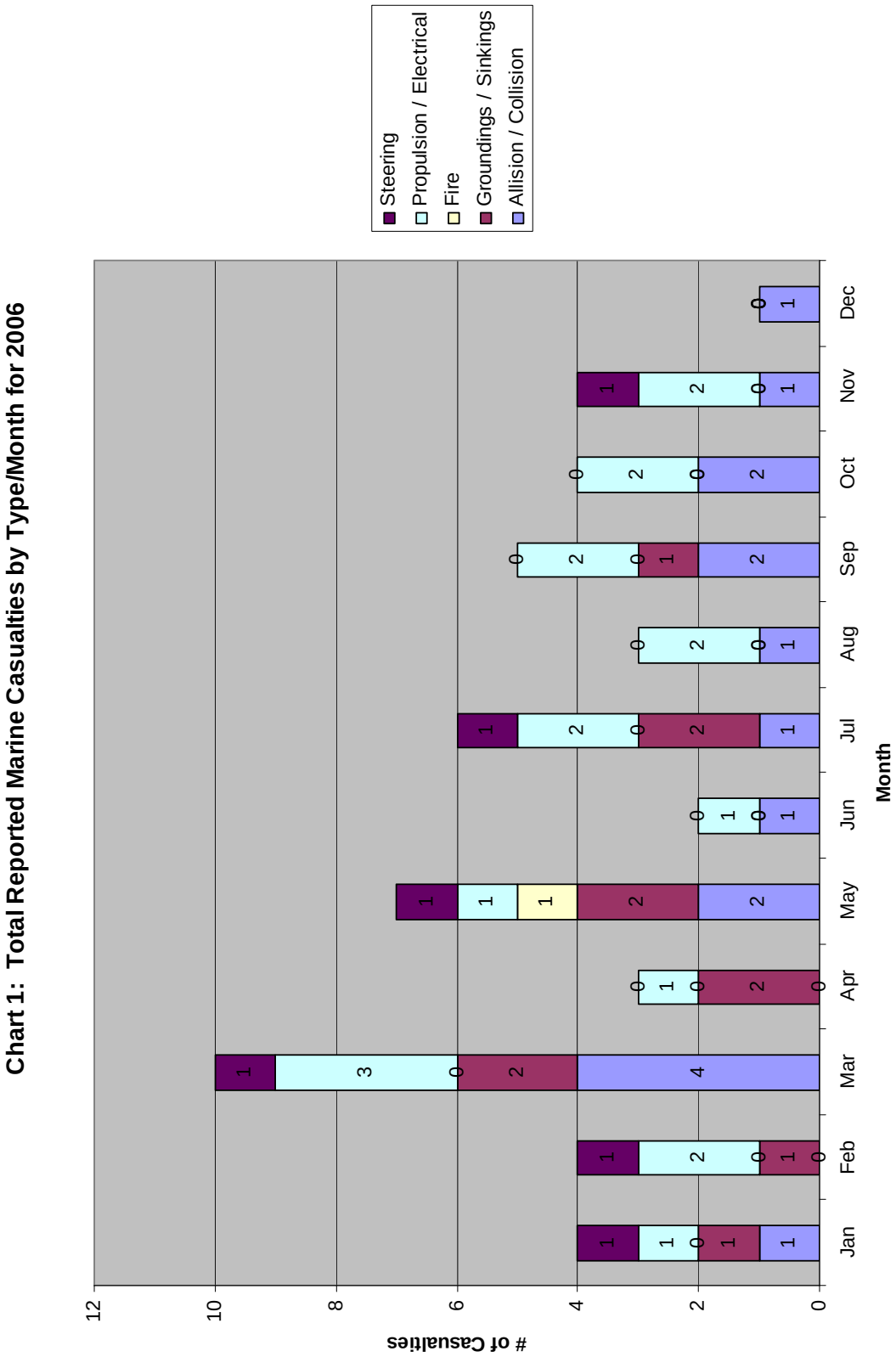


Chart 1: Total Reported Marine Casualties by Type/Month for 2006
Steering
Propulsion / Electrical
Fire
Groundings / Sinkings
Allision / Collision
# of Casualties
0
2
4
6
8
10
12
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

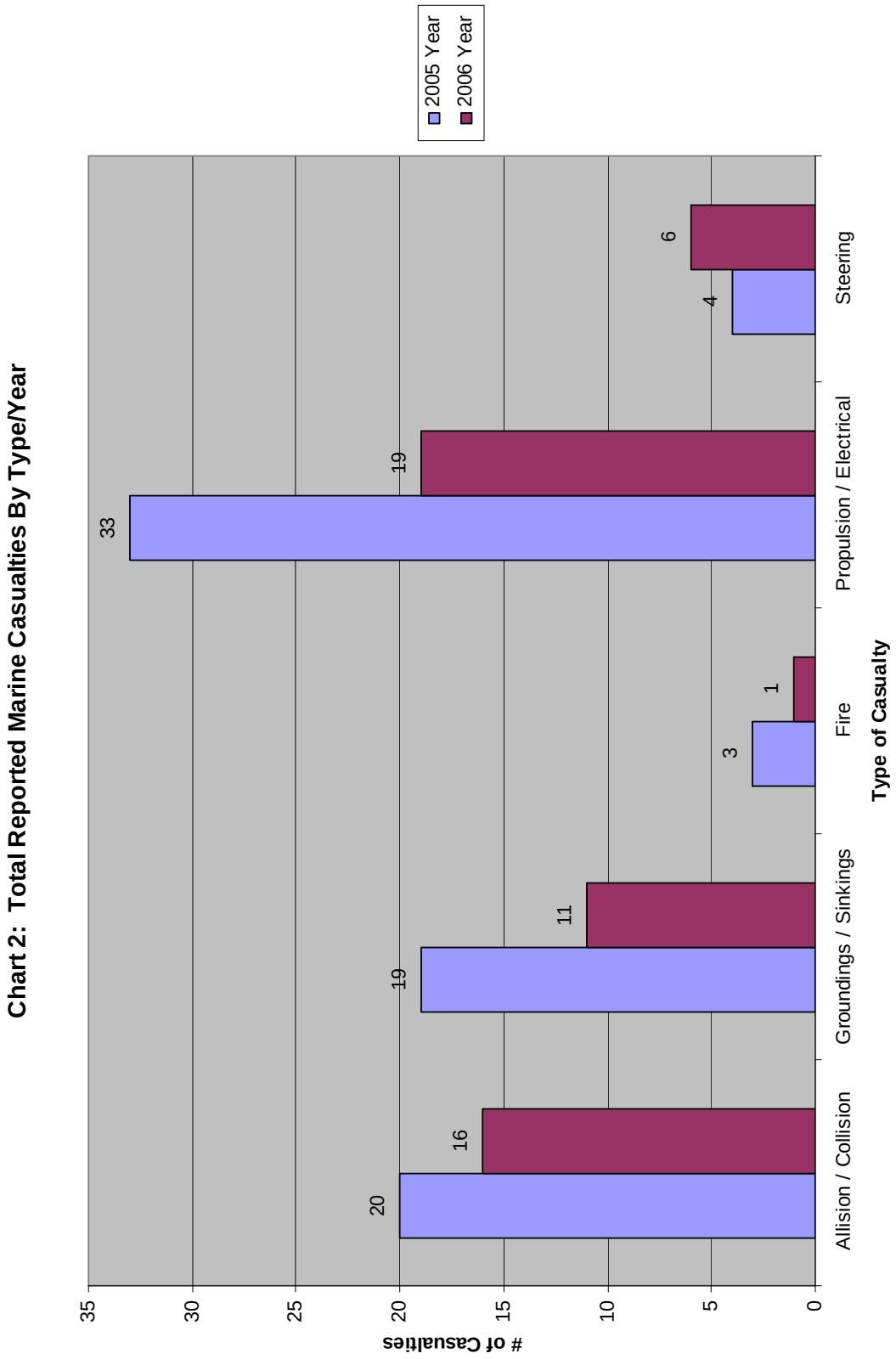


Chart 2: Total Reported Marine Casualties By Type/Year
2005 Year
2006 Year
# of Casualties
35
30
25
20
15
10
5
0
20
16
19
11
3
1
33
19
4
6
Allision / Collision
Groundings / Sinkings
Fire
Propulsion / Electrical
Steering
Type of Casualty

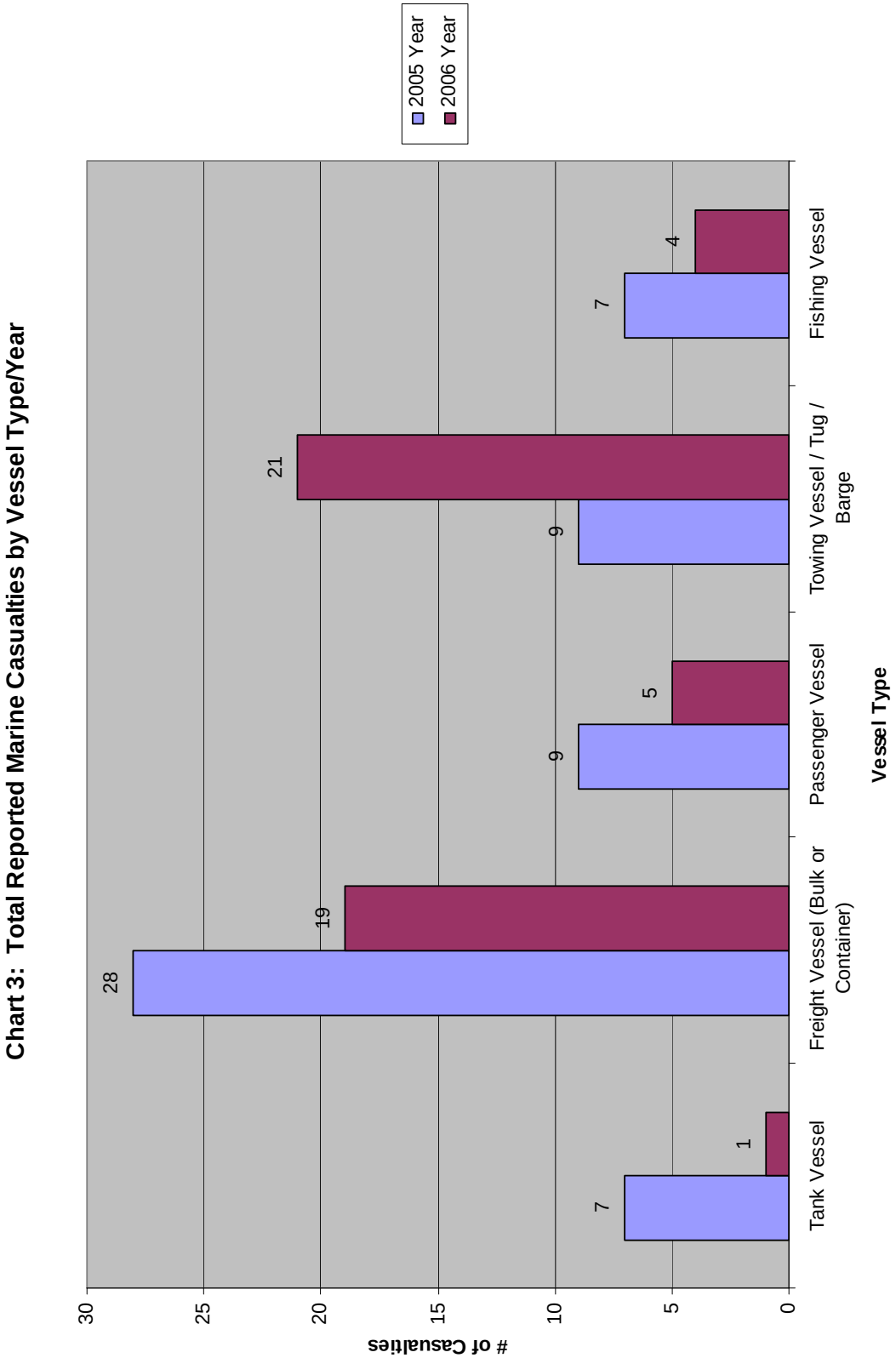


Chart 3: Total Reported Marine Casualties by Vessel Type/Year
2005 Year
2006 Year
# of Casualties
30
25
20
15
10
5
0
7
1
28
19
9
5
9
21
7
4
Tank Vessel
Freight Vessel (Bulk or Container)
Passenger Vessel
Towing Vessel / Tug / Barge
Fishing Vessel
Vessel Type

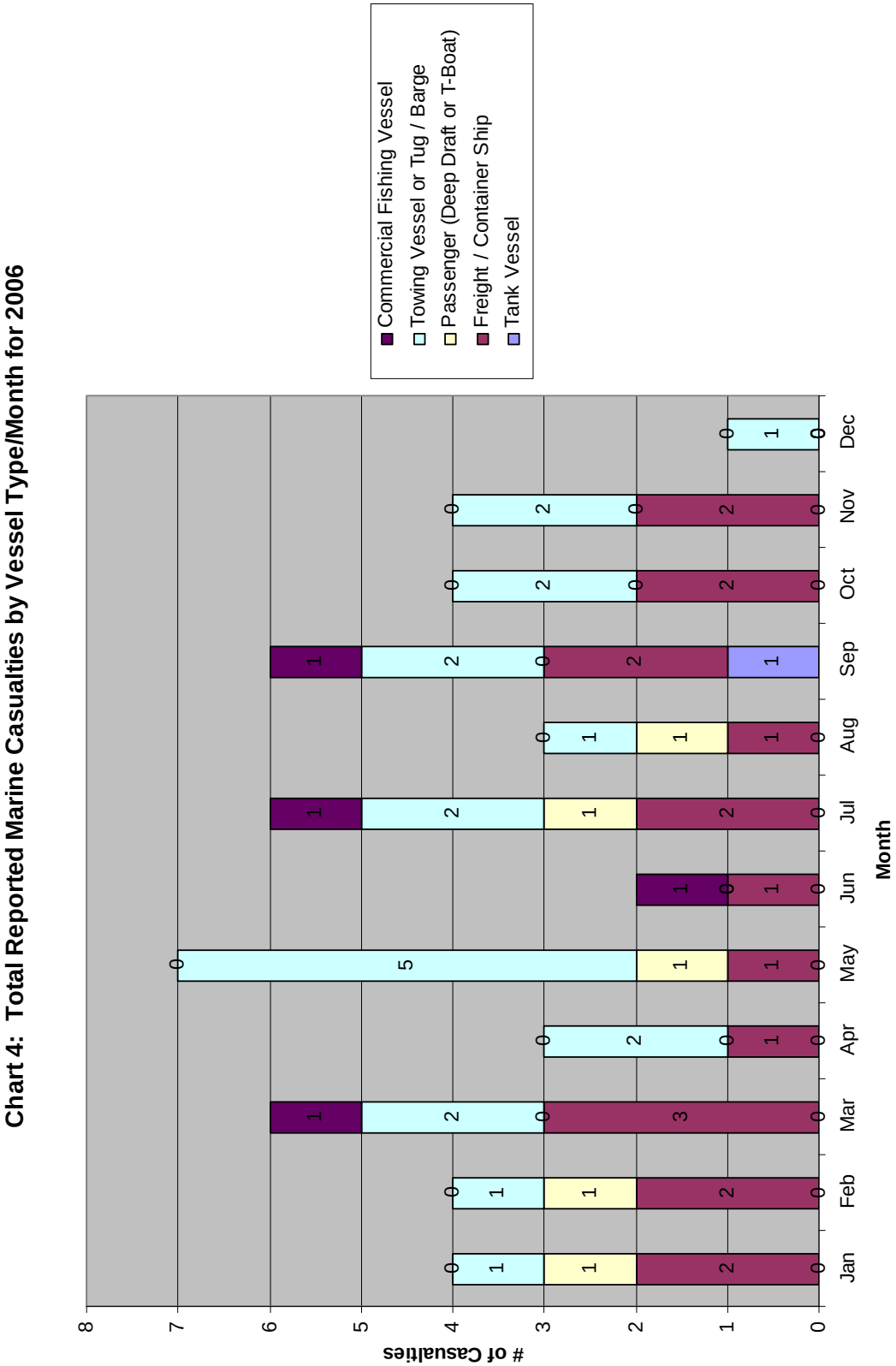


Chart 4: Total Reported Marine Casualties by Vessel Type/Month for 2006
Commercial Fishing Vessel
Towing Vessel or Tug / Barge
Passenger (Deep Draft or T-Boat)
Freight / Container Ship
Tank Vessel
# of Casualties
0
1
2
3
4
5
6
7
8
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

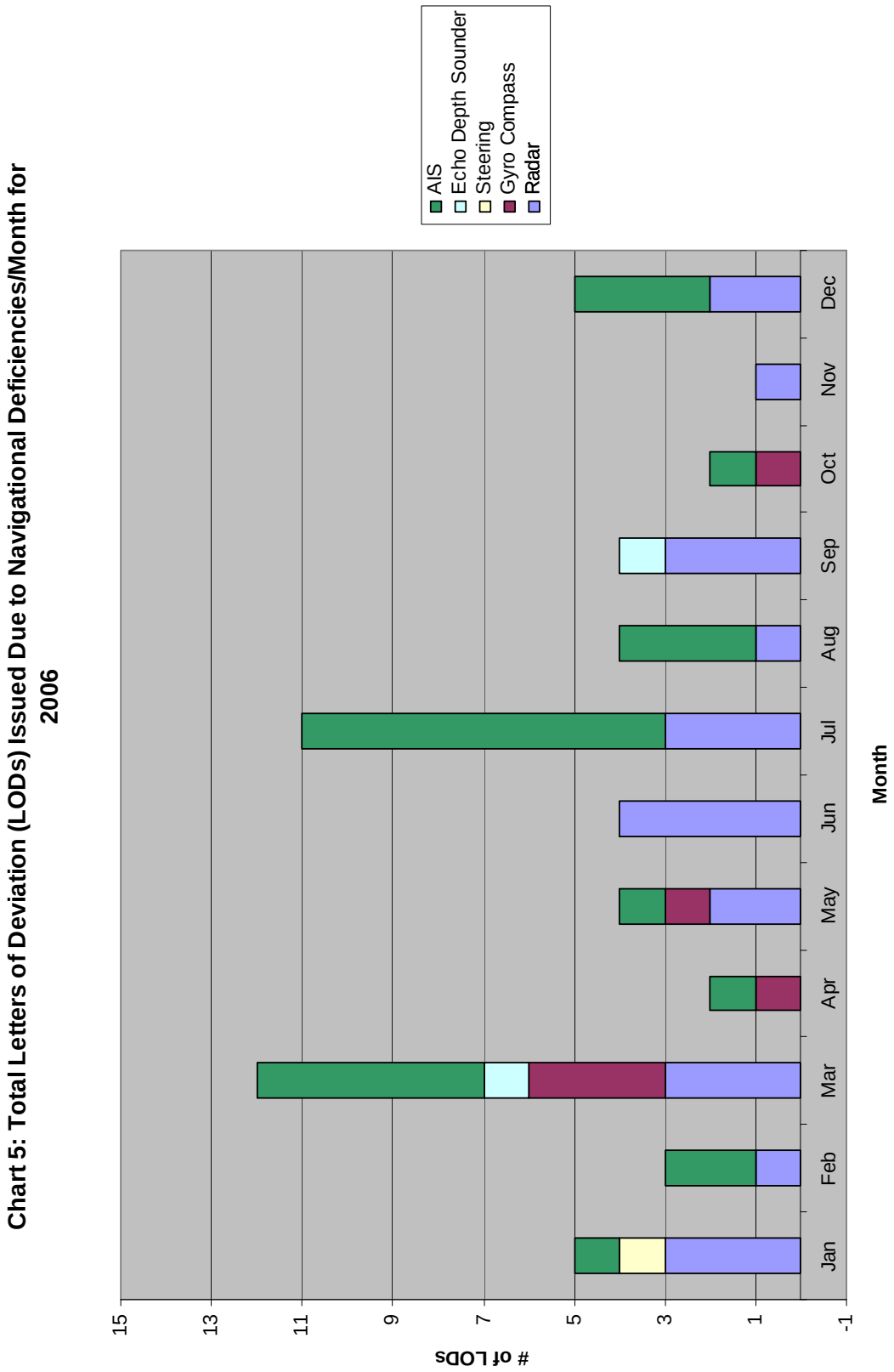


Chart 5: Total Letters of Deviation (LODs) Issued Due to Navigational Deficiencies/Month for 2006
AIS
Echo Depth Sounder
Steering
Gyro Compass
Radar
# of LODs
15
13
11
9
7
5
3
1
-1
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Month

Sector San Francisco Pollution Statistics January 1, 2006 to December 31, 2006

Total Reported Oil Pollution Incidents for Sector SF/Year - Chart 1

	2000 Year	2001 Year	2002 Year	2003 Year	2004 Year	2005 Year	2006 Year	Total	Avg
Total Number of Oil Pollution Incidents	363	303	240	192	196	200	297	1791	255.857

Total Reported Oil Spills By Source/Year - Chart 2

	2000 Year	2001 Year	2002 Year	2003 Year	2004 Year	2005 Year	2006 Year	Total	Avg
Facility	75	67	31	30	34	21	79	337	48.14
Military / Public Vessel	7	3	12	6	8	2	15	53	7.57
Fishing Vessel	45	20	19	20	18	10	20	152	21.71
Commercial Vessel	20	5	3	2	18	21	35	104	14.86
Non-Commercial Vessel	77	59	62	50	30	59	54	391	55.86
Unknown Source	134	146	154	81	87	65	100	767	109.57

Total Reported Oil Pollution Incidents/Month for 2006 - Chart 3

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	Avg
Total Number of Oil Pollution Incidents	24	32	19	11	22	22	12	29	25	20	42	39	297	25

	Jan	Feb	Mar	Apr*	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	Avg
Total Amount of Oil Discharged and/or Hazardous Material Released (gallons)	3468	4852	202	980	308	9480	544	2,137	507	181	162	2269	25090	2091

Total Amount of Oil and/or Hazardous Material Released by Vessels/Month for 2006 - Chart 4

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	Avg
Total Amount of Oil and/or Hazardous Material Released	3036	1577	92	930	198	5080	491	534	107	181	162	15	12403	1034

Total Amount of Oil and/or Hazardous Material Released by Non-Vessel Sources/Month for 2006 - Chart 5

	Jan	Feb	Mar	Apr*	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total*	Avg
Total Amount of Oil and/or Hazardous Material Released	432	3275	110	50	110	4400	53	1603	400	0	0	2254	12687	1057

Total Reported Oil Spills by Size/Month for 2006 - Chart 6

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	Avg
# of Spills between 0 - 10 gallons	18	27	16	7	16	16	11	25	18	16	35	38	243	20
# of Spills between 10 - 100 gallons	2	3	5	3	6	4	2	4	5	3	2	3	42	4
# of Spills between 100 - 1,000 gallons	1	2	1	1	1	1	2	2	2	1	1	0	15	1
# of Spills 1,000 gallons >	1	2	0	0	0	2	0	1	0	0	0	1	7	1

Total Reported Oil Spills By Source/Month for 2006 - Chart 7

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total	Avg
Facility / Non-Vessel Source	4	8	8	4	6	5	5	12	8	2	4	13	79	6.58
Military / Public Vessel	0	2	2	1	1	1	0	1	3	0	3	1	15	1.25
Fishing Vessel	5	2	1	0	1	0	2	2	2	0	2	3	20	1.67
Commercial Vessel	1	0	6	1	3	3	4	5	2	2	5	3	35	2.92
Non-Commercial Vessel	4	7	1	3	6	7	1	5	3	4	4	9	54	4.50
Unknown Source	8	15	3	2	6	7	3	7	7	12	20	12	102	8.50

Penalty Action:														
Civil Penalty (MV)	1	0	0	0	0	0	0	0	0	0	0	0	1	0.08333
Civil Penalty (TK)	4	2	3	1	1	3	0	1	0	1	1	1	18	1.5
Letter of Warning (LOW)	6	7	4	2	3	5	3	2	5	4	2	3	46	3.83333
No Action Required	11	25	15	8	19	15	12	29	20	15	35	38	242	20.1667

Please Note: Oil Discharge data includes all discharges within the USCG response zone, including wetlands and adjacent waterways.

Sector San Francisco Pollution Statistics: 2000 to 2006

	01-12/31/2000	01-12/31/2001	01-12/31/2002	01-12/31/2003	01-12/31/2004	01-12/31/2005	01-12/31/06		
	2000 Year	2001 Year	2002 Year	2003 Year	2004 Year	2005 Year	2006 Year	Totals	Average per year (2000-2006)
Total Reported Oil Pollution Incidents for MSO SF	363	303	240	192	196	249	297	1395	279
Penalty Action:									
Civil Penalty (MV)	11	10	41	18	4	1	1	81	16.2
Civil Penalty (TK)	30	18	41	25	9	23	18	132	26.4
Letter of Warning	75	45	52	31	40	39	46	249	49.8
No Action Required	247	226	176	99	132	132	242	990	198

	01-12/31/2000	01-12/31/2001	01-12/31/2002	01-12/31/2003	01-12/31/2004	01-12/31/05	01-12/31/06		
Spill Source	2000	2001	2002	2003	2004	2005	2006	Totals	Average per year (2000-2006)
Facility / Non Vessel	75	67	31	30	34	21	79	282	40.3
Military/Public Vessel	7	3	12	6	8	2	15	53	7.6
Fishing Vessel	45	20	19	20	18	10	20	156	22.3
Commercial Vessel	20	5	3	2	18	21	35	104	14.9
Non-Commerical Vessel	77	59	62	50	30	59	54	391	55.9
Unknown Source	134	146	154	81	87	65	102	769	109.9

	2005	2006	Totals	Avg per year (2005-2006)
Total Reported Discharge Oil or Released Hazmat (gallons)	14958	25090.00	40048.00	20024

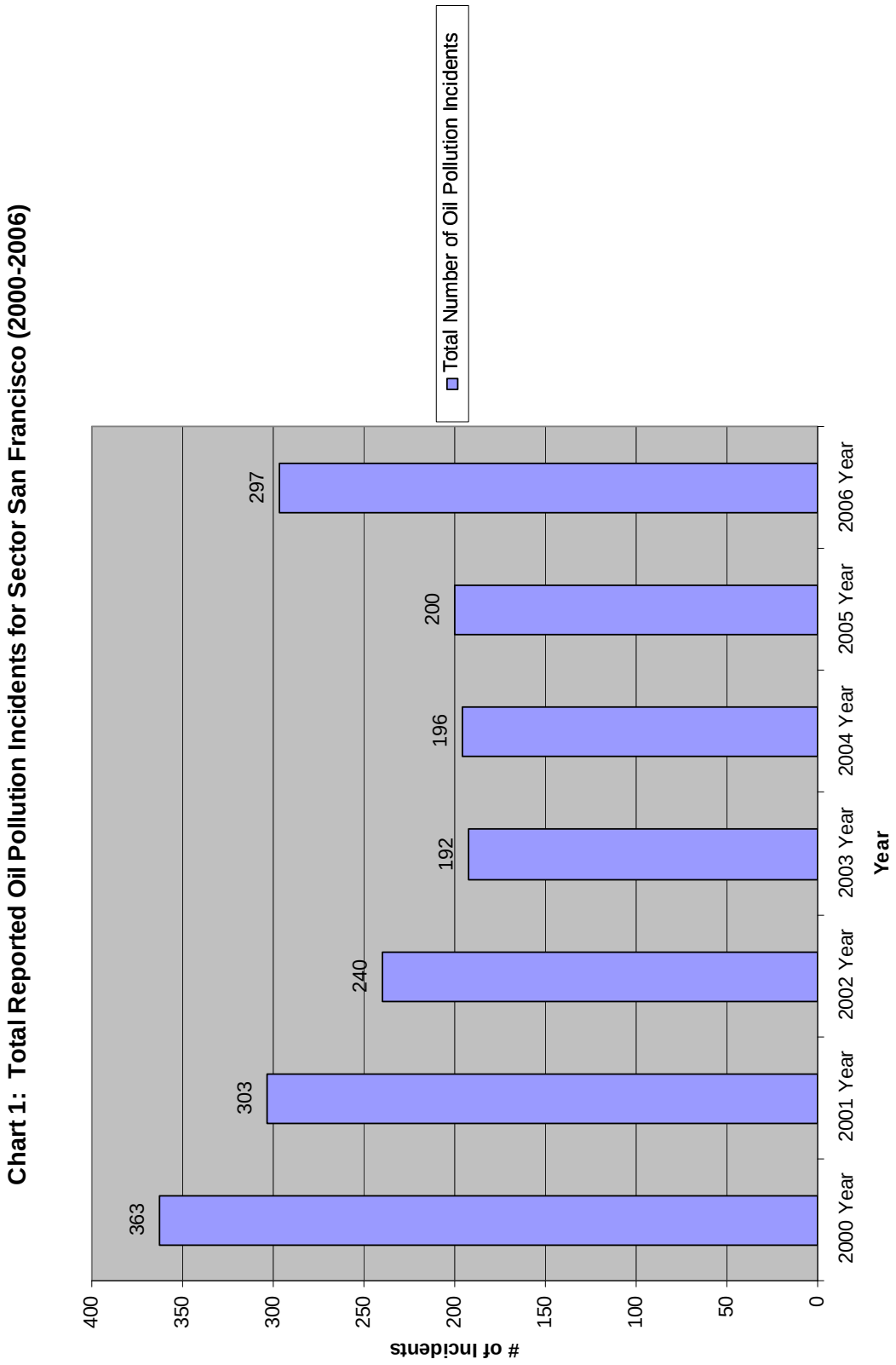


Chart 1: Total Reported Oil Pollution Incidents for Sector San Francisco (2000-2006)
Total Number of Oil Pollution Incidents
# of Incidents
400
350
300
250
200
150
100
50
0
363
303
240
192
196
200
297
2000 Year
2001 Year
2002 Year
2003 Year
2004 Year
2005 Year
2006 Year
Year

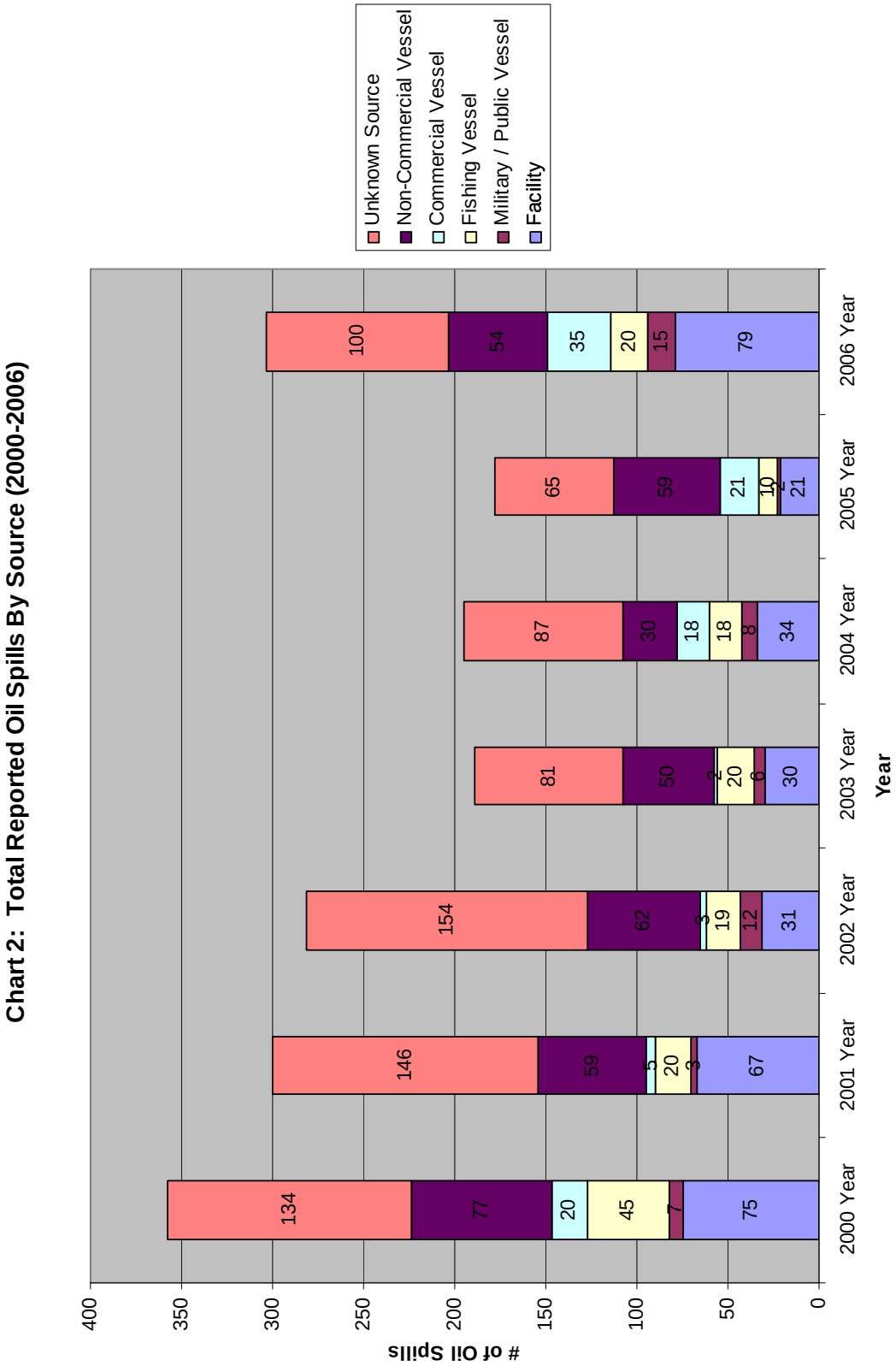


Chart 2: Total Reported Oil Spills By Source (2000-2006)
Unknown Source
Non-Commercial Vessel
Commercial Vessel
Fishing Vessel
Military / Public Vessel
Facility
# of Oil Spills
0
50
100
150
200
250
300
350
400
Year
2000 Year
2001 Year
2002 Year
2003 Year
2004 Year
2005 Year
2006 Year
134
77
20
45
7
75
146
59
5
20
3
67
154
62
3
19
12
31
81
50
2
20
6
30
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18
18
8
34
65
59
21
10
2
21
100
54
35
20
15
79

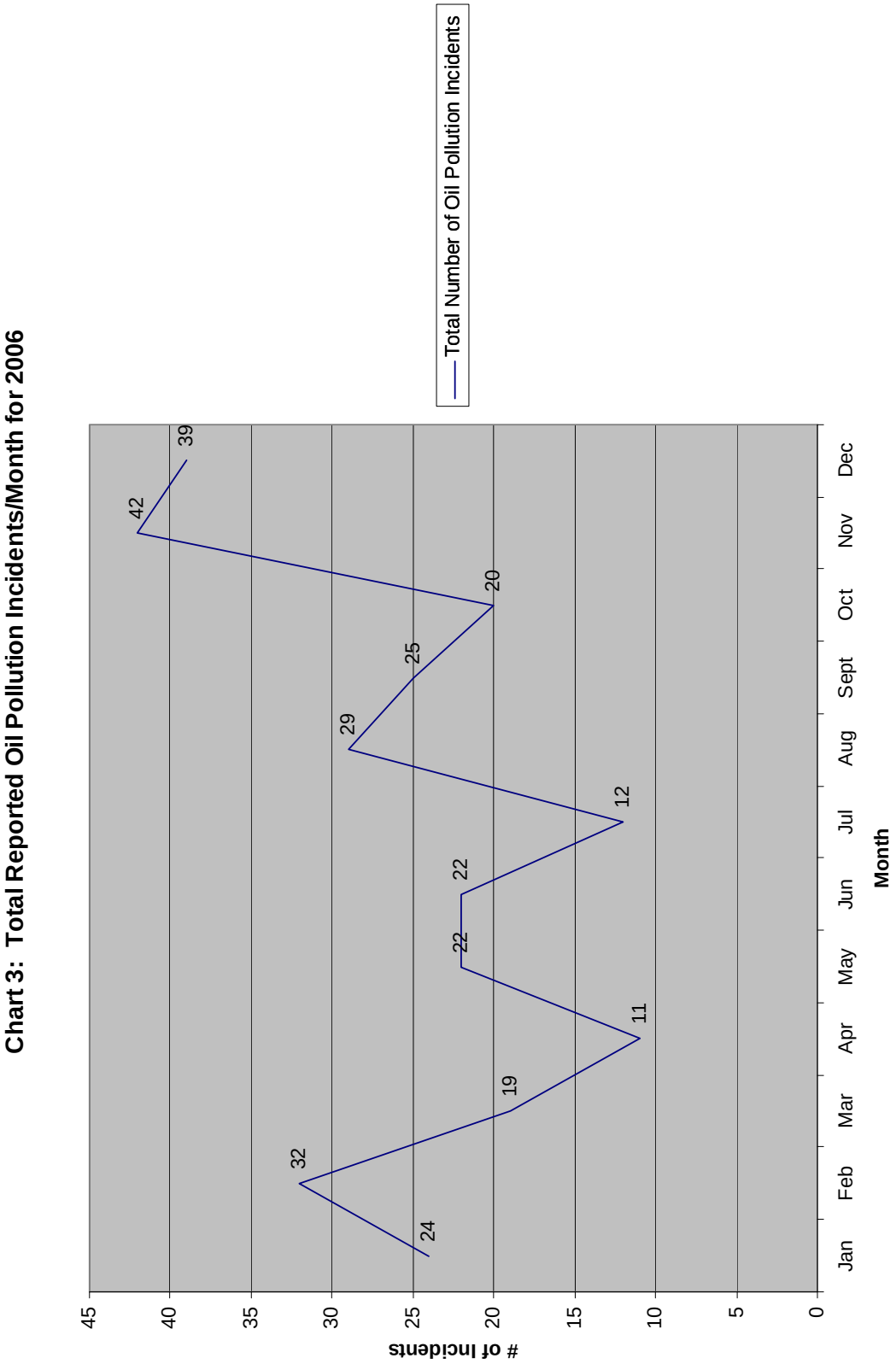


Chart 3: Total Reported Oil Pollution Incidents/Month for 2006
Total Number of Oil Pollution Incidents
# of Incidents
45
40
35
30
25
20
15
10
5
0
24
32
19
11
22
22
12
29
25
20
42
39
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Month

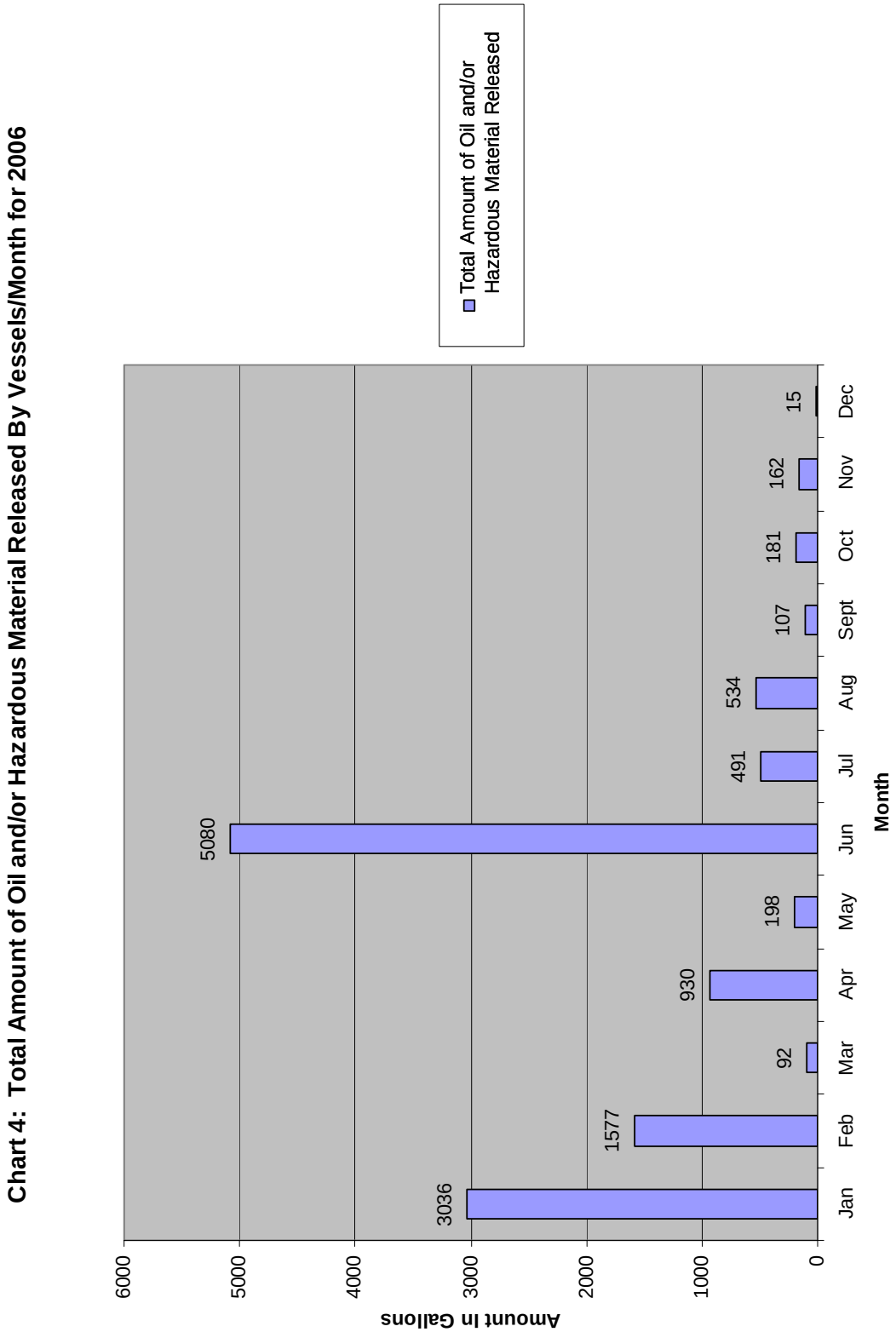


Chart 4: Total Amount of Oil and/or Hazardous Material Released By Vessels/Month for 2006
Total Amount of Oil and/or Hazardous Material Released
Amount In Gallons
6000
5000
4000
3000
2000
1000
0
3036
1577
92
930
198
5080
491
534
107
181
162
15
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Month

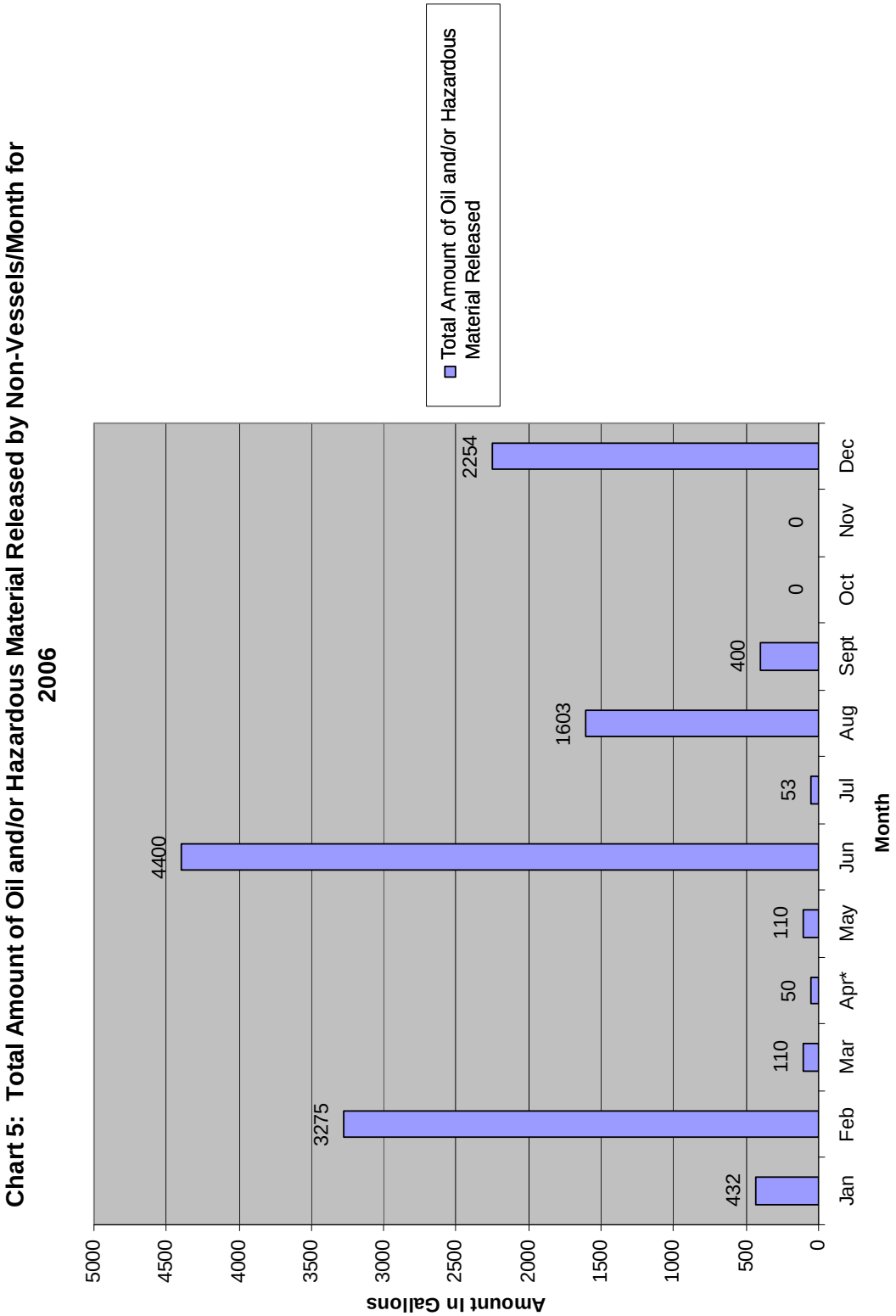


Chart 5: Total Amount of Oil and/or Hazardous Material Released by Non-Vessels/Month for 2006
Total Amount of Oil and/or Hazardous Material Released
Amount In Gallons
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
432
3275
110
50
110
4400
53
1603
400
0
0
2254
Jan
Feb
Mar
Apr*
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
Month

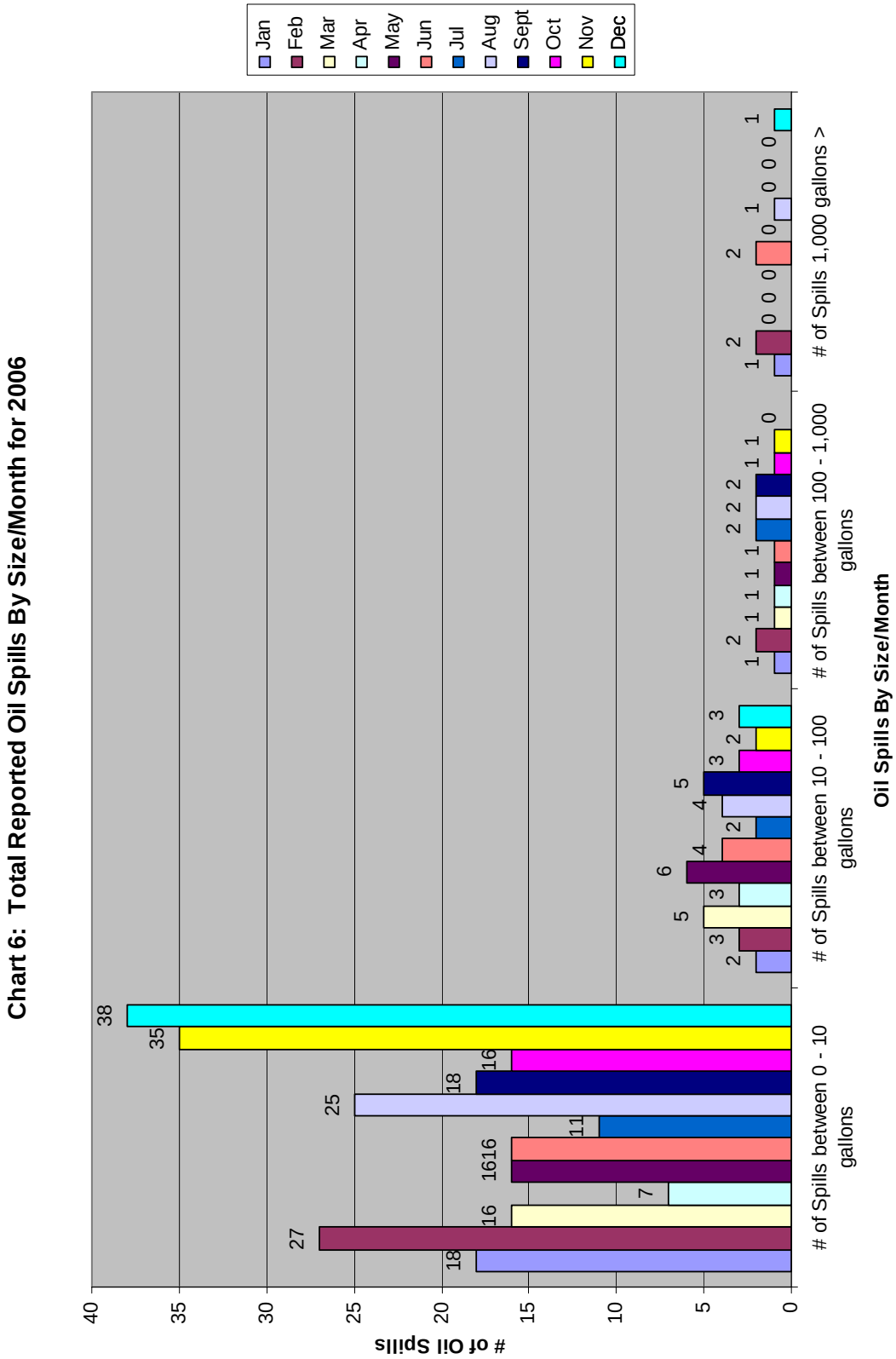


Chart 6: Total Reported Oil Spills By Size/Month for 2006
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec
# of Oil Spills
0
5
10
15
20
25
30
35
40
# of Spills between 0 - 10 gallons
# of Spills between 10 - 100 gallons
# of Spills between 100 - 1,000 gallons
# of Spills 1,000 gallons >
Oil Spills By Size/Month

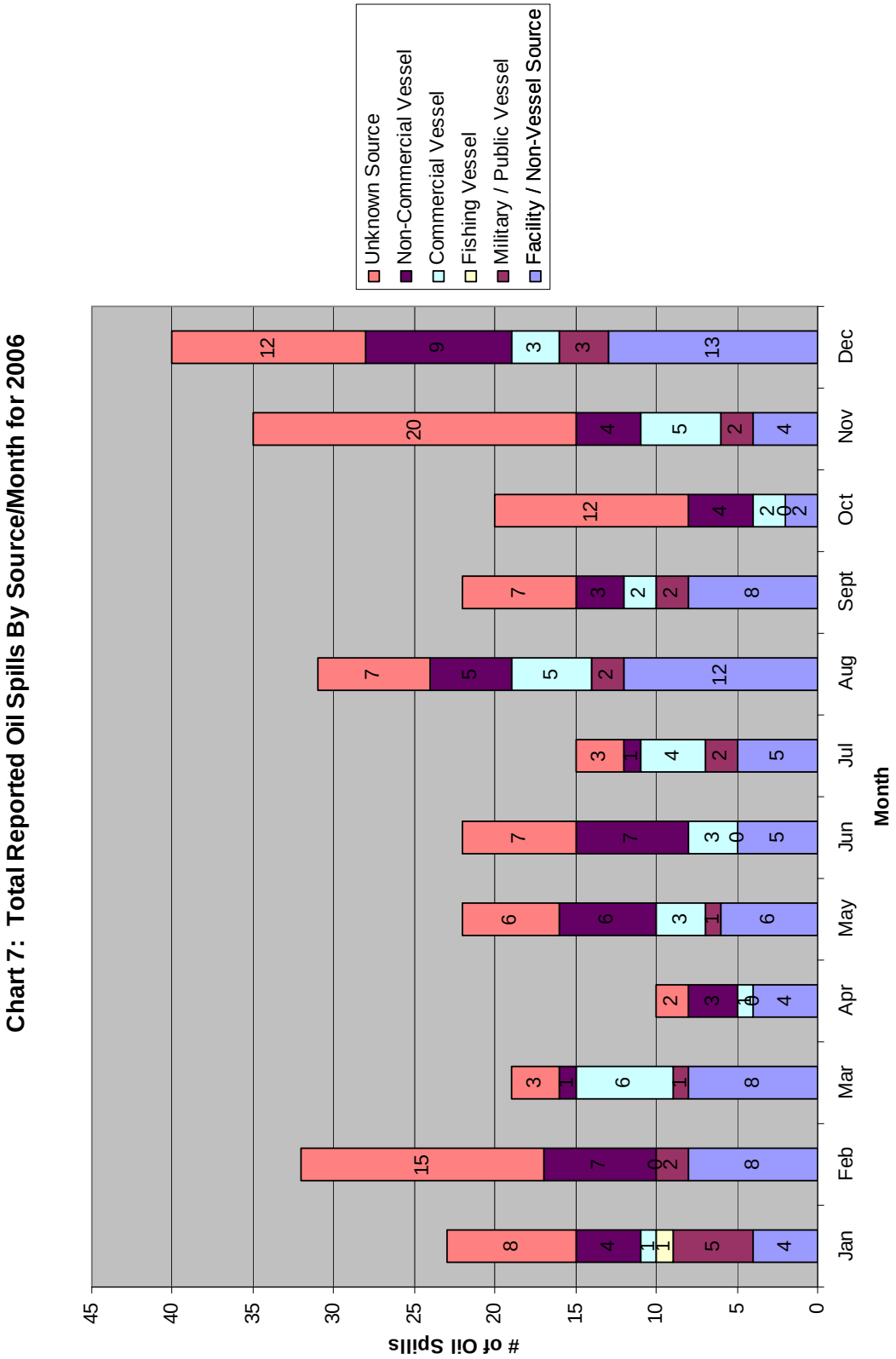


Chart 7: Total Reported Oil Spills By Source/Month for 2006
Unknown Source
Non-Commercial Vessel
Commercial Vessel
Fishing Vessel
Military / Public Vessel
Facility / Non-Vessel Source
# of Oil Spills
0
5
10
15
20
25
30
35
40
45
Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sept
Oct
Nov
Dec

CA STATE LANDS COMMISSION
SAN FRANCISCO REGION

Waterborne Petroleum Cargo Statistics
(Barrels)
January 1, 2006 - December 31, 2006

Product	Load	Discharge
Additives-Alkylate	2,069,000.00	2,973,700.00
Additives-Naphtha	978,000.00	576,500.00
Additives-Other	1,003,400.00	2,204,600.00
Additives-Ethanol	94,000.00	
Additives-Reformate	3,758,200.00	715,000.00
Additives-Toulene	42,000.00	365,100.00
Crude-ANS	40,000.00	46,380,000.00
Crude-Import	485,000.00	108,799,547.00
Crude-Other	75,000.00	2,560,000.00
Cutter Stock	865,500.00	792,400.00
Diesel	23,541,879.00	8,416,050.00
Fuel Oil	31,609,363.00	12,043,243.00
Gasoline	53,895,038.00	11,524,550.00
Jet Fuel	9,761,300.00	871,600.00
Light Cycle Oil	10,618,000.00	37,499,526.00
Lube Oil	5,259,860.00	313,600.00
MDO	28,383.00	
Other	2,413,814.00	2,777,240.00
Totals	**146,537,737.00**	**238,812,656.00**

Grand Total:	**399,287,877.00**

RECOMMENDATIONS YET TO BE IMPLEMENTED

In 2004, the Harbor Safety Committee reviewed and updated its "Recommendations yet to be Implemented" and "Recommendations Implemented or Addressed." The updates were subsequently approved by the HSC at its March 10 and June 9, 2005 meetings.

I. Geographical Boundaries No current recommendation.

II. General Weather, Tides and Currents

1. The Harbor Safety Committee supports efforts to adequately fund NOAA maritime functions. The Committee recommends that NOAA update tide and current data using the latest technology available and publish the water level and current atlases on an expeditious basis.

2. The Harbor Safety Committee urges that the OSPR Administrator continue to support PORTS as a high priority and that OSPR continue to seek and allocate funds to maintain the system. The Committee recommends that the Marine Exchange of the San Francisco Bay Region continue to operate, maintain and support the uses of the PORTS program.

3. The Harbor Safety Committee recommends that a statewide uniform system of PORTS, certified by NOAA, be established in California waters. PORTS should be permanently financed by the State of California and/or NOAA, as there is broad public benefit in terms of marine safety, protecting the environment, use by recreational boaters and by academia, and preventing oil spills in California waters. Safety of navigation in our harbors is highly dependent upon real time tidal, current and wind information. OSPR, as an agency, should continue its oversight role.

III. Aids to Navigation No current recommendation.

IV. Anchorages No current recommendation.

V. Surveys, Charts and Dredging

1. The Committee continues to encourage facility owners/operators to conduct annual condition surveys of depths alongside and at the head of their facilities. The surveys should be forwarded to NOAA for application to the nautical charts.

2. The Committee continues to support the spirit of cooperation of the Corps of Engineers (COE) in providing timely up-to-date surveys of deep-water navigation channels, with highest priority on areas where shoaling has taken place, and timely dissemination of that information to the United States Coast Guard (USCG), pilots and the maritime community.

3. The Committee continues to support NOAA's timely updating of charts to reflect survey information from NOAA, COE and independent sources, frequently publishing

data on channel depths in areas heavily trafficked by deep draft vessels, oil tankers and barges, and quickly alerting the USCG, pilots and the maritime community.

VI. Contingency Routing

1. The Committee continues to support the high degree of cooperation and consultation between pilots, the Coast Guard, the COE, port authorities and all other appropriate agencies and contractors, from the project planning stage through the construction stage of projects that may impact safe navigation in the Bay. The planning stage should include an evaluation of various alternatives to ensure harbor safety.
2. The Committee continues to request that Caltrans, railroads, etc., provide notice of work that would temporarily or permanently reduce bridge clearances as far in advance as possible through the Local Notice to Mariners, at a minimum, to assure that vessels are alerted to these hazards.

VII. Vessel Speed and Traffic Patterns

1. As larger and deeper draft vessels enter San Francisco Bay en route to the Port of Oakland due to the -50 foot deepening project, it is recommended that the Navigation Work Group of the Harbor Safety Committee (HSC) examine the current traffic scheme in the Bay and make recommendations to the Coast Guard for any changes in the current traffic schemes.

2. It is recommended that the Navigation Work Group (or a special group formed for this purpose) examine the Coast Guard's marine casualty statistics and their monthly reports of Significant Port Safety and Security cases to determine if there are trends or issues that should be brought to the HSC's attention for further consideration or action. A summary shall be included in the Annual Report to the Harbor Safety Committee.

VIII. Accidents and Near-Accidents No current recommendation.

IX. Communication No current recommendation.

X. Bridges

1. The Harbor Safety Committee continues to recommend that Caltrans, the Golden Gate Bridge and other owners and bridge operators install energy-absorbing fendering, instead of wooden or plastic fendering as bridges are repaired, retrofitted or in new construction.

XI. Small Vessels

1. Representatives of the Harbor Safety Committee should continue to make efforts to meet with representatives of the San Francisco Boardsailing Association, kayak, outrigger and canoe groups to promote safer navigation in the Bay by discussing such issues as race schedules and locations (if applicable); Rule 9 requirements; characteristics of large vessels, fast ferries, and tug/barge operations, and possible education efforts such

as posting signs at areas frequented by large numbers of boardsailors or paddlesports enthusiasts to warn of vessel traffic dangers.

Other possible efforts include:

- Cooperate with the Coast Guard Auxiliary, U.S. Power Squadrons and other educational organizations to emphasize boater safety education and to disseminate boater safety materials to recreational boaters.
- Target boat rental establishments for education of inexperienced boaters.
- Target marinas and boat ramps for education outreach.

XII. Vessel Traffic Service No current recommendation.

XIII. Tug Escort/Assist for Tank Vessels No current recommendation.

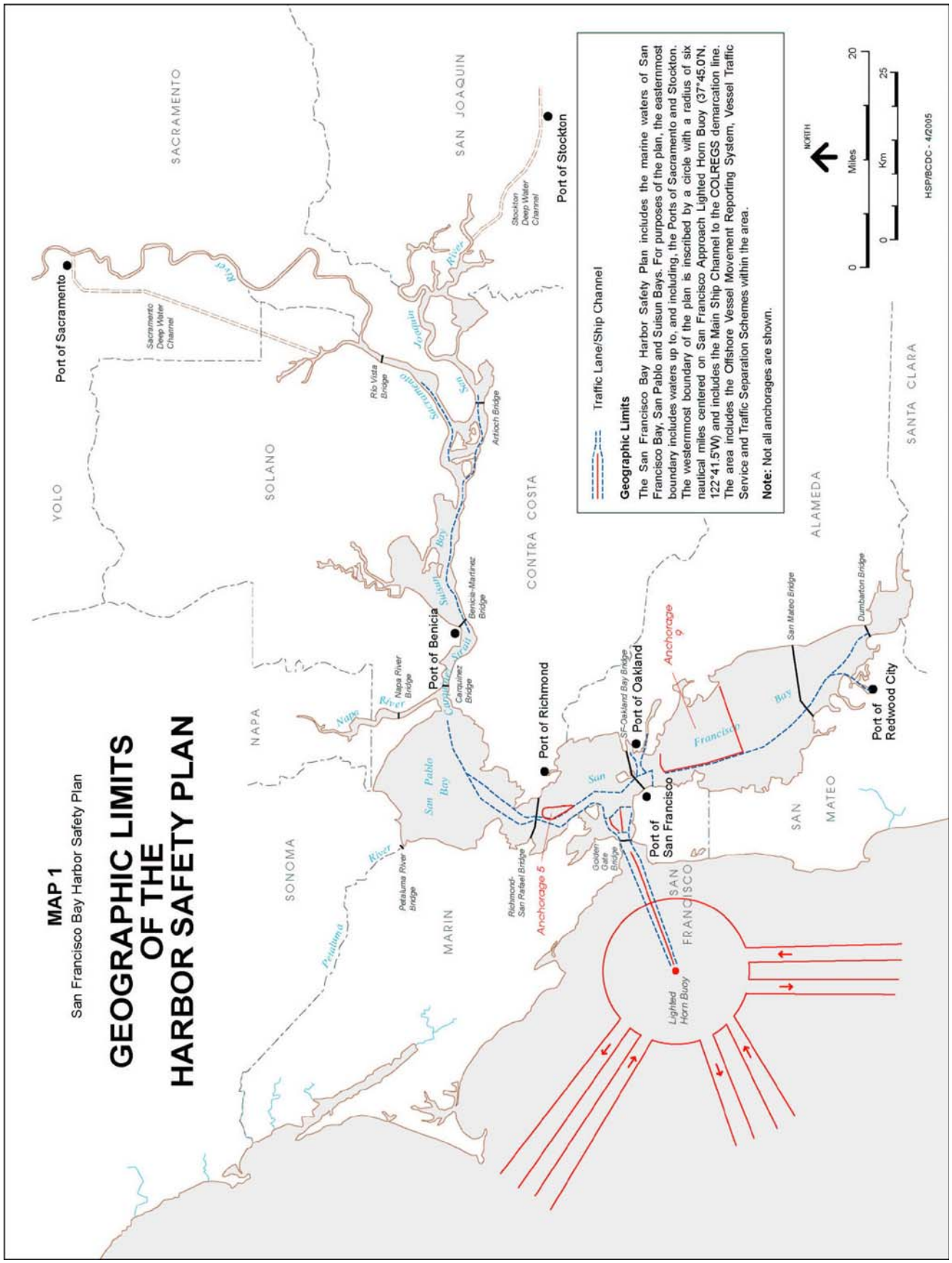
XIV. Pilotage No current recommendation.

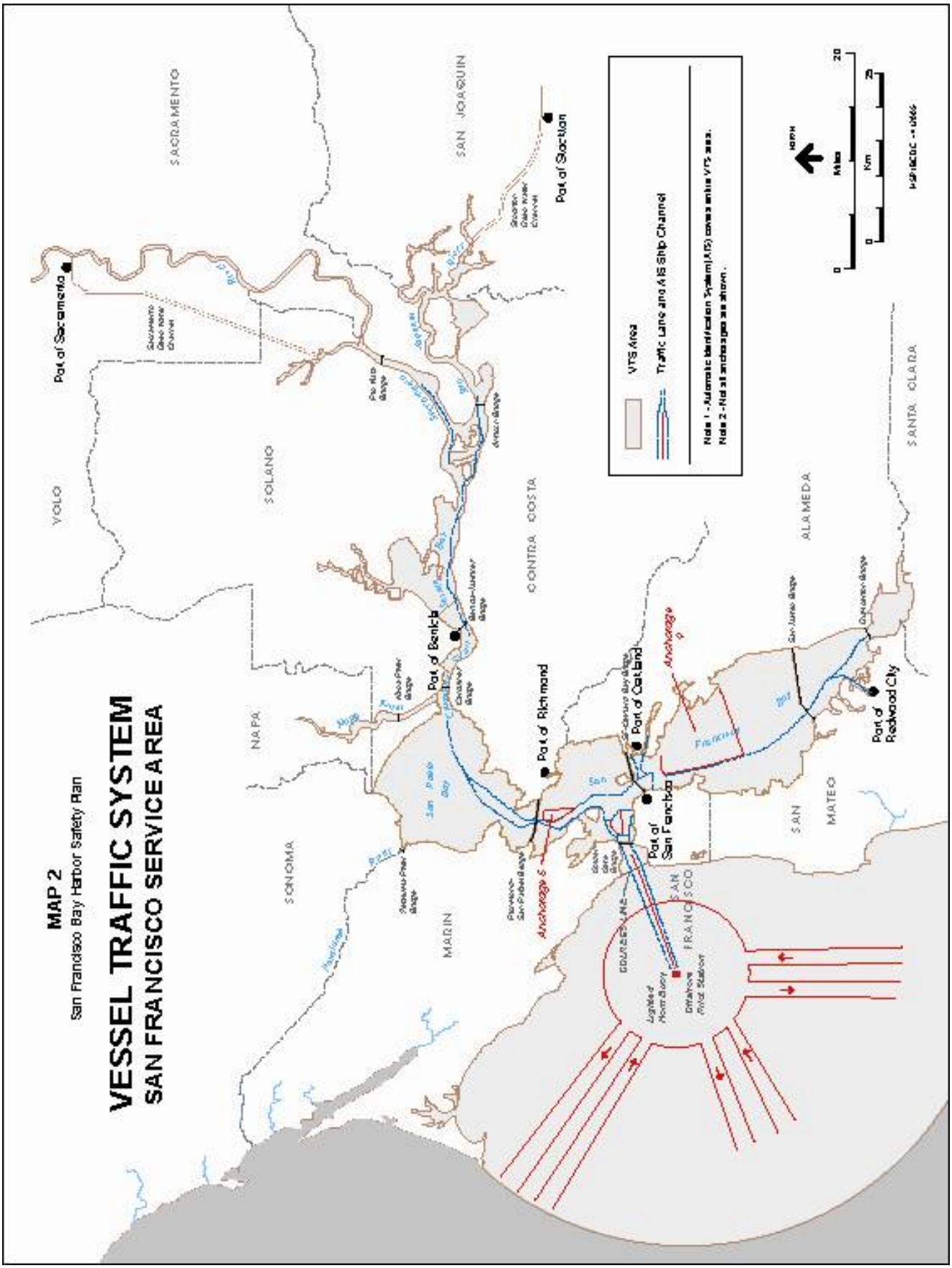
XV. Underkeel Clearance and Reduced Visibility No current recommendation.

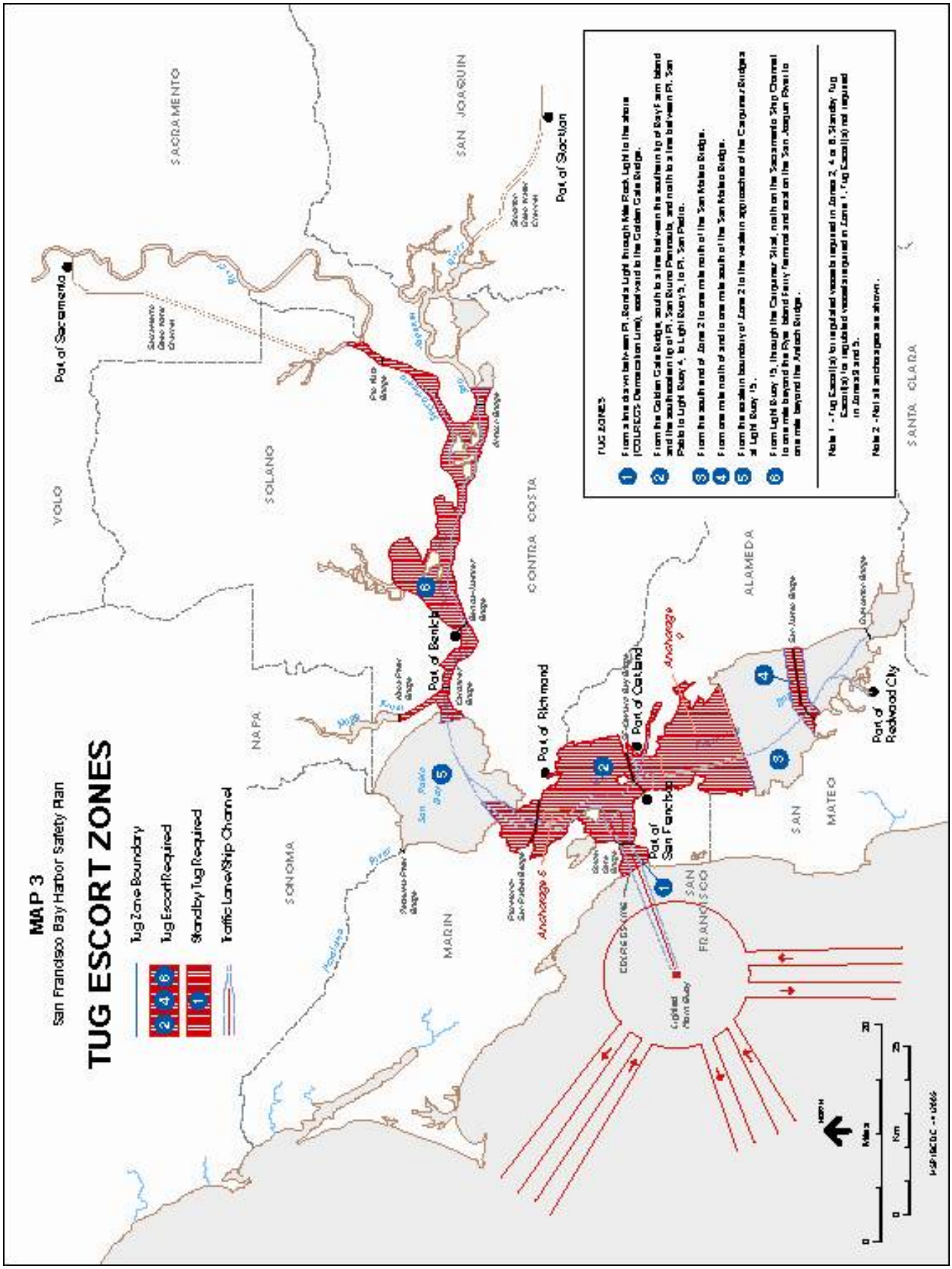
XVI. Economic and Environmental Impacts No current recommendation.

XVII. Plan Enforcement No current recommendation.

XVIII. Substandard Vessel Inspection Program No current recommendation.


MAP 1
San Francisco Bay Harbor Safety Plan
GEOGRAPHIC LIMITS OF THE HARBOR SAFETY PLAN
Traffic Lane/Ship Channel
Geographic Limits
The San Francisco Bay Harbor Safety Plan includes the marine waters of San Francisco Bay, San Pablo and Suisun Bays. For purposes of the plan, the easternmost boundary includes waters up to, and including, the Ports of Sacramento and Stockton. The westernmost boundary of the plan is inscribed by a circle with a radius of six nautical miles centered on San Francisco Approach Lighted Horn Buoy (37°45.0'N, 122°41.5'W) and includes the Main Ship Channel to the COLREGS demarcation line. The area includes the Offshore Vessel Movement Reporting System, Vessel Traffic Service and Traffic Separation Schemes within the area.
Note: Not all anchorages are shown.
NORTH
Miles
Km
HSP/BCDC - 4/2005
Port of Sacramento
Port of Stockton
Port of Benicia
Port of Richmond
Port of Oakland
Port of San Francisco
Port of Redwood City
Anchorage 5
Anchorage 9
Lighted Horn Buoy
Sacramento Deep Water Channel
Stockton Deep Water Channel
Rio Vista Bridge
Antioch Bridge
Benicia-Martinez Bridge
Carquinez Bridge
Napa River Bridge
Petaluma River Bridge
Richmond-San Rafael Bridge
Golden Gate Bridge
SF-Oakland Bay Bridge
San Mateo Bridge
Dumbarton Bridge
YOLO
SACRAMENTO
SAN JOAQUIN
SOLANO
NAPA
SONOMA
MARIN
CONTRA COSTA
ALAMEDA
SAN MATEO
SAN FRANCISCO
SANTA CLARA
San Pablo Bay
Suisun Bay
San Francisco Bay


MAP 2
San Francisco Bay Harbor Safety Plan
VESSEL TRAFFIC SYSTEM
SAN FRANCISCO SERVICE AREA
Port of Sacramento
Port of Stockton
Port of Benicia
Port of Richmond
Port of Oakland
Port of San Francisco
Port of Redwood City
Anchorage 5
Anchorage 9
VTS Area
Traffic Lane and AIS Ship Channel
Note 1 - Automatic Identification System (AIS) coverage within VTS area.
Note 2 - Fixed AIS antennas are shown.
Miles
Km
SACRAMENTO
SAN JOAQUIN
YOLO
SOLANO
CONTRA COSTA
ALAMEDA
SANTA CLARA
NAPA
SONOMA
MARIN
SAN FRANCISCO
SAN MATEO


MAP 3
San Francisco Bay Harbor Safety Plan
TUG ESCORT ZONES
Tug Zone Boundary
Tug Escort Required
Standby Tug Required
Traffic Lane/Ship Channel
TUG ZONES
Port of Sacramento
Port of Stockton
Port of Benicia
Port of Richmond
Port of Oakland
Port of San Francisco
Port of Redwood City
SACRAMENTO
SAN JOAQUIN
YOLO
SOLANO
NAPA
SONOMA
MARIN
CONTRA COSTA
ALAMEDA
SAN MATEO
SAN FRANCISCO
SANTA CLARA
Anchorage 4
Anchorage 5
Anchorage 9
NORTH
Miles
Km