

Appendix A - Best Maritime Practices

Background. The container ship Cosco Busan allided with the Oakland Bay Bridge November 7, 2007, releasing approximately 53,000 gallons of fuel oil. Shortly afterward Governor Schwarzenegger issued a directive to investigate and make recommendations on the navigational and operational aspects of the Cosco Busan allision. The HSC was assigned this task by OSPR. HSC Work Groups discussed the issues at length, and based on facts known of the incident at the time, developed recommendations to improve vessel transit in the Bay. The findings and recommendations developed by the Harbor Safety Committee in light of the allision covered a number of topics, some of which are now included in the Harbor Safety Plan.

Additionally, prior to the Cosco Busan incident, OSPR directed the five Harbor Safety Committees in California to adopt Best Maritime Practices for each harbor to ensure that vessels in transit will be aware of the guidelines of operation in California harbors, to be incorporated into each Harbor Safety Plan. During 2008 and early 2009, the S.F. Harbor Safety Committee developed a number of Best Maritime Practices (“BMPs”) for safe navigation in the San Francisco Bay Region. These guidelines, summarized below, provide important information necessary for safe, reliable and environmentally sound vessel movements in and around San Francisco Bay. The BMPs also are available on the Marine Exchange website: www.sfmex.org/support/hsc/introhscbestpractices.htm.

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Large Vessels and Tugs with Tows \geq 1600 GT: Speed Restrictions on San Francisco Bay

Large Vessels are power driven vessels of 1600 gross tons or more, and tugs with tows of 1600 gross tons or more. Specific areas where a **15 knot speed limit** applies within the San Francisco Bay region are prescribed in 33 CFR 165.1181:

- Golden Gate Traffic Lanes, which include the westbound and eastbound lanes west of the Golden Gate Precautionary Area
- Golden Gate Precautionary Area
- 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)
- Central Bay Precautionary Area
- North Ship Channel between North Channel Lighted Buoy “A” and the Richmond-San Rafael Bridge
- Southampton Shoal Channel including the Richmond Long Wharf maneuvering area
- Richmond Harbor Entrance Channel
- Oakland Harbor Bar Channel including the Outer and Inner Harbors Entrance Channels
- San Pablo Strait Channel
- Pinole Shoal Channel
- Benicia-Martinez Railroad Drawbridge

Additionally, power driven vessels of 1,600 or more gross tons shall 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.

Note: In instances where a slower speed than the 15 knot RNA limit is required for safe navigation, the COLREGS will prevail.

See Harbor Safety Plan Chapter VII: Vessel Speed and Traffic Patterns for discussion.

Large Vessels and Tugs with Tows ≥ 1600 GT: Guidelines for Navigating in Reduced Visibility

Large Vessels are power driven vessels of 1600 gross tons or more, and tugs with tows of 1600 gross tons or more. Mariners are at all times to comply with the requirements of the COLREGS.

Critical Maneuvering Areas (CMAs): There are areas within the Bay where additional standards of care are required due to the restrictive nature of the channel, proximity of hazards, or the prevalence of adverse currents. Large vessels should not transit through CMAs when visibility is less than 0.5 nautical miles. Locations within the Bay identified as Critical Maneuvering Areas:

- Redwood Creek
- San Mateo-Hayward Bridge
- Oakland Bar Channel*
- Islais Creek Channel
- Richmond Inner Harbor
- Richmond-San Rafael Bridge, East Span
- Union Pacific Bridge
- New York Slough, up-bound
- Rio Vista Lift Bridge

*The Oakland Bar Channel is identified due to cross currents and its proximity to the Bay Bridge and Yerba Buena Island.

Vessels docked: Large vessels at a dock within the Bay should not commence a movement if visibility is less than 0.5 nautical miles at the dock.

Vessels proceeding to dock: Large vessels proceeding to a dock should anchor if visibility at the dock is known to be less than 0.5 nautical miles, unless, under all circumstances, proceeding to the dock is the safest option.

Note: Vessel pilots or operators should notify VTS upon determination that a scheduled movement will be delayed or cancelled. If underway, they shall make a sailing plan deviation report per VTS regulations.

Adopted March 2008. See Harbor Safety Plan Chapter II: General Weather, Currents and Tides for discussion.

Large Vessels and Tugs with Tows \geq 1600 gross tons: Guidelines for Navigating in Severe Weather

A number of factors must be considered when limiting transits in the Bay or closing the Bar due to severe weather, including sea state, tidal influences, visibility, traffic density, and wind advisories issued by NOAA. The size, class and condition of the vessels being addressed must also be considered. The HSC recommends a tiered approach, applying greater caution as conditions worsen.

Sustained winds exceeding 25 knots in the Bay

- Vessels should closely evaluate whether it is safe to transit in the Bay. Size, class and sail area of the vessel, tidal influences, visibility, and traffic density should all be considered.
- VTS San Francisco will establish regular communications with bridge watches of VTS users in Bay Area anchorages, and more closely monitor swing circles to ensure vessels are not dragging.

Sustained winds exceeding 40 knots in the Bay

- Transits to and from berths are not recommended.

Sustained winds exceeding 40 knots and/or seas exceed 12 ft at the Sea Buoy

- Bar traffic restrictions and closure should be considered. Size and class of the vessel, draft, swell period, tidal influences, visibility, and traffic density should all be considered. Strong ebb tides should be avoided, and a minimum of 10 feet under-keel clearance is recommended.

Procedures for Closing the Bar or Restricting Bar Traffic

- Bar closures are exercised on a situational basis without specifically defined weather or security conditions.
- The most recent San Francisco Bar Pilot over the Bar, inbound or outbound, shall make the recommendation to the dispatcher that the Bar should be considered for closure, or traffic limited to one-way traffic.
- In the event that the station boat is “boarded off”, then the station boat captain will make the recommendation to the dispatcher.
- The dispatcher will then notify the Operations Pilot, who will notify the Port Agent.

- The Operations Pilot or Port Agent will then notify the U.S. Coast Guard VTS and Command Duty Officer at the Sector San Francisco Command Center.
- The Captain of the Port will consult with the Operations Pilot or Port Agent prior to closing the bar under Captain of the Port authority. The Coast Guard will then issue a Marine Safety Broadcast communicating the closure or traffic restriction.
- The procedure for lifting traffic restrictions or re-opening the Bar will be the same as that for restricting traffic or closing the Bar.
- Vessels under Federal Pilotage or Public Vessel may petition the Captain of the Port to transit the San Francisco Bar.

Adopted January 2009. See Harbor Safety Plan Chapter II: General Weather, Currents and Tides for discussion.

Tugs with Tows <1600 Gross Tons: Guidelines for Navigating in Reduced Visibility

Critical Maneuvering Areas (CMAs): There are areas within the Bay where additional standards of care are required due to the restrictive nature of the channel, proximity of hazards, or the prevalence of adverse currents. Tugs with tows should not transit through CMAs when visibility is less than 0.25 nautical miles. Tugs with tows in petroleum service should not transit through CMAs when visibility is less than 0.5 nautical miles.

Locations within the Bay identified as Critical Maneuvering Areas:

- Redwood Creek
- San Mateo-Hayward Bridge
- Oakland Bar Channel*
- Islais Creek Channel
- Richmond Inner Harbor
- Richmond-San Rafael Bridge, East Span
- Union Pacific Bridge
- New York Slough, up-bound
- Rio Vista Lift Bridge

*Note: the Oakland Bar Channel is identified due to cross currents and its proximity to the Bay Bridge and Yerba Buena Island.

Vessels docked: Tugs with tows at a dock within the Bay should not commence a movement if visibility is less than 0.25 nautical miles at the dock. Tugs with tows in

petroleum service at a dock within the Bay should not commence a movement if visibility is less than 0.5 nautical miles at the dock.

Vessels proceeding to dock: Tugs with tows proceeding to a dock should anchor if visibility at the dock is known to be less than 0.25 nautical miles, unless, under all circumstances, proceeding to the dock is the safest option. Tugs with tows in petroleum service proceeding to a dock should anchor if visibility at the dock is known to be less than 0.5 nautical miles, unless, under all circumstances, proceeding to the dock is the safest option.

Note: Vessel captains or operators should notify VTS upon determination that a scheduled movement will be delayed or canceled. If underway, they shall make a sailing plan deviation report per VTS regulations.

Adopted February 2009. See Harbor Safety Plan Chapter II: General Weather, Currents and Tides for discussion.

Tugs with Tows <1600 Gross Tons: Guidelines for Navigating in Severe Weather

A number of factors must be considered when limiting transits in the Bay or closing the Bar due to severe weather, including sea state, tidal influences, visibility, traffic density, and wind advisories issued by NOAA. The size and condition of the vessels being addressed must also be considered. The Tug Escort Work Group recommends a tiered approach, applying greater caution as conditions worsen.

Sustained winds exceeding 25 knots in the Bay

- Tugs with tows should closely evaluate whether it is safe to transit in the Bay. Size and sail area of the vessel, tidal influences, visibility, operator skill and traffic density should all be considered.
- VTS San Francisco will establish regular communications with bridge watches of VTS users in Bay Area anchorages, and more closely monitor swing circles to ensure vessels are not dragging.

Sustained winds exceeding 40 knots in the Bay

- Transits to and from berths are not recommended, but may be performed following a careful risk management evaluation by the vessel operator and vessel management.

Sustained winds exceeding 40 knots and/or seas exceed 12 ft at the Sea Buoy

- Bar traffic restrictions and closure should be considered for tugs with tows. Size of the vessel, draft, swell period, tidal influences, visibility, and traffic density should all be considered. Strong ebb tides should be avoided, and a minimum of 10 feet under-keel clearance is recommended.

Adopted February 2009. See Harbor Safety Plan Chapter II: General Weather, Currents and Tides for discussion.

Emergency Training for Tug Escorting

A set of recommendations for conducting Escort Training on San Francisco Bay is included in the Harbor Safety Plan (Appendix J). The guidelines anticipated live escort training exercises; however, few opportunities arise for on-water exercises involving tankers and tugs, with few individuals trained for emergency events. With maritime simulators becoming more sophisticated in their ability to replicate a variety of situations and with a California Maritime Academy simulator soon operational, the HSC found simulating local conditions to be a cost-effective alternative to on-water exercises.

The Work Group concluded that in addition to promoting simulator training for tugs escorting tankers, simulator training is applicable to tugs assisting and docking container ships, bulk carriers and chemical ships – thus providing industry-wide benefits for safe navigation.

The HSC recommends the use of simulators to improve communication between pilots and tug masters, offer in-house training to tug industry personnel, and provide valuable “lessons learned” for emergency situations in a controlled environment.

Adopted November 2008. See Harbor Safety Plan Chapter XIV: Tug Escort/Assist for Tank Vessels for discussion.

S.F. Bar Pilots: Use of Portable Navigation Units

The SF HSC recommends that San Francisco Bar Pilots be trained in the use of and equipped with Portable Pilot Units (PPUs) at all times while piloting, except when the pilot deems that embarking on or disembarking from a vessel while carrying a PPU may present an unacceptable safety hazard to the pilot or when circumstances would prevent its use.

Such PPU shall, at a minimum, have the following capabilities:

- (a) Displaying approved electronic navigation charts (ENCs) issued by the cognizant U.S. government authority;

- (b) Displaying the vessel's position and heading on such ENC's to the accuracy required by the International Maritime Organization (IMO) for Automatic Identification Systems (AIS); and
- (c) Displaying other navigational information as provided through the vessel's AIS pilot plug.

Adopted July 2008. See Harbor Safety Plan Chapter XV: Pilotage for discussion.

Small Passenger Vessels - Ferries: Recommended Guidelines for Navigating in Reduced Visibility and Severe Weather

Safety Practices

The Master of a ferry is the person in charge of the vessel, responsible for the safety of the passengers and crew at all times, and has the authority to decide if it is safe to get underway or to proceed.

In reduced visibility and inclement weather conditions, the following practices are followed:

- A go or no-go decision to get underway is made by the vessel Master or the company Operation Manager, based on conditions along the entire route, using all available information including the experience of the master and operations manager.
- Look-outs: the vessel Master assigns crewmembers for look-out duty based on the existing or anticipated conditions; the applicable regulations are found in the Navigation Rules and Regulations, Rule 5 Look-out (text attached).
- Safe speed: the vessel is required to proceed at a speed appropriate to the prevailing circumstances and conditions, which include state of visibility and the manageability of the vessel with special reference to stopping distance and turning ability. Other factors include participation in fixed ferry routes, wind advisories issued by NOAA, sea state, traffic density, and applicable Navigation Rules and Regulations (see attached verbiage from Rule 6 Safe Speed).
- Equipment: each Ferry is required to have at minimum one radar; commuter ferry vessels generally have two operational radars onboard; the vessel Master is required to have a radar observer license endorsement. Global Positioning Satellite, Automatic Identification System and Electronic Charting navigation systems are also installed and used to assist navigation.

In conditions of high wind and waves:

- Go/no-go decision is made by the vessel Master or the company Operation Manager, based on conditions along the entire route, using all available information including the experience of the master and operations manager. Factors to be considered include size of the vessel, direction of the winds and seas, orientation of departure and arrival piers to prevailing conditions, and limitations of ferries to travel at slower speeds.
- Passenger safety: Captain can maneuver the vessel to minimize wave effects. Crew duties include rough weather announcements and passenger safety management.

High Speed Ferry Operations (over 30 Knots)

U.S. Coast Guard Navigation and Vessel Inspection Circulars (NAVIC) 5-01 and 5-01 Change 1 provide specific guidance for high speed passenger vessels and include approved vessel operation manuals, training programs and risk assessment tools (matrix).

- Vessel equipment: operators have exceeded minimum requirements for navigation electronics including dual radar, Global Position Satellite and electronic charting with Automatic Identification System overlay.
- Manning/Training: Vessels traveling at high speed are required to have a minimum of two qualified watch-standers during normal operations. Vessel operators have developed approved training programs for high speed navigation in compliance with NAVIC 5-01 and 5-01 Change 1.

Adopted February 2009. See Harbor Safety Plan Chapter XI: Small Passenger Vessels - Ferries for discussion.

Passenger Ferry Traffic Routing Protocol

To avoid future possible ferry collisions, particularly in light of expanded fast ferry service, a protocol for ferry navigation in the San Francisco and San Pablo Bays includes routes and a Ferry Building Approach Zone, as shown in Figures 1-7 below.

Adopted May 2008. See Harbor Safety Plan Chapter XI: Small Passenger Vessels - Ferries for discussion.

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Communication Procedures to Improve Safety During Bunker Barge Transfer Operations Alongside Container Vessels

Container Vessel Bunker Barge Safety Program and Delivery Notice. This document outlines the process for essential communication between the agents, bunker barge operators (tankermen) and terminal's Marine Department to ensure a safe and productive work environment. The Container Operator has adopted this Best Management Practices Program and has instituted it to assist all parties involved in the vessel operations when vessel bunkering is involved in the operation.

The "Bunker Delivery Notice" appears at the end of this section. The Agent will e-mail the notice to the Ship, Terminal and the Bunker Barge operator prior to the stevedoring operation. The terminal, ship and barge operator will reply to the E-mail by including the contact phone/cell number of the person working that vessel/shift. This will be the cross check that all parties are aware of during a planned bunkering operation.

Essential Communications: Contact between the Tankerman and Terminal

- The Bunker Barge Operator (Tankerman/Person in Charge (PIC)) must contact the Designated Facility Contact prior to beginning the barge operation.
- This will allow the Tankerman/PIC to learn the planned stevedore operation in the CFS/CLO and highlight any possible conflicts. (A Check Sheet shall be used for this function.)
- The Bunker Barge representative (Tankerman/PIC), must communicate with the Designated Facility Contact, and Chief Engineer/Chief Mate, (vessel PIC) prior to beginning the barge operation. This will allow the Tankerman to learn the planned stevedore operation and highlight any possible conflicts so they may be eliminated.

Essential Communications: Tankerman Check Sheet

- a. What are the bay designations directly forward and aft of the house on this vessel that overlap the bunker barge?
- b. Is there any planned loading, discharging, or lashing in these bays?
- c. When does the terminal plan to work these bays?
- d. Is any of the work in these bays going to extend into the two or three offshore positions?
- e. Can these positions be worked in a specific time frame so possible conflicts are avoided?
- f. What time periods is the stevedore going to shut down cargo operations for breaks, lunch, etc.?

Understanding the Bunkering Process #1

- Vessels contract for Bunkers
 - Oil Companies notify barge operators
 - Agents coordinate delivery notifications with barge operators and terminals
 - Bunker Barge arrival time and duration of pumping is established

Understanding the Bunkering Process #2

- Vessel Arrives for Cargo Operations
- Agent Coordinates bunker barge arrival
- Terminal plans operations
- Cargo Flow Sheet or Crane letter of Operations (CFS or CLO) is prepared
 - Outlines what cargo is to be moved in what sequence
 - Terminal will plan around bunker operations if possible
- Terminal gives CFS/CLO to Agent to pass to Chief Engineer/PIC and Tankerman/PIC

Understanding the Bunkering Process #3

- Bunker Barge Arrives for Bunker Ops
 - Optimal placement to minimize exposure.
 - Vessel insures BUNKER OPERATION SIGN is posted.
 - DOI is signed by Chief Engineer/PIC and Tankerman/PIC.
 - Tankerman/PIC /Chief Mate/Chief Engineer/PIC will have a copy of Cargo Flow Sheet or Crane letter (CFS/CLO).
- Tankerman/PIC should understand what cargo adjacent to the barge is to be handled and when.
- Tankerman/PIC shall have contact with the vessel Superintendent at all times.

Understanding the Bunkering Process #4

- Vessel cargo operations commence.
 - Lashers sent aboard to unlash containers.
 - Crane lowered over hold/hatch to be worked.
- Work commences in accordance with CFS/CLO
 - Lashers sent aboard to re-lash containers
- Bunker operations could start before, during or after cargo operations
 - Tankerman/PIC, Chief Mate & Superintendent must understand where the stevedore operator is relative to the Cargo Flow Sheet or Crane letter and the bunkering process.

Area or Zone of Concern

- Tankerman/PIC, Terminal Personnel, (Superintendents, Foremen, Lashers, Crane Operators) and Vessel Personnel (Chief Mate and Engineer/PIC) all must be mindful of and take particular care when lashing or cargo operations take place in the outer three stacks of containers in bays adjacent to the bunker barge if the transfer is in progress.

Essential Communications: Bunker Delivery Notice

- To inform all concerned parties of the planned bunkering operations, the Vessel Agent (or other carrier assigned representative), will complete a “Bunker Delivery Notice”.
- The Agent will forward the notice by E-mail to BOTH the terminal and the bunker barge operator prior to the start of any stevedoring operation.

Post Incident Response

- It is expected that the Tankerman will be alert to the crane working near the barge and the cargo flow that has been planned.
- It is expected that the Tankerman/PIC will determine the proper action to take regarding oil transfer process should any incident occur which affects the safety of the operation.
- Any incident will require direct communications between the parties involved who shall be readily available. This will allow for adjustments to working plans to correct conflicts.

Long Term Incident Resolution

- It is expected that the Operations Department’s management personnel, vessel representative, and the barge operator will discuss mutually agreeable adjustments to minimize Tankerman exposures that may be determined as the result of the incident and the post incident investigation.
- Ideas and lessons learned will be shared among all parties including the other Port Terminals.

Adopted February 2009.

Bunker Delivery Notice

Date:	Port:	
Vessel:	Voyage:	
Reference #:		
Bunker Barge Co.		
& Phone:		
Name of Bunker Barge:		
Name of Bunker Barge PIC:		
Contact Phone # of Barge PIC:		
Bunker Barge Emergency Contact #:		
Amount and type to be bunkered:		
Delivery Time of Bunkers:		
Location of Delivery of Bunkers:		
Bunker Barge to Land Side to as Vessel (select Port or Starboard):	Port	or Starboard
Estimated duration of bunker delivery:		
Designated Facility Contact:		
Terminal Emergency Phone #:		
Name of Vessel PIC for bunkers:		
Telephone number of vessel:		
Location of Bunker Manifold/Riser:		
Agent for Vessel:		
Agent Cell Phone #:		
Agent 24 Hour Contact #:		