



National Transportation Safety Board

Marine Accident Brief

Allision of Tanker *Overseas Reymar* with San Francisco–Oakland Bay Bridge

Accident no.	DCA-13-LM-004
Vessel name	<i>Overseas Reymar</i>
Accident type	Allision
Location	Echo tower of the San Francisco–Oakland Bay Bridge 37°48.49' N, 122°21.34' W
Date	January 7, 2013
Time	1118 Pacific standard time (coordinated universal time – 8 hours)
Injuries	None
Damage	Estimated repair cost to vessel: \$220,000; bridge: \$1.4 million
Environmental damage	None
Weather	Fog; visibility estimated as one eighth of a mile; air temperature 48°F; ebbing tide of about 3 knots
Waterway characteristics	Busy US port with heavy traffic from oil tankers, container ships, passenger ferries, and small private vessels

On January 7, 2013, at 1118 local time, the 752-foot-long tanker *Overseas Reymar* allided with the fendering system of the San Francisco–Oakland Bay Bridge's Echo tower. The vessel was outbound in San Francisco Bay. No one was injured and no pollution was reported. Damage to the vessel was estimated at \$220,000, and the cost to repair the Echo tower's fendering system was estimated at \$1.4 million.



The *Overseas Reymar*. (Photo by Kamal Wanniarachchi, at www.vesseltracker.com)

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That morning, the pilot awoke about 0600 and checked his duty status with the San Francisco Bar Pilots Association. He learned that he was scheduled to pilot the tanker *Overseas Reymar* for an estimated 1100 departure. He reported to the pilot station about 0930–0945 to allow sufficient time for departure preparations. After boarding the vessel at Anchorage 9, the pilot and the master reviewed vessel-related information and the passage plan. The pilot informed the master that he intended to transit through the Charlie-Delta (CD) span of the San Francisco–Oakland Bay Bridge (“Bay Bridge”), and the master agreed.

The CD span is 1,079 feet wide; the adjacent Delta-Echo (DE) span is more than twice as wide, 2,210 feet. Watchstanders with the US Coast Guard’s San Francisco Vessel Traffic Service (VTS) indicated that 80–90 percent of vessels transit through the wider DE span. The pilot told investigators that, nevertheless, he typically chose the CD span when departing Anchorage 9 because:

I like to make my . . . routes the same – do the same route over and over again so that if I am in reduced visibility and I’m just relying on the radar, I have the same – I see the same thing again and again. And if I see something – it’s much easier to see if you’re out of position, if you do the same route over and over and over again.

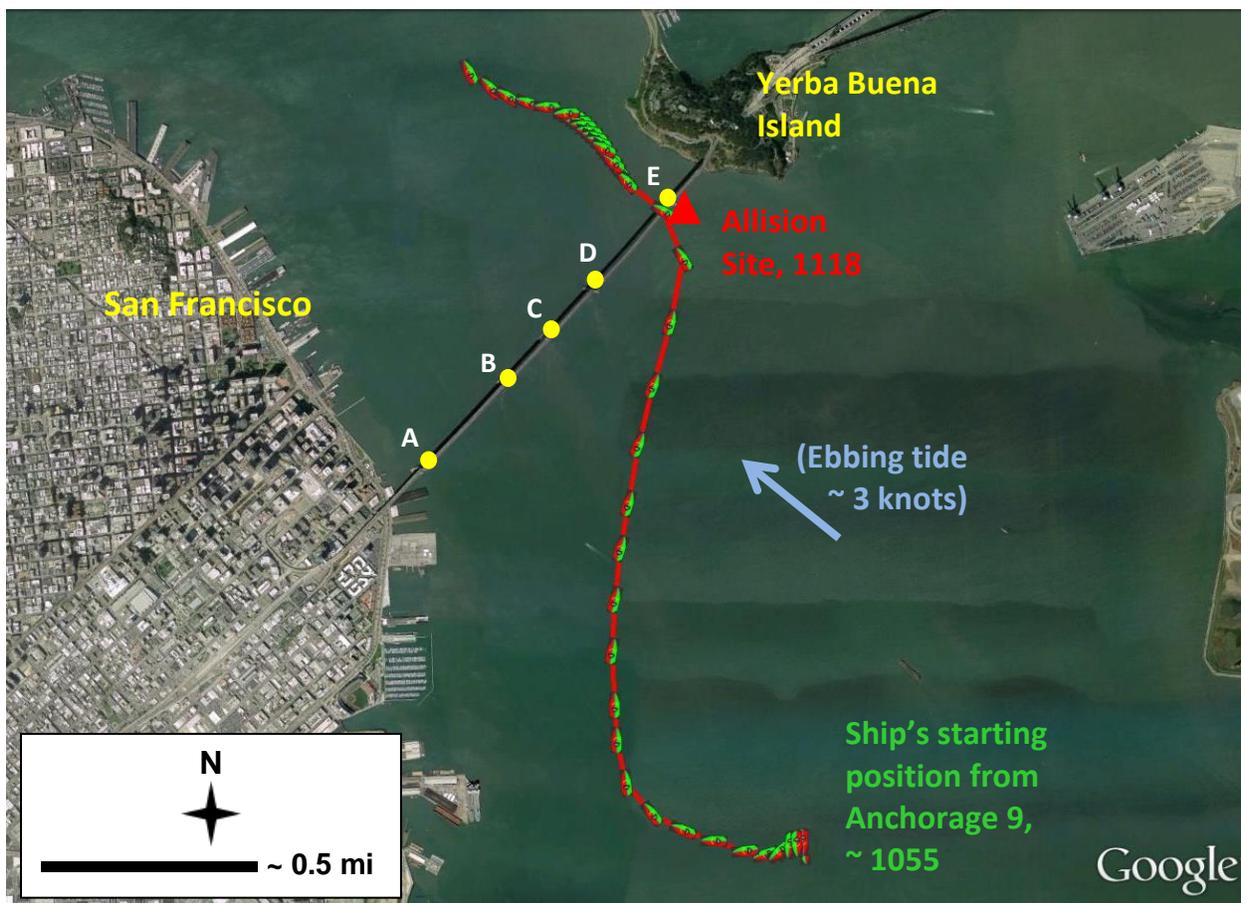


A section of the Bay Bridge, with towers and pier marked. (The photo is taken from the northwest, looking southeast. The western-most tower, Alpha, is not visible in this photo.) The CD span runs between the Charlie pier and the Delta tower. The DE span runs between the Delta and Echo towers. (Background photo by David Bailey)

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At 1044, the pilot reported to VTS that he and the crew were preparing to get the ship under way and that they would transit through the CD span. At 1054, the master ordered the anchor heaved, and the vessel began its transit shortly thereafter. VTS asked the pilot to report the visibility, and the pilot responded that it was about half a mile, but, as he later told investigators, the visibility was “going in and out” or increasing above and decreasing below half a mile as the transit continued. (Meteorological data indicate that the visibility at the time of the allision was about one eighth of a mile near the bridge.)

Both the pilot and the master told investigators that, as the *Overseas Reymar* continued its transit, the visibility decreased to less than a quarter of a mile. About the same time, the pilot, who was using both visual cues and vessel radar for navigation, realized that the return from the RACON, or “RADar beaCON” on the CD span was not displaying on the vessel’s radar screens. The RACON, a transponder that responds to radar interrogations, identifies the center of the span. Caltrans, the California state agency that oversees the Bay Bridge, installed three RACONs on the bridge; in addition to the CD span, the Alpha-Bravo (AB) and DE spans are equipped with RACONs. Although not required by Coast Guard regulations, RACONs have become one of many tools mariners rely on when operating in reduced visibility. Caltrans personnel learned after the accident that the CD span RACON was out of service.



Aerial view of San Francisco Bay. The *Overseas Reymar* was proceeding from Anchorage 9 south of the Bay Bridge to the sea. The vessel’s trackline is overlaid in red and green. The towers and pier on the bridge’s San Francisco side are overlaid in yellow. (Background by Google Earth)

According to the pilot, shortly after he realized that the CD span RACON did not display on the vessel’s radar screens, the visibility decreased further and he lost visual sight of the

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bridge. The pilot told investigators that because of the reduced visibility and the absence of RACON information, he decided to change his path and instead transit through the DE span; its RACON was functioning and visible on the vessel's radar screens. As required, he informed VTS of the change. At that point, the vessel was about one and a quarter mile south of the bridge on an approximate heading of 010 degrees and a speed of about 10 knots. The ebbing tide was about 3 knots at the time, pushing the vessel in a northwest trajectory toward the bridge. The pilot called for a 015-degree heading, and the vessel began a slight turn to starboard/toward the east to line up for the DE span. At 1111:02, the pilot ordered full ahead on the main engine.

Less than 1 minute later, the master answered the first of two calls to his cell phone from his company, both of which involved operations-related information. The first call lasted 25 seconds.

At 1113:22, the pilot ordered a course of 020 degrees. The vessel was traveling at about 12 knots at this point, parallel to the bridge, about a quarter of a mile abeam of the Charlie pier (located at the center of the bridge section that connects San Francisco with Yerba Buena Island).

At 1115:28, the master answered the second phone call from his company and began a longer conversation, which he did not end until 2 seconds before the allision.

At 1115:46, the pilot ordered the rudder hard to port to align the ship for passage under the DE span. At 1117:25, VTS contacted the pilot and informed him that the vessel was proceeding directly toward the Echo tower. The pilot replied, "We're going under the bridge right now." Seconds later, about 1118, the vessel's aft starboard side allided with the Echo tower's fendering system.



Allision damage to the *Overseas Reymar's* aft starboard side. (Photo provided by the Coast Guard)

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The pilot reported the allision to VTS personnel and said that he would take the vessel to Anchorage 7 just past the bridge. The master declined tug assistance. At 1346, about 2.5 hours after the allision, the pilot was tested for the presence of alcohol and illegal drugs. The master, the third officer, and the helmsman were tested an hour after that. All results were negative. About 1600, the VTS supervisor and watchstanders, three of whom were civilian and one an active duty Coast Guard member, were also tested for the presence of drugs and alcohol. The VTS supervisor told investigators that the testing was carried out at 1600 because the laboratory representative did not arrive until then. The results were negative.

The pilot told investigators that he had maintained a regular sleep-wake pattern in the 4 days preceding the accident and that he received at least 8 hours of sleep each night, going to sleep about the same time each evening and awaking about the same time each morning.



Damage to the Echo tower's fendering system. (Photo provided by the Coast Guard)

The pilot initially selected the CD span because he anticipated encountering reduced visibility (as he told investigators, he regularly used the same course when departing from Anchorage 9 because he would “see the same thing again and again”). Familiarity with a route facilitates a pilot's ability to recognize deviation from a planned course, an important factor to consider when transiting waterways in challenging conditions. And, although the CD span is less than half as wide as the DE span, its width is sufficient for vessels even larger than the *Overseas Reymar* to safely complete the transit.

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However, despite the pilot’s familiarity with the CD span, his navigation plans were based on the RACON identifying the center of the span on the vessel’s radar. When this nonfunctioning RACON did not display, the pilot appears to have seen no other alternative than to choose another span with a functioning RACON. Yet marine safety depends on mariners being sufficiently prepared and “ahead of the vessel” so that the loss of a single navigational aid, despite its criticality, does not jeopardize safety.

Even without the aid of the CD span RACON, the pilot had sufficient information available to complete the transit through the CD span rather than opt for another span by turning the ship in reduced visibility while close to a bridge tower. The vessel’s radar displayed the locations of the bridge towers and especially the large Charlie pier of the CD span. In addition, the electronic chart display and information system (ECDIS) was also available to provide navigation information. These tools should have been sufficient for an experienced pilot to safely guide the vessel under the CD span as he originally intended. Moreover, VTS data, interviews with VTS personnel and the pilot and crew, and data from the vessel’s voyage data recorder all indicate that by the time the pilot realized that the CD span RACON was out of service, it was too late to safely transit through the DE span. The 3-knot ebbing tide, pushing the vessel toward the bridge, was also unfavorable for a span change.

Further, the master’s phone conversations during a critical navigation phase—while the vessel was in a confined, complex waterway in reduced visibility—degraded the safety of the vessel’s transit. Although the pilot serves as the waterway expert, the master is the vessel expert. Masters and pilots, working together, are integral to effective vessel team performance. They assist one another by verifying or providing waterway and vessel information. By removing himself from the team because of his phone conversations—which should have been postponed until the vessel entered a less demanding phase—the master was unable to assist and oversee the pilot effectively. Consequently, he was not in a position to recognize that the vessel was no longer on a safe course.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the *Overseas Reymar* allision with the San Francisco–Oakland Bay Bridge was the pilot’s decision to alter course from the CD span to the DE span without sufficient time to avoid alliding with the bridge’s Echo tower, and the master’s failure to properly oversee the pilot by engaging in a phone conversation during a critical point in the transit.

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Vessel Particulars

Vessel	<i>Overseas Reymar</i>
Owner/operator	Overseas Shipholding Group, Inc.
Port of registry	Majuro, Republic of the Marshall Islands
Flag	Marshall Islands
Type	Tanker
Built	2004
IMO number	9275749
Construction	Steel
Length	752 ft (228 m)
Width	105 ft (32 m)
Draft	27 ft (8.2 m)
Gross ITC tonnage	40,038
Engine power	13,709 hp (10,282 kW), diesel
Persons on board	18 crew and 1 pilot

For more details about this accident, visit www.nts.gov/investigations/dms.html and search for NTSB accident ID DCA13LM004.

For a summary of a previous allision involving the San Francisco–Oakland Bay Bridge, see Appendix A.

Adopted: November 7, 2013

The NTSB has authority to investigate and establish the probable cause of any major marine casualty or any marine casualty involving both public and nonpublic vessels under 49 United States Code 1131. This report is based on factual information provided by the US Coast Guard from its informal investigation of the accident. The NTSB did not conduct its own on-scene investigation.

Appendix A

Changes Since the *Cosco Busan* Allision

On November 7, 2007, the container ship *Cosco Busan* allided with the Delta tower of the Bay Bridge (NTSB 2009). The vessel's fuel tanks were breached and over 53,000 gallons of fuel oil spilled into the waterway. The cost of repairing the bridge and the vessel and cleaning up the oil spill exceeded \$70 million. The NTSB determined that the probable cause of the accident was the failure to safely navigate the vessel in restricted visibility as a result of (1) the pilot's degraded cognitive performance from his use of impairing prescription medications, (2) the absence of a comprehensive pre-departure master/pilot exchange and a lack of effective communication between the pilot and the master during the accident voyage, and (3) the master's ineffective oversight of the pilot's performance and the vessel's progress. In addition, among its findings in the investigation, the NTSB determined that:

- The lack of US Coast Guard guidance on the use of VTS authority limited the ability of VTS San Francisco personnel to exercise their authority to control or direct vessel movement to minimize risk.
- Although the pilot did not disclose to the physician who conducted his January 2007 medical evaluation all of his medical conditions or medication use, as he was required to do, the physician exercised poor medical oversight on behalf of the California Board of Pilot Commissioners by finding the pilot fit for duty despite having collected sufficient information regarding his multiple medical conditions and medications to call into question his ability to perform his piloting duties safely.

At the time of the *Cosco Busan* accident, VTS watchstanders were restricted in the type of action they could take when observing vessels in potential danger. VTS had four levels of control: *monitor*, *inform*, *recommend*, and *direct*. Watchstanders observing a vessel about to collide or allide were required to proceed through each of the four levels when communicating with personnel on that vessel. Leading up to the allision, VTS watchstanders got only as far as *inform* and never instructed the *Cosco Busan* pilot to take other action, even though they witnessed the ship headed directly toward the Delta tower. After the *Cosco Busan* allision, the Coast Guard changed its procedures, authorizing VTS watchstanders to proceed directly to the level of control appropriate for the situation.

Also as a result of the *Cosco Busan* allision, on February 9, 2009, the San Francisco Bay Harbor Safety Committee (a group of government and industry representatives involved in port operations) and the Coast Guard established nine critical maneuvering areas (CMAs) in the San Francisco Bay region during periods when visibility is half a mile or less (Coast Guard, 2009). As the Coast Guard described 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.

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As described, vessels of 1,600 gross tons or greater were not permitted to transit CMAs, and vessels docked in CMAs were not permitted to leave the dock when visibility was less than half a mile. Vessels encountering reduced visibility in CMAs when proceeding to a dock were to be directed to anchor, “unless, under all circumstances, proceeding to the dock is the safest option.” However, the area around the Bay Bridge was not mentioned in the bulletin, and no special guidelines or rules pertained to vessel transits under the bridge in reduced visibility. Had the area around the Bay Bridge been designated a CMA, the *Overseas Reymar* pilot likely would not have entered it until the visibility improved.

As a result of the *Overseas Reymar* allision, on February 14, 2013, the Harbor Safety Committee adopted temporary guidelines for navigating in reduced visibility that complement and enhance the existing CMA guidance. The area around the Bay Bridge is still not designated as a CMA in the new guidance; however, specific interim guidelines apply to the bridge, as detailed below. The guidelines were promulgated by the Coast Guard in a bulletin (Coast Guard, 2013) that also informed masters, pilots, and tug operators of the following:

- Vessels transiting the Bay Bridge (west of Yerba Buena Island) in any condition of reduced visibility should generally do so via the AB or DE span unless vessel traffic, environmental or other safety factors dictate otherwise;
- Outbound/northbound vessels should not transit the Bay Bridge (west of Yerba Buena Island) when visibility is less than 0.5 nautical mile; and
- Inbound vessels transiting the Bay Bridge in restricted visibility are advised to exercise extreme caution during their transit.

The Harbor Safety Committee is continuing to review the CMA guidelines and will evaluate the temporary guidelines for permanent adoption once the investigation into the *Overseas Reymar* accident has been completed and released to the public. The NTSB is pleased that the Coast Guard and San Francisco Harbor Safety Committee worked together to improve maritime safety by addressing the area around the Bay Bridge in the temporary guidelines and considering it for designation as a CMA in the ongoing comprehensive CMA review.

Also as a result of the 2007 *Cosco Busan* accident, the board overseeing the San Francisco Bar pilots (the Board of Pilot Commissioners for the Bays of San Francisco, San Pablo, and Suisun) asked an associate professor at the University of California at San Francisco (UCSF) School Of Medicine’s Division of Occupational and Environmental Medicine to study the Board of Pilot Commissioners’ oversight of pilot medical standards and to recommend improvements. The associate professor recommended that the Board of Pilot Commissioners replace its previous medical guidelines with those adopted and presented in the Coast Guard’s Navigation and Vessel Circular (NVIC) 04-08 (Coast Guard, 2008). He also recommended that the Board of Pilot Commissioners:

- Move from an annual “snapshot” review of pilot medical fitness to a continuous review model;
- Regularly test pilots for the presence of antidepressants, antipsychotics, opiates, and other prescribed medications known to reduce cognitive performance;

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- Modify the requirements for physicians designated to medically evaluate pilots to include at least 5 years of experience in occupational medicine; and
- Require pilots to report, within 10 days, changes in the dosages or types of medications used.

The Board of Pilot Commissioners asked the California state legislature to undertake the rulemaking necessary to implement the recommendations in the UCSF report. If the rules are changed, as requested, the quality of the medical oversight provided by the Board of Pilot Commissioners would exceed that of the Coast Guard's oversight of licensed merchant mariners by requiring pilots to report changes in medication use, testing for the presence of prescribed but impairing medications, and requiring that occupational medicine physicians examine and medically certify its licensed pilots.

In addition, NTSB Safety Recommendation M-09-4 asked the Coast Guard to change its medical oversight system to require mariners to report changes in their medical condition or medical status. The Coast Guard has not yet indicated whether it would take action as proactive as that proposed by the Board of Pilot Commissioners to enhance the medical qualifications of its licensees. Although medical oversight did not play a role in the *Overseas Reymar* accident, the NTSB supports the actions of the Board of Pilot Commissioners to implement a medical oversight system that contributes substantially to marine safety.

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Reference List

- NTSB (National Transportation Safety Board). 2009. *Allision of Hong Kong-Registered Containership M/V Cosco Busan With the Delta Tower of the San Francisco-Oakland Bay Bridge, San Francisco, California, November 7, 2007*. NTSB/MAR-09/01. Washington, DC: NTSB.
- US Coast Guard. *Guidelines for Navigating in Reduced Visibility*. Marine Safety and Security Information Bulletin (MSIB) 09-01. Coast Guard Sector San Francisco, Department of Homeland Security, February 9, 2009.
- US Coast Guard. *Temporary Guidelines for Navigating in Reduced Visibility*. Marine Safety and Security Information Bulletin (MSIB) 13-02. Coast Guard Sector San Francisco, Department of Homeland Security, February 14, 2013.
- US Coast Guard. *Medical and Physical Evaluation Guidelines for Merchant Mariner Credentials*. Navigation and Vessel Inspection Circular (NVIC) 04-08. United States Coast Guard, September 15, 2008.