



August 7, 2008

Mr. Thomas K. Roth-Roffy  
Investigator in Charge  
National Transportation Safety Board  
Office of Marine Safety  
Washington, D.C. 20594

Dear Mr. Roth-Roffy,

Subject: Allision of the M/V *Cosco Busan* with the San Francisco Oakland Bay Bridge,  
Nov 7, 2007

Thank you for your invitation in your letter of June 27, 2008, to submit proposed findings of cause and proposed safety recommendations. Our proposed findings, probable cause, and recommendations are based on your draft factual report, the April 2008, public hearings on this event, and NTSB docket exhibits.

On-going actions that address spill response to the Cosco Busan Oil spill have already been provided to you in our response to the NTSB draft factual report. These actions, we believe, address all major points in your report including spill response by Oil Spill Response Organizations (OSRO), notification procedures (and subsequent changes), as well as coordination of quantification efforts by all parties. Many of these on-going initiatives cover spill response investigations, which address spill response beyond the first 24 hours that the NTSB has investigated.

The context of our probable cause and recommendations is focused on the question we asked ourselves in our own analysis, "How can we prevent a Cosco Busan incident from happening again?". Discussions and recommendations concerning United States Coast Guard Systems such as VTS and maritime licensing and drug testing procedures are deferred to that organization. The specific actions of the VTS operator involved in communicating with the Cosco Busan did appear to be appropriate.

#### **PROBABLE CAUSE**

**The probable cause of the Cosco Busan's allision with the San Francisco Bay Bridge was the loss of situational awareness by the Pilot, who believed the Delta Tower was the center of the D/E span, and the failure of the Master and bridge team of the Cosco Busan to effectively monitor the Pilot's actions (pilot oversight) and position of their vessel during conditions of very low visibility.**

Mr. Thomas K. Roth-Roffy  
Page Two  
August 7, 2008

## CONTRIBUTING FACTORS

**Decision by Master to get underway with a new crew in visibility less than .5 nautical miles.** *(opinion: There was no indication that Master questioned Pilot's decision to get underway; thus, by inference, he agreed with Pilot's decision.)*

**Bridge team did not demonstrate proficiency navigating in reduced visibility, or fix vessel's position.** *(opinion: Bridge team, consisting of Helmsman, Third Mate, and Master had never been in San Francisco Bay and had worked as a bridge team from October 24, 2008 until November 7, 2008, with only three restricted water port entry/departures in that time frame. While members of the team may have been individually proficient in their duties, they were not proficient as a bridge team.)*

**Decision by Pilot to get underway in low visibility after having problems tuning vessel's radar (according to VDR).** *(opinion: Neither crew nor Pilot appeared to be proficient in tuning this model radar and failed to take sea and rain clutter control out of automatic.)*

**Failure of the Pilot/Crew to properly tune the vessel's radar in accordance with normal tuning procedures.** *(opinion: Sea and rain clutter adjustment control left in automatic and gain control adjusted higher than normal may have led to less than optimal, ("a little more clutter") radar display.)*

**Failure of the Pilot and Master to distinguish the difference between "center of the Bridge" and "center of the Span" marked by "red triangles" on the electronic chart display in conversations recorded on the VDR.** *(opinion: Pilot meant to ask "where the center of the span was"; Master heard the pilot ask "where the center of the bridge was" and responded accordingly.)*

**Failure of the Master and Pilot to review low visibility passage plan.** *(opinion: No VDR indication track on chart was reviewed or discussed by Pilot and Master.)*

**No indication that vessel's voyage plan had been entered into the ship's vessel management system (VMS).** *(opinion: Voyage plan berth to berth was superficial at best.)*

**Variable Range Marker (VRM) set at .33 nautical miles did not appear to be monitored by anyone on bridge.** *(opinion: Once Pilot shifted his attention to electronic chart in lieu of radar he appeared to ignore the .33 VRM marker he had previously set to mark the center of the D/E span. Observing the position of this marker in relation to*

Mr. Thomas K. Roth-Roffy  
Page Three  
August 7, 2008

*Yerba Buena Island might have assisted him to regain his navigational awareness had he used it.)*

**RACON Beacon that marks the center of the D/E span was not reportedly observed by anyone on the Cosco Busan Bridge.** *(opinion: Bridge crew was not familiar with all navigational aides in San Francisco Bay, and Pilot was apparently distracted away from radar display when RACON was firing.)*

Discussion. Industry practices are, in the opinion of the writer, vessel Masters, in general, entrust pilots with the safe navigation and conning of their vessels in the restricted waters of ports without a significant degree of oversight. When a more challenging navigational situation exists, such as low visibility piloting, the Masters and Bridge Crews of vessels are stretched to their limit to contribute to the Bridge Team Management Concept. This concept is well documented in Maritime laws, rules and regulations. In short, a major objective of the Bridge Team Management Concept is to put a system in place that prevents a single human error from causing a maritime accident. An effective bridge management team ensures by checks, cross checks, and information sharing no single person can create an accident because his or her actions will be corrected by another member of that team. This concept was not effectively utilized in the case of the Cosco Busan. The pilot of the Cosco Busan single handedly allided the Cosco Busan with the San Francisco Bay Bridge, and nobody prevented him from doing it.

Pilots, in the opinion of the writer, are identified and recruited in most cases by their ship handling ability of vessels in restricted waters. They are usually identified by ship handling and maneuvering skills significantly better than their peers. Their "seaman's eye" is highly developed along with maritime judgment in varying conditions. Conversely, there appears to be a wide range of technical savvy among pilots that takes advantage of technical advances such as navigational lap top computers or other available maritime technology advances. Other pilots appear to rely almost exclusively on the vessel's equipment and their own superior navigational knowledge of the area. These pilots, in the opinion of the writer, have no "plan B" if vessel equipment fails or malfunctions such as a radar casualty (perceived or real) in a low visibility situation. There should be an independent system of some minimal capability that pilots could use and demonstrate proficiency which could assist them in their duties. No such universally accepted system exists to the best of this writer's knowledge.

Mr. Thomas K. Roth-Roffy  
Page Four  
August 7, 2008

### Recommendations

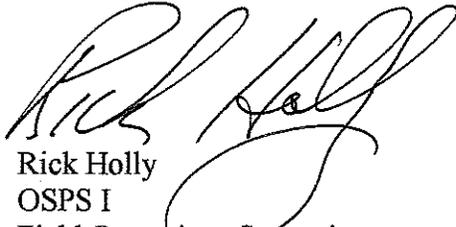
**NTSB include comments in their findings on the adequacy of vessel bridge manning in low visibility conditions in restricted waters of the United States.** *(opinion: Current bridge manning of merchant vessels for low visibility navigation is inadequate.)*

**NTSB include comments in their findings on the adequacy of training on merchant vessels to demonstrate team proficiency.** *(opinion: No effective system is mandated or in place that tests the proficiency (as a team) of entire crew change overs, such as the Cosco Busan crew.)*

**NTSB include comments in their findings that address adequacy of oversight of pilots and responsibilities of pilots involved in major maritime accidents.** *(opinion: Pilots involved in major maritime accidents usually end a very lucrative and enjoyable career even though by law the Master of the vessel is ultimately responsible for the safety of his vessel and crew. This de facto punishment of pilots may in itself not be enough to prevent accidents similar to the Cosco Busan from happening again.)*

Thank you for the opportunity to participate in your investigation.

Sincerely Yours,



Rick Holly  
OSPS I  
Field Operations Supervisor  
Northern California