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COMMENTS AND SUGGESTIONS OF THE
AMERICAN PILOTS' ASSOCIATION CONCERNING
THE DRAFT MARINE ACCIDENT REPORT ON
THE NOVEMBER 7, 2007 ALLISION OF THE
M/V COSCO BUSAN WITH THE
SAN FRANCISCO – OAKLAND BAY BRIDGE,

August 29, 2008

The American Pilots' Association (APA), as a party to the Safety Board's investigation into the *COSCO BUSAN* allision with the Oakland Bay Bridge, appreciates the opportunity to provide suggestions regarding the Analysis, Conclusions, Findings, and Recommendations to this Marine Accident Report. This submission supplements our previous comments and suggestions on the Draft Marine Factual Report on this accident, about which APA renews our request that those comments and suggestions be considered during preparation of the final Marine Accident Report.

Analysis

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Exclusions

Within the 2-hour time period established in the regulations governing the federal alcohol testing program, an alcohol breathalyzer test using Department of Transportation-approved equipment was performed on the pilot and this test showed that the pilot had a .000 blood alcohol content. Also, well within the federally mandated timeframe of 32 hours required for drug-test specimens, a urine specimen was obtained from the pilot, and the drug screening results showed that the pilot's urine tested negative for all drugs for which the screening is designed to detect (marijuana, cocaine, opiates, amphetamines, and phencyclidine). Therefore, the Safety Board concludes that with respect to the pilot, neither alcohol nor illicit drugs were factors in the accident.

In contrast, no member of the crew of the *COSCO BUSAN*, including the master, was administered an alcohol breathalyzer test within the time period established by federal regulations. In addition, other than the master, no member of the COSCO BUSAN crew submitted a urine sample for drug testing within the federally mandated timeframe. Finally, contrary to internal agency policy guidance, none of the military or civilian VTS controllers, or the civilian watch supervisor on duty at the time of the incident submitted urine or breath specimens for testing. Therefore, while there is no evidence to suggest that alcohol or illicit drugs were factors in the accident with respect to the crew of the COSCO BUSAN or VTS personnel, because breath and urine tests were not administered in accordance with federal regulations and agency policy, the Safety Board cannot exclude alcohol or drug use by these individuals as factors in the accident.

Pilot's Medical Condition

During the course of the investigation, the Safety Board reviewed the medical examination reports submitted by the pilot to the Coast Guard under existing federal regulations. The Safety Board also reviewed the medical oversight of the pilot by the Board of Pilot Commissioners for the Bays of San Francisco, San Pablo and Suisun. Under both programs, the pilot had disclosed medications that had been prescribed by his physicians for several conditions. The pilot had nevertheless been found "fit for duty" by the licensed occupational health physician who examined the pilot under the Board's program. In addition, the Coast Guard had granted the pilot medical waivers for the disclosed conditions and medications. Subsequent to the accident, however, the Coast Guard determined that the previously disclosed information about prescription medication should have disqualified the pilot under the federal medical standards and requested that the pilot deposit his federal license with the Coast Guard. The pilot complied with that request.

Despite the pilot's record of prescription medications and the Safety Board's concern over the adequacy of existing medical review standards and procedures, the Safety Board was not able to determine if the pilot had taken any medications during any relevant period prior to the piloting assignment on the *COSCO BUSAN* or if any medical condition may have affected the pilot's performance during the assignment. As a result, the Safety Board cannot make any conclusion about the pilot's medical condition or competency at the time of the accident.

Accident

The master, chief officer, second officer, third officer, and helmsman were all new to the *COSCO BUSAN* and to the particular navigation and sensor equipment aboard, having just reported aboard the vessel only two weeks before the allision with the bridge. In addition, with the exception of the chief officer, none of the crew, including the master, had ever navigated a vessel into San Francisco Bay. The chief officer had been aboard a vessel in a junior capacity that had transited into San Francisco Bay, but this was nearly 10 years prior to the allision. The Safety Board, therefore, concludes that at the time of the allision, the *COSCO BUSAN* was operating with a crew unfamiliar with both the navigational characteristics of San Francisco Bay and with the specific navigational equipment found aboard the vessel.

The berth-to-berth passage plan required to be prepared prior to the transit by international and domestic regulations and by the *COSCO BUSAN's* Safety Management System, was actually fraudulently prepared after the accident. The Safety Board sought to determine why the berth-to-berth passage plan was not prepared prior to the *COSCO BUSAN* getting underway, but the master and bridge crew refused to cooperate with the Safety Board investigators in the investigation of this accident.

A passage plan properly prepared and reviewed prior to getting underway and monitored during the transit would have laid out and highlighted the vessel's intended track and navigational hazards, and provided the master and the bridge team with detailed navigational information for the entire transit. A pre-approved passage plan would also have provided the master and bridge team the means to monitor the pilot's navigation of the *COSCO BUSAN.* In addition, if communicated to the pilot, the information that would have been in the passage plan could have alerted the pilot to the fact that the navigational plan he was carrying out had become flawed. Finally, key information from the passage plan could also have been entered into the vessel's voyage management system, which had the capability of superimposing the vessel's intended track and waypoints onto the vessel's radar screens. This overlay would have been extremely helpful to the master, bridge team, and pilot. Therefore, the Safety Board concludes that the absence of a pre-approved and detailed passage plan for the *COSCO BUSAN's* transit out of San Francisco Bay deprived the master, the bridge team, and the pilot of critical navigational information that potentially could have prevented the allision.

Even though visibility was limited to only about ¼ of a mile, and notwithstanding the "adverse weather" section of the Harbor Safety Plan that cautioned masters of vessels at the dock about getting underway if visibility is less than ½ of a mile, the master and the pilot agreed to get the *COSCO BUSAN* underway from berth 56 on the morning of the accident. The visibility continued to be very poor throughout the *COSCO BUSAN's* transit up to and including the time the vessel allided with the Oakland Bay Bridge. The Safety Board, therefore, concludes that, given the significantly reduced visibility on the morning of November 7, 2007, the master and the pilot should have exercised more caution and elected not to get underway until the visibility had improved.

Similarly, even though the pilot informed the VTS watchstander via VHF radio of his and the master's decision to get underway from berth 56 in only ¼ mile visibility and the Harbor Safety Plan authorized the Captain of the Port (and his agent, the VTS) to "prohibit movement of vessels within...the Bay during adverse weather conditions", the VTS operator never cautioned the master or the pilot about getting underway in such heavy fog. Therefore, the Safety Board concludes that the VTS watchstander failed to fully carry out his responsibilities by not at least cautioning the master and pilot about the risks of getting underway in those conditions.

At about the time the *COSCO BUSAN* was approximately 1/3 mile from the Oakland Bay Bridge, a VTS operator provided incorrect navigational information to the pilot when he said over the radio that the *COSCO BUSAN* was "on a 235 heading" when the vessel in fact had a "course over ground" of 235. "Heading" and "course over ground" are basic navigational terms that have two very different meanings regarding the navigation of a vessel. The VTS operator should have understood the meaning of these terms and the potential dangers of confusing the

two. The VTS operator should also have been aware that his equipment did not provide heading information. The pilot stated that he recognized that a heading of 235 was impossible given the heading information available to him from the ship's equipment. Had the VTS operator used the proper term, the pilot may have better understood, and been more willing to consider, the VTS's information regarding the position of the vessel. The Safety Board, therefore, concludes that by providing erroneous navigation information to the *COSCO BUSAN*, the VTS operator may have contributed to a loss of situational awareness by the master, bridge team, and pilot.

As the pilot made his initial turn to the southwest to put the *COSCO BUSAN* on a course through the Oakland Bay Bridge, he noted a deterioration in the radar display, later telling Safety Board investigators that the radar picture of the bridge became distorted as the vessel got closer to the bridge and the RACON on the bridge did not appear. At least twice in the four months leading up to the *COSCO BUSAN's* allision with the Oakland Bay Bridge, major work was performed on the radar systems aboard the vessel, including significant repairs only two days prior to the accident. The *COSCO BUSAN's* radars and electronic charting system, all products purchased from Sperry Marine, were not tested immediately after the accident, nor was the equipment properly secured for evidentiary purposes. Five days passed before the *COSCO BUSAN's* radar and electronic charting equipment was tested; and these tests were conducted by representatives from Sperry Marine, rather than an independent expert. Because the navigation equipment was not tested immediately after the accident (or properly secured prior to testing*) and because at least one person noted technical problems with the radar shortly before the allision, the Safety Board, therefore, cannot exclude navigation equipment malfunction as a factor in the accident.

Even though a berth-to-berth passage plan was not approved prior to the *COSCO BUSAN's* departure from berth 56 as required, the evidence is clear that both the master and the pilot understood that the vessel was to transit through the center of the D-E span of the Oakland Bay Bridge. However, as became apparent during statements after the incident and conversations recorded on the VDR, prior to the *COSCO BUSAN* getting underway and during the vessel's approach to the Bay Bridge, the master and the pilot were not in clear agreement regarding precisely how the bridge span was marked on the electronic chart, and as a result, whether the vessel was actually steering toward the center of the D-E span or at the D tower itself. As the *COSCO BUSAN* grew nearer to the Oakland Bay Bridge, the pilot became intent upon following a trackline that would ultimately lead him into the D tower of the bridge, apparently believing this would lead the vessel to pass safely through the center of the D-E span. Considering that the pilot had 26 years of experience, had made this transit numerous times, had received training in the use of electronic chart systems, and had used many different electronic charting systems in the course of his work as a San Francisco pilot, this confusion is inexplicable. Factors that may have contributed to the confusion include: the severely restricted visibility, the erroneous information passed to the pilot by the VTS operator, possible problems with the radar display, the apparent confusion between the master and the pilot regarding electronic chart symbols, and the language barrier between the pilot and the master. The Safety Board, therefore, concludes that the master, bridge team, and pilot lost situational awareness as the vessel approached the

* The failure to properly secure the navigation equipment following the accident is even more critical due to Fleet Management's actions to falsify evidence sought by the Safety Board and other investigators.

Oakland Bay Bridge; and that this loss of situational awareness caused the pilot to choose a track that led the *COSCO BUSAN* to allide with the D tower of the Oakland Bay Bridge.

As master of the *COSCO BUSAN*, the master had the ultimate duty to oversee its safety. Coast Guard's Navigation Safety Regulations, 33 CFR §164.11 in particular, are clear that the master shall ensure that the wheelhouse is manned by persons who fix the vessel's position, plot that position on a chart of the area, and inform the person directing the movement of the vessel (in this case, the pilot) of that position; and that the person directing the movement of the vessel sets the vessel's speed with consideration for the prevailing visibility and weather conditions and proximity of the vessel to fixed structures. International law also makes clear that the master has the ultimate responsibility and obligation for the safe navigation of the vessel. The STCW Code provides that, notwithstanding the duties and obligation of pilots, the master shall "maintain an accurate check on the ship's position and movement." While the master should rightfully respect the pilot's skills, training, and experience, this does not, and did not, relieve him of his obligations and overall responsibility for the safety of the vessel. A primary purpose of this critical concept is to avoid a single point error. There was ample evidence available to the master that the pilot was under some substantial misconceptions about the progress the vessel was making along the intended trackline for the master to become more involved in the navigation of the *COSCO BUSAN*. However, at no time during the transit of the *COSCO BUSAN* on November 7 did the master or his bridge team become actively involved in the navigation of the vessel.

Because he had the overall responsibility for the safe navigation of the *COSCO BUSAN*, the master should have been fully aware of the intended track, including the transit through the center of the D-E span of Oakland Bay Bridge, should have monitored the ship's position and movement along the intended track (including the approach to the D-E span), should have ensured that the bridge team was providing both him and the pilot with updates on the vessel's position during the transit, and should have intervened (or at the very least, questioned the pilot's actions) if the vessel was straying significantly from the intended track. The evidence is clear that the master did none of these things. The master did not ensure that the bridge team was carrying out their duties, he did not monitor the *COSCO BUSAN's* movement and progress along the intended track, he did not question the pilot's actions or his directions to the helmsman, and he did not intervene to ensure the safe navigation of the vessel. The Safety Board, therefore, concludes that the master failed to exercise his command responsibilities over the *COSCO BUSAN* and its safe navigation.

Conclusions

Findings

1. With respect to the pilot, neither alcohol nor illicit drugs were factors in the accident.

2. While there is no evidence to suggest that alcohol or illicit drugs were factors in the accident with respect to the crew of the COSCO BUSAN or VTS personnel, because breath and urine tests were not administered in accordance with federal regulations and agency policy, the Safety Board cannot exclude alcohol or drug use by these individuals as factors in the accident.

3. Although the Safety Board investigated the pilot's history of prescription medications and medical conditions that are potentially disqualifying under federal standards, there is no reliable evidence indicating that the pilot was medically or mentally impaired or incompetent during his pilotage assignment on the COSCO BUSAN.

4. At the time of the allision, the COSCO BUSAN was operating with a crew unfamiliar with both the navigational characteristics of San Francisco Bay and with the specific navigational equipment found aboard the vessel.

5. The absence of an approved detailed passage plan for the COSCO BUSAN's transit out of San Francisco Bay deprived the master, the bridge team, and the pilot of critical navigational information that potentially could have prevented the allision.

6. Given the significantly reduced visibility on the morning of the accident, the master and the pilot should have exercised more caution and opted not to get underway until the visibility had improved.

7. The VTS watchstander failed to fully carry out his responsibilities by not at least cautioning the master and pilot about the risks of getting underway in those conditions.

8. The VTS operator provided erroneous navigation information to the *COSCO BUSAN*, and this may have contributed to a loss of situational awareness by the master, bridge team, and pilot.

9. Because the navigation equipment was not tested immediately after the accident (or properly secured prior to testing) and because at least one person noted technical problems with the radar shortly before the allision, the Safety Board cannot exclude navigation equipment malfunction as a factor in the accident.

10. The master, bridge team, and pilot lost situational awareness as the vessel approached the Oakland Bay Bridge; and this loss of situational awareness caused the pilot to choose a track that led the COSCO BUSAN to allide with the D tower of the Oakland Bay Bridge.

11. The master failed to exercise his command responsibilities over the COSCO BUSAN and its safe navigation.

Probable Cause

The National Transportation Safety Board determines that the probable cause of this accident was the loss of situational awareness by the master, bridge team, and pilot immediately prior to the allision with the Oakland Bay Bridge. Contributing to the cause of the accident was: (1) the master's failure to exercise his command responsibility over the vessel by maintaining an accurate check on the ship's position and movement and ensuring that the *COSCO BUSAN's* transit was planned in advance of getting underway; (2) the decision by the master and pilot to get underway in less than ¼ mile visibility; and (3) the unfamiliarity of the master and crew with San Francisco Bay and the navigation equipment aboard the *COSCO BUSAN*.

Recommendations

To the U.S. Coast Guard

Amend 33 CFR 96.250 to include the specific requirement that a detailed berth-to-berth passage be prepared prior to beginning the transit by those to whom 33 CFR Part 96, Subpart B applies (see 33 CFR 96.210).

Revise 33 CFR 96.250(e) to ensure greater clarity regarding the master's role and overall responsibility for the safety of the vessel.

Through appropriate international forums, such as the International Maritime Organization, reemphasize the vital importance that both the crews and shore-based personnel for foreign flag vessels calling on a port or place in the United States understand and strictly adhere to the procedures and policies of the safety management system and federal and local regulations for the safe operation of vessels.

In close consultation with local stakeholders, develop or revise (as appropriate for specific port areas) adverse weather guidance for major ports. This guidance should include specific recommendations regarding weather conditions during which vessels should be cautioned about getting underway from a berth or anchorage or from entering port..

Verify whether the regulations for alcohol and drug testing after serious marine incidents are being followed, and if not, identify corrective measures.

To the San Francisco Board of Pilot Commissioners

Review the training program requirements for pilots to ensure that appropriate periodic training is required in electronic navigation equipment expected to be found on vessels entering San Francisco Bay.

To the American Pilots' Association

Disseminate this Report among its members and highlight the importance of periodic training on the use of electronic navigation and reemphasize the risks associated with navigation in restricted visibility and the importance of being cognizant of regulations and port policies on navigation in adverse weather conditions.