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### RESPONSE OF THE AMERICAN PILOTS' ASSOCIATION TO NTSB SAFETY RECOMMENDATION M-11-22

#### COLLISION OF TANKSHIP EAGLE OTOME WITH CARGO VESSEL GULL ARROW AND SUBSEQUENT COLLISION WITH THE DIXIE VENGEANCE TOW IN THE SABINE-NECHES CANAL, PORT ARTHUR, TEXAS – JANUARY 23, 2010 [ACCIDENT REPORT NTSB/MAR-11/04; PB2011-916404]

December 20, 2011

#### Introduction

The American Pilots' Association (APA)<sup>1</sup> submits the following response to the National Transportation Safety Board's recommendation (M-11-22) to the APA arising out of the above-referenced investigation and Accident Report (the Report). As discussed below, the APA has complied with the recommendation.

In addition to responding to the Board's recommendation, the APA offers comments on the analysis, conclusions, and recommendations in the Report. The APA has substantial disagreement with the Board's conclusion that fatigue played a major role in this marine casualty. There was an evident predetermination to focus on fatigue regardless of the facts of the accident. The APA also has concerns about a double standard in the Board's approach to state-licensed pilots as compared to other mariners and about an apparent unfamiliarity with current practices of ship navigation that pervades the Report. As a consequence of these factors, the Board not only missed the mark in its analysis of the casualty, it also missed an opportunity to contribute meaningfully to marine safety.

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<sup>1</sup> The American Pilots' Association (APA), a non-profit group, has been the national association of the piloting profession since 1884. Virtually all of the nearly 1,200 state-licensed pilots working in the 24 coastal states of the United States, as well as all of the U.S. registered pilots operating in the Great Lakes system under authorization by the Coast Guard, belong to APA-member pilot groups. These pilots handle well over 90 percent of large ocean-going vessels moving in international trade in the waterways of the United States. Their role and official responsibility is to protect the safety of navigation and the marine environment in the waters for which they are licensed.

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One example of an important issue that could have, and should have, been a focus of the Report is the use of tug assistance. Pilots and other experienced maritime professionals who are familiar with the facts of the casualty are virtually unanimous in the judgment that active tug assistance in circumstances similar to those that existed on the day of the casualty would be a valuable preventive measure. Following the casualty, the Sabine Pilots, with the support of most operating companies, determined that the use of assist tugs for particular types of vessels -- especially poor-handling vessels such as the EAGLE OTOME -- in key portions of the Sabine-Neches waterway should become standard practice. Although the Report briefly mentions this post-casualty development, the Board ignores the tug issue in its conclusions and its recommendations.

An NTSB recommendation for the use of assist tugs in similar circumstances would have been welcomed by mariners as indicating that the Board has an understanding of the realities of vessel navigation. It would also have been recognized by mariners as a useful, practical, achievable recommendation that could make a real, immediate improvement in marine safety. Finally, it would have helped pilots to combat commercial pressures from some operators who resist the hiring of such tugs for purely cost-saving reasons

Please understand that the APA shares the Board's objective of "promoting transportation safety" on America's waterways. Our comments are offered in good faith with the intent of providing the Board with frank feedback that can lead to improved investigations and most importantly to better recommendations.

### **Response to Recommendation (M-11-22)**

We note, at the outset, that the failure of the "first pilot" to refer to the EAGLE OTOME by name in his radio communication was not, according to the Board, a causal factor in the accident. In addition, there was no indication that the master of the ship was uncertain whether the radio communication in question pertained to his vessel. Clearly, this issue had nothing to do with this casualty. We recognize, however, that the Board has stated in this and other instances that it feels that it is a good practice to use the vessel's name in radio communication. We have communicated to APA members the Board's view on that issue in the past.

We are also aware of both the requirements and the guidance contained in Federal Communications Commission regulations regarding bridge-to-bridge communication procedures. In addition, state-licensed pilots are trained in, and are expected to be familiar with, radio communication procedures that have been developed over the years in their particular pilotage areas, typically with the knowledge and support of the local U.S. Coast Guard officials.

In compliance with recommendation M-11-22, the APA has sent out a notice to its members about the recommendation. The notice was sent via email to the presidents of APA member groups, members of the APA's Navigation Technology Committee, and APA officers. It cites the Report, discusses the recommendation, and attaches a copy of

the recommendation letter as well as of 47 CFR §80.331. See attached. Also, the next edition of the APA newsletter, *ON STATION*, will contain an article about the Board's investigation, the Report, and the recommendation. The NTSB's Marine Safety Office is on the mailing list for *ON STATION*.

### **Comments on MAR-11/04**

#### **A) Fatigue**

State-licensed maritime pilots have been focused on fatigue awareness and ways to mitigate fatigue for many years. The APA and its member-pilots have long taken a serious and proactive approach to fatigue education. In fact, as far back as 1984, the APA conducted its entire national convention around fatigue education, awareness, and mitigation. During this convention, Dr. William Dement – considered by many to be the father of modern sleep medicine – spoke to the assembled state pilots about the dangers of fatigue and how best to avoid its potential effects. Since then, APA and local pilot associations have continually sought ways to further member pilots' understanding of fatigue and methods to mitigate fatigue in their profession. Throughout the years, pilot groups have commissioned studies on work hours and fatigue and, with the support of their state and local oversight authorities, are continually reevaluating their local protocols and guidelines in light of the ever-changing science. In addition to developing rest and work protocols, local associations have systems in place that encourage a pilot to remove him/herself from the work rotation if the pilot has doubts as to whether he or she is adequately rested.

In a related area, long before federal agencies and international organizations began advocating bridge resource management (BRM), pilots were pioneers in the marine transportation sector regarding the development and use of BRM principles and training courses. Nearly two decades ago, the APA developed BRM courses geared specifically to marine pilots. These courses are now commonly referred to as BRM-P courses. As the Board's Marine Safety Office staff is aware, APA-approved BRM-P courses typically include modules on fatigue. In fact, the guidelines published by the APA for BRM-P courses encourage the training centers to address "research on fatigue, cognitive science and other human factors" in their courses.

Sleep is an ever-present concern in the life and lifestyle of a pilot and the pilot's family. Individual pilots – during their multi-year progression from trainees to full branch pilots – learn how to sleep efficiently, how to maximize sleep benefits, and when to sleep during a pilot rotation to ensure they are fully prepared for their assignments. Pilots understand the conditions and practices that work best in their situations to promote effective, restful and individually adequate sleep. Further, a pilot's family understands the importance of a pilot's sleep – regardless of the time of day or night – and structures household and family activities around the pilot's rest schedule and needs. In short, pilots understand better than most people (including most human factors experts) the importance of sleep hygiene and adequate rest. A pilot's livelihood and

personal safety, as well as the protection of the port and surrounding waterways, depends on it.

Admittedly, there may be more that could be done to help mitigate fatigue as an occupational challenge for pilots. This is a work in progress. The science is evolving. Despite the considerable attention being paid to this issue, there is little consensus on the best formula for minimizing fatigue in the unique, round-the-clock environment of ship piloting. What is best: service hour restrictions or minimum rest periods or both? How many continuous hours of service are too many for a pilot – 6, 8, 10, 12? What is the right number of hours for the minimum time between assignments – 6, 8, 10, 12, 14, 16? How should “service” or “work” be defined? What is the best way of addressing the irregular hours, the day/night straddles, and the disruption of circadian rhythms that are the unavoidable realities of a pilot’s job? The Board might consider offering some suggestions on these practical questions, perhaps by convening a national conference as it has in the past for other subjects, rather than simply telling pilot associations and commissions to address the issue, which they have been doing for many years.

What we do know is that there cannot be a one-size-fits-all-solution. Pilots’ schedules and work rules must conform to the nature, timing, and flow of ship traffic in a particular pilotage area. What is an effective and appropriate work schedule for a port where pilots typically work several assignments of relatively short duration during an “on” period may not work in a port or waterway with long duration pilotage runs. Those two types of situations present very different fatigue problems. To further compound the challenge, in many pilotage areas both situations are present. In addition, the duration of a particular assignment often may be much different than anticipated by the pilot and the dispatch service. These variables, over which the pilot and the pilot association have no control, have to be accommodated in the work rules.

Another thing we know is that the maritime industry has run out of no-cost responses to this problem. So-called fatigue “management” or “endurance” programs that are based on the premise that you can teach a mariner not to be tired -- usually while increasing his or her workload -- have proven to be of little value. The industry is now at the point where any effective measure to reduce the incidence of fatigue will require more workers and fewer hours of service. This has a cost. While we understand that the Board’s recommendations are not, and probably should not be, constrained by economic realities, the Board should recognize that any adjustments to pilots’ work schedules to reduce fatigue will be strenuously opposed by the parties that pay pilot fees. Indeed, we have provided the Marine Safety Office with examples of cases where pilots have been the subject of formal “neglect of duty” complaints by ship operators for refusing to work in violation of the minimal federal work hour restrictions.

In short, fatigue is a very real safety concern for pilots and other mariners. The Board is right to try to raise awareness of the issue. That effort, however, is hurt, not helped, by the EAGLE OTOME Report. This was not a fatigue accident, and the evident determination to force this into the fatigue category devalues the Report in the eyes of mariners and other maritime professionals.

The APA is aware that there is a body of scientific thought that suggests that transportation accident investigators should look at four “fatigue factors”: (1) sleep (acute loss and cumulative debt), (2) continuous hours of wakefulness, (3) circadian rhythms, and (4) sleep disorders.<sup>2</sup> The EAGLE OTOME Report considered these four factors, and, despite the absence of any direct evidence of fatigue, concluded that each of these factors indicated that the first pilot was fatigued at the time of the accident. This conclusion is not supported by the facts contained in the Report. Analyzing the four “fatigue factors” with a more objective consideration of the facts, it becomes apparent that the totality of the circumstances does *not* indicate that the first pilot was fatigued at the time of the accident. A brief discussion of the four “fatigue factors” and the evidence contained in the Report follows below:

**1. Sleep (acute loss and cumulative debt).** With regard to the first pilot’s sleep during the several days prior to the accident, following at least two nights in which the first pilot had a full eight hours of sleep,<sup>3</sup> the first pilot did conduct two piloting assignments, one of which went through the night and into the early morning. Prior to these two assignments, however, the first pilot had more than 40 hours off. Moreover, according to information contained in the Report, following these two piloting assignments and before the first pilot ever got aboard the EAGLE OTOME, he had more than eighteen hours of rest, including more than twelve hours of sleep.

When investigators are looking to determine a person’s acute sleep loss or cumulative sleep debt, these calculations “should be based on the person’s usual sleep requirement” and when a sleep debt does exist, recovering is not necessarily an “hour-for-hour payback of lost sleep that requires extended sleep.”<sup>4</sup> While the first pilot had some sleep loss and potentially some cumulative sleep debt from the two assignments several days before the casualty, his schedule following the two assignments (i.e., 18 hours rest and more than 12 hours of sleep between piloting assignments), combined with the usual sleep requirements he has become accustomed to as a maritime pilot (i.e., his individually adequate sleep), would have allowed him ample time to recover through restorative sleep.

**2. Continuous Hours of Wakefulness.** The manner in which the second fatigue factor, continuous hours of wakefulness, was considered in the Report also raises questions and concerns. The Report correctly notes that a full day before the EAGLE OTOME accident, the first pilot had an extended period of wakefulness -- although the APA would dispute, and the facts do not support, the Board’s assertion that the first pilot was without rest for 27 hours. The Report completely discounts, however, the fact that the first pilot had more than 40 hours off before his extended duties and more than 18

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<sup>2</sup> See, e.g., Rosekind, M.R., Gregory, K.B., Miller, D.L., Co, E.L., Lebacqz, L., & Brenner, M. (2008). *Examining Fatigue Factors in Accident Investigations: Analysis of Guantanamo Bay Aviation Accident*. Alertness Solutions, NASA Ames Research Center, and National Transportation Safety Board.

<sup>3</sup> As the Accident Report indicates, typically, 8 hours of sleep per night will provide most people enough rest to avoid being fatigued the next day; although some can sleep less without being fatigued.

<sup>4</sup> Rosekind, *et al.*, p. 2.

hours of rest before the EAGLE OTOME assignment, during which time he obtained over 12 hours of restorative sleep.

The Report speculates that this extended period of sleep by the first pilot “would almost certainly have been poor.” While this speculation may have been necessary to reach the Report’s conclusion that fatigue played an important role in this marine accident, there is no evidence to support it. To reiterate, the undisputed evidence in the Report indicates that the first pilot had 18 hours off and that he slept for more than 12 hours before reporting for his piloting assignment aboard the EAGLE OTOME.

We also note an inconsistency in the Board’s treatment of the first pilot’s rest and work schedule. The Board cites with apparent approval 46 CFR 15.1111(a), 46 USC 8104(n), and the STCW Convention and Code as examples of work and rest rules applicable in many maritime operations. Even though these rules do not apply to compulsory pilots who are not members of a ship’s crew (according to the Coast Guard), the first pilot’s rest and work schedule in the days preceding the accident would have been in compliance with these rules.

**3. Circadian Rhythms.** The APA recognizes that in the course of conducting an accident investigation, circadian rhythms – circadian lows (e.g., 0300-0500 and 1500-1700) in particular – can be an important consideration. According to experts, analyzing the circadian factor in a transportation safety context can be simple -- essentially determining “whether a critical phase of operation or significant performance requirement occurred during a window of circadian low.”<sup>5</sup> While there were periods during some of the preceding days when the first pilot safely conducted at least some operations during a circadian low, the accident in question occurred well outside either circadian low window. In fact, the first pilot boarded the EAGLE OTOME *after* his morning circadian low.

**4. Sleep Disorders.** How the Report addresses the diagnosis, severity and treatment of obstructive sleep apnea (OSA) also calls into question the Board’s objectivity, implies an eagerness to find fatigue as a casual factor, and contributes to an overall loss in the credibility of the Report. Citing only the results of a single polysomnography (sleep study) conducted two years before the accident,<sup>6</sup> the Report concludes that the first pilot had “moderate to severe” OSA. The Board’s remote “diagnosis” seems to be based on three results from the sleep study: sleep efficiency, latency to initial sleep, and apnea hypopnea index. According to the Report, these results are “all indicating moderate to severe obstructive sleep apnea.” Emphasis added. This statement is not supported by the facts.

The first pilot’s sleep efficiency score was over 95%. The majority of published polysomnography guidance indicates that a sleep efficiency score of greater than 90% is

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<sup>5</sup> Rosekind, *et al.*, p. 3.

<sup>6</sup> Given the potential uncertainty that could be created by personal variables in play with the polysomnography subject, relying on the results of a single, dated sleep study to make a “diagnosis” without further examination of the patient seems inexact at best.

considered normal. Further, OSA severity is generally defined as “moderate” for events per sleeping hour less than 30.<sup>7</sup> According to this sleep study, the first pilot’s hypopnea index was 26.1, indicating, at most, “moderate” OSA. Based on the results of this one rather dated sleep study, it seems a stretch for the Board to determine conclusively that the first pilot was afflicted with “severe” OSA.

Beyond the Board’s attempt to characterize the first pilot’s OSA as more severe than it likely was, the APA is also troubled by the Report’s description, as if it were an undisputed fact, of the first pilot’s OSA as “untreated” at the time of the accident. This description is not supported by the facts or the U.S. Coast Guard medical standards to which the first pilot was subject at the time of the accident. The APA understands that at the time of this accident the first pilot was in full compliance with the U.S. Coast Guard’s “Medical and Physical Guidelines for the Merchant Mariner Credential” and “Medical Certification Standards.”

Additionally, the first pilot was in compliance with current medical standards for continuous positive airway pressure (CPAP) device usage. According to experts in sleep science for the transportation industry, use of a CPAP device 100% of the time is not necessary to be in compliance with CPAP usage requirements or to receive the benefit of these devices. Based on current standards of practice as outlined by a panel of experts convened by the Federal Motor Carrier Safety Administration, acceptable CPAP use is “at least 4 hours of use per night on at least 70% of nights.”<sup>8</sup> According to this same expert panel, “there can be substantial variation between patients in their patterns of use of PAP, i.e., number of hours/night and number of days/week in which the device is used” and, significantly as it may pertain to the first pilot, “**some patients benefit from more limited use [of a CPAP device].**”<sup>9</sup> Emphasis added.

While the Report, through omissions and strained interpretation of facts, speculates that the first pilot was experiencing the effects of fatigue, the above discussion of the four “fatigue factors” indicates that this conclusion is far from clear and certainly not supported by solid evidence. It appears that the Board arrived at the conclusion that fatigue played a significant role in the EAGLE OTOME accident in spite of, not because of, the facts and evidence at hand. Again, forcing fatigue as a causal factor in this accident investigation, notwithstanding the lack of supporting evidence, undermines the credibility and utility of the accident investigation.

## **B) Double Standard**

There appears to be a double standard in how the Board approached the first pilot’s performance, medical fitness, and work schedule, and how the investigation looked at similar factors for the other licensed mariners involved in this marine accident.

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<sup>7</sup> *Clinical Guideline for the Evaluation, Management and Long-term Care of Obstructive Sleep Apnea in Adults*. Journal of Clinical Sleep Medicine. March 2009. P. 267.

<sup>8</sup> *Expert Panel Recommendations: Obstructive Sleep Apnea and Commercial Motor Vehicle Driver Safety*, Federal Motor Carrier Safety Administration, January 14, 2008. P. 11.

<sup>9</sup> *Id.* p. 11.

For instance there is little discussion of the tug or EAGLE OTOME masters' medical conditions, work hours, and broken sleep schedules; and there is virtually no analysis of these matters. The Board seems to have been quite willing to accept at face value the other mariners' descriptions, in general terms, of their sleep without the suspicion and questioning that it displayed in the treatment of the first pilot. Further, the Report does not address, or seems to go out of its way to "explain away," any potential shortcomings in, the performance of other licensed mariners, e.g., the tug master's delay in recognizing and potentially reacting to the EAGLE OTOME's sheer, the EAGLE OTOME master's delay in executing the first pilot's engine orders, the crew's delay in carrying out the first pilot's order to let go the starboard anchor, and the EAGLE OTOME master's accidentally placing the engines in "manual emergency stop" instead of full ahead during one of the most critical times leading up to the accident.

With respect to the last item, mariners and navigation experts who have reviewed the facts of the casualty have a much different view of the significance of the loss of engine power for 45 – 80 seconds<sup>10</sup> just before the allision of the EAGLE OTOME with the GULF ARROW. The important consideration is not, as the Report suggests, whether the pilot's full astern order during this period would have brought the vessel to a complete stop short of the GULF ARROW. Rather, a timely implementation of the order, which was prevented by the master's error, would have, at a minimum, changed the angle and force of the vessel's movement. In addition, the pilot's actions and decisions might have been much different if the master had told the pilot that he had shut down the engine.

There is another confounding aspect to the Board's unwillingness to address the master's error. The accidental pushing of the "manual emergency stop" button would seem to be exactly the type of cognitive and motor error that would raise a red fatigue flag. Given the Board's current focus on fatigue, why decline the opportunity to analyze the nature of that error? Would the Board have been so reluctant to examine the possible fatigue cause of the error and worked so hard to discount its role in the accident if it had been made by a pilot?

Whatever the contribution of the performance shortcomings by mariners other than the pilots to this accident, the Board's failure to engage in a meaningful discussion and analysis of them leads to the impression that the investigators were inappropriately targeting the state pilots and their performance. There is no question that pilots have a critical role in vessel navigation. A conning pilot directs the navigation of a vessel, subject to the master's overall command and ultimate responsibility for the vessel's safety. Nevertheless, a pilot cannot navigate a vessel alone (unlike a pilot of an airplane). The failure of a vessel's bridge team to perform their tasks correctly can be a causative

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<sup>10</sup> An experienced mariner and navigation expert who has reviewed the facts and written a report on the accident has calculated that the engine was without power for one minute and twenty seconds, not the 45 seconds estimated in the Report. The engine was restarted and the pilot's full astern order finally implemented only 10 seconds before the allision. As a practical matter, the pilot's full astern order was never carried out.

factor in a casualty. The Board should be willing to examine every person's performance with the same scrutiny and expectations.

### **C) 2-Pilot Guidelines**

The discussion in the Report concerning the so-called 2-pilot "Guidelines" is misleading and apparently the result of a factual misconception. This misconception has several unfortunate consequences.

The Report's description of the document entitled "Guidelines Governing Aboard Vessels Requiring Two Pilots When Transiting the Sabine-Neches Waterway" as being "in effect" at the time of the accident is not accurate. As the Board's investigators were told, the document has never been in effect. It was drafted sometime around 1990 by the then chairman of the Sabine Pilots as a concept paper. It was never adopted or even considered by the Association or the Commission. It does not appear in the minutes of any Association meeting. Until its existence was unearthed in the Board's investigation, most Sabine Pilots and the chairman and presumably the other members of the Pilot Commission were understandably unaware of it.

As the president of the Sabine Pilots testified, the best practices for 2-pilot jobs in the nearly two decades since the "Guidelines" was drafted rejects a "team" approach in favor of a "relief" approach. Those are the two basic types of 2-pilot jobs, and they are significantly different. The relief approach is typically used in longer pilotage runs, such as the intended transit of the EAGLE OTOME. As the president of the Sabine Pilots also testified, the objective of that type of 2-pilot system is to apportion the transit time between two individuals. This is a fatigue mitigation measure. It is not for the two pilots to work together as a team, and it is definitely not a pilot/co-pilot type of arrangement, as the Board apparently envisions.

The plan to which the two pilots on the EAGLE OTOME had agreed when the second pilot boarded was to "spell" each other, with the non-conning pilot available to assist if needed. This is the practice typically followed by all Sabine Pilots. The Board is certainly free to express an opinion that a team approach should always be used for 2-pilot jobs (although the APA would not agree with that opinion) or that the two pilots on the EAGLE OTOME should have abandoned earlier their previously agreed relief approach as the circumstances leading up to the casualty developed. The Board's use of the Guidelines or of BRM principles to criticize the two pilots for not following teamwork practices, however, is misleading and unfair. The fact is that the two pilots on the EAGLE OTOME did not follow the inoperative "Guidelines" and were not working together as a team because that was never their intention.

This erroneous premise that the two pilots intended, but failed, to work together as a team is the apparent basis for the Report's conclusion that the conning pilot was hampered by making a radio call while navigating the vessel and that this was a causal

factor in the loss of control over the vessel.<sup>11</sup> The Report even suggests that conning officers or conning pilots rarely, if ever, conn a vessel and talk on the bridge-to-bridge VHF radio at the same time. This is a mistaken impression. In the overwhelming majority of situations on bridges of ships, the conning officer is also primarily responsible for talking on the VHF radio and making passing arrangements with other vessels. This is the common practice across the maritime industry.

The Report would do a disservice to the industry and to navigation safety if one of its proffered lessons learned is that a conning officer should not conduct his or her own radio communications or that when two pilots are present on a bridge, the conning and radio communication tasks should be separated between them. This issue deserves more thought than the summary pronouncement in the Report. Having an individual other than the conning officer talk on the radio and make passing arrangements with other vessels, especially while attempting a series of quick succession maneuvers in a tight or congested waterway, has the potential to introduce confusion and delay. By the time the conning pilot tells the “radio” pilot what to say, the conning pilot could have already done it himself or herself and have conveyed exactly what he or she intended. This potential for error has to be measured against whatever benefit the Board sees in separating the communication and conning tasks. It is, in reality, a BRM issue that should be decided by experienced and knowledgeable professionals, who would consider the particular piloting circumstances in determining when and to what extent a non-conning pilot should make radio calls.

### **Conclusion**

Contrary to the dismissive assertion made by the Board in the Report, the APA is not simply an association focused only on advocating on behalf of individual pilots. The APA is recognized by local, state, federal, and international authorities as the leading authority on pilotage and piloting in the United States and as an active, effective force for enhancing maritime piloting standards, as well as navigation safety and marine environmental protection practices. In recognition of the fact that state-licensed pilots are critical to the safe, environmentally responsible, and efficient movement of vessels in and around bays, rivers, harbors, ports and coastal approaches in this country, the APA regularly communicates with, and facilitates discussion among, federal, state, and local regulatory authorities (including state pilot commissions) and local pilot associations with the aim of continually improving the safety and efficiency of the system. We will continue to carry out this important function.

Given the vital nature of pilotage service and operations, the APA, local pilot associations, individual pilots, and local/state oversight bodies consistently use marine casualty investigations – including but certainly not limited to NTSB reports – to review practices and procedures, develop “lessons learned”, and to improve overall pilotage

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<sup>11</sup> This represents an internal inconsistency in the Report. On pages 55-56, the Report concludes that the pilot’s alleged late initiation of the turn was due to the pilot talking on the radio, which “interfered with his ability to fully focus on conning the vessel.” On page 58, however, the Report argues quite strenuously that the alleged delay in starting the turn was caused by fatigue.

operations. Continual improvement has long been a hallmark of the state pilot system. Local oversight of pilotage, as envisioned by Congress, allows for improvements to be made quickly and in a way that addresses the unique needs of each local port, harbor and waterway. Casualty investigation reports have been valuable resources for the piloting profession (which includes pilot oversight bodies) in developing measures to enhance the state pilot system and address fatigue in what is necessarily (by law and by the realities of our “just-in-time” economy) a 24 hours-a-day, 365 days-a-year operation.

Such efforts by maritime professionals to use the lessons from accident investigations to address issues relating to fatigue are not aided – in fact these efforts are hampered – when a fatigue finding is promoted in an accident investigation in which fatigue clearly was not a factor. “Shoe-horning” fatigue as a casual factor into a marine casualty investigation, as well as treating different classes of licensed mariners differently during an accident investigation, serves only to undermine the credibility of these important accident investigation reports. The same is true of taking an obscure, inoperative draft document out of context, contrary to the evidence reviewed by the investigators, and presenting it as some sort of lodestar to guide piloting practices.

Both the Board and the maritime community benefit when the Board’s marine casualty investigation reports are recognized as credible, objective, and fair. The above comments are submitted with that goal in mind.

Subj: **NTSB Recommendation to APA - Eagle Otome Casualty**  
 Date: 12/15/2011 3:46:35 P.M. Eastern Standard Time  
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On November 4, 2011, the National Transportation Safety Board (NTSB) issued a "Safety Recommendation" to the APA stemming from its Accident Report titled, "Collision of Tankship *Eagle Otome* with Cargo Vessel *Gull Arrow* and Subsequent Collision with the *Dixie Vengeance* Tow, Sabine-Neches Canal, Port Arthur, TX, January 23, 2010." The NTSB Safety Recommendation letter to APA is attached and the entire Accident Report can be viewed at: <http://www.nts.gov/doclib/reports/2011/MAR1104.pdf>.

The APA will file a detailed response to this NTSB Accident Report indicating areas of agreement, as well as those of concern and disagreement. This broadcast email is limited only to a discussion of the NTSB's specific Safety Recommendation to the APA. The APA's response to the NTSB will be forwarded later.

In its Accident Report, the NTSB noted that the pilot involved in this marine accident did not always use the name of his vessel during radio transmissions. While this practice is not uncommon in maritime operations throughout the country and around the world, the NTSB recommended that the APA, "Advise your members to consistently identify vessels by name in bridge-to-bridge radio communication, as required by the Federal Communications Commission." Therefore, APA is forwarding Safety Recommendation M-11-22 to all APA-member pilot associations.

In any consideration of this Safety Recommendation, however, two points should be noted. First, the FCC, in promulgating the regulations referenced in the NTSB's recommendation (47 CFR §80.331), chose not to mandate precise formats that must always be used by shipboard

personnel in every communication. Rather, the operative portion of the regulation provides that vessels “transmitting on the designated navigational frequency must conduct communications in a format **similar to** those given [in the regulation].” Emphasis added. Although the format examples offered in the regulation use the vessel’s name, the “similar to” language suggests regulatory flexibility that would reflect the realities of maritime operations. The FCC was no doubt aware of the wide variety of unpredictable circumstances, types of vessels, nationalities of crews, and longstanding local practices and customs that could be encountered by bridge personnel involved in underway operations. The text of 46 CFR§80.331 is attached

Second, the NTSB’s Eagle Otome Report states that there was no evidence indicating that “not using the vessel’s name was a factor in the accident” nor was there any indication that the masters of the vessels involved were uncertain as to whether radio communications pertained to a particular vessel.

As all of you are aware, it has long been the practice of the APA and member pilot groups around the country that in any marine casualty in which a pilot or matters potentially relating to pilotage have any involvement, lessons learned are discussed in a professional dialog in order to continually improve the quality of state pilotage system in this country. In this spirit, the APA recommends that member pilot groups review and discuss the Accident Report, consider the NTSB’s Safety Recommendation in light of local port operations, and continue to assess how to improve your group’s pilotage operations, including radio communications and the application of 47 CFR § 80.331.

If you have any questions, please contact the APA office.

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# National Transportation Safety Board

Washington, DC 20594

## Safety Recommendation

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Date: NOV 04 2011

In reply refer to: M-11-22

Captain Michael R. Watson  
President  
American Pilots' Association  
499 South Capitol Street, SW  
Suite 409  
Washington, DC 20003

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The National Transportation Safety Board (NTSB) is an independent Federal agency charged by Congress with investigating transportation accidents, determining their probable cause, and making recommendations to prevent similar accidents from occurring. We are providing the following information to urge your organization to take action on the safety recommendation in this letter. The NTSB is vitally interested in this recommendation because it is designed to prevent accidents and save lives. Information supporting the recommendation is discussed below. The NTSB would appreciate a response from you within 90 days addressing the actions you have taken or intend to take to implement our recommendation.

### Background

The recommendation is derived from the NTSB's investigation of the January 23, 2010, accident in which the 810-foot-long oil tankship *Eagle Otome* collided with the 597-foot-long general cargo vessel *Gull Arrow* at the Port of Port Arthur, Texas. A 297-foot-long barge, the *Kirby 30406*, which was being pushed by the towboat *Dixie Vengeance*, subsequently collided with the *Eagle Otome*. The tankship was inbound in the Sabine-Neches Canal with a load of crude oil en route to an ExxonMobil facility in Beaumont, Texas. Two pilots were on board, as called for by local waterway protocol. When the *Eagle Otome* approached the Port of Port Arthur, it experienced several unintended heading diversions culminating in the *Eagle Otome* striking the *Gull Arrow*, which was berthed at the port unloading cargo.

A short distance upriver from the collision site, the *Dixie Vengeance* was outbound with two barges. The towboat master saw the *Eagle Otome* move toward his side of the canal, and he put his engines full astern but could not avoid the subsequent collision. The *Kirby 30406*, which was the forward barge pushed by the *Dixie Vengeance*, collided with the *Eagle Otome* and breached the tankship's starboard ballast tank and the No. 1 center cargo tank a few feet above the waterline. As a result of the breach, 862,344 gallons of oil were released from the cargo tank, and an estimated 462,000 gallons of that amount spilled into the water. The three vessels

remained together in the center of the canal while pollution response procedures were initiated. No crewmember on board any of the three vessels was injured.<sup>1</sup>

The National Transportation Safety Board determines that the probable cause of the collision of tankship *Eagle Otome* with cargo vessel *Gull Arrow* and the subsequent collision with the *Dixie Vengeance* tow was the failure of the first pilot, who had navigational control of the *Eagle Otome*, to correct the sheering motions that began as a result of the late initiation of a turn at a mild bend in the waterway. Contributing to the accident was the first pilot's fatigue, caused by his untreated obstructive sleep apnea and his work schedule, which did not permit adequate sleep; his distraction from conducting a radio call, which the second pilot should have conducted in accordance with guidelines; and the lack of effective bridge resource management by both pilots. Also contributing was the lack of oversight by the Jefferson and Orange County Board of Pilot Commissioners.

### Use of Vessel Name in Radio Communication

During the NTSB's investigation of the *Cosco Busan* accident in San Francisco, California,<sup>2</sup> investigators confirmed that at no point during the underway radio communication between the pilot and vessel traffic service (VTS) was the ship referred to by its name. Instead, the pilot and VTS simply used the pilot's designator, "Romeo," as identification. The *Cosco Busan*'s master and bridge crew were Chinese, and the master later told investigators that he was uncertain as to what ship the radio communication was referring. He said that without hearing his vessel's name during radio communication, it was difficult to discern whether the exchange was "private conversation" as opposed to operational and vessel-specific, and hearing the vessel name would have clarified that the communication pertained to him. During the *Cosco Busan* investigation, the NTSB also confirmed that in most U.S. ports, VTS uses the vessel's name in radio communication, but that in a few ports—including the Port of Oakland, from which the *Cosco Busan* departed—VTS and the pilots used the pilot designator or other terms as identification. As a result of this finding, the NTSB issued Safety Recommendation M-09-2 to the U.S. Coast Guard:

Revise your vessel traffic service policies to ensure that vessel traffic service communications identify the vessel, not only the pilot, when vessels operate in pilotage waters.

In a July 2009 response, the Coast Guard responded that it concurred with the intent of the recommendation and that it would review VTS's radiotelephone practices to determine whether nationwide communication protocols should be developed. As a result, the NTSB classified Safety Recommendation M-09-2 "Open—Acceptable Response" in November 2009.

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<sup>1</sup> For more information, see *Collision of Tankship Eagle Otome with Cargo Vessel Gull Arrow and Subsequent Collision with the Dixie Vengeance Tow, Sabine-Neches Canal, Port Arthur, Texas, January 23, 2010*, Marine Accident Report NTSB/MAR-11/04 (Washington, DC: National Transportation Safety Board, 2011), available at <http://www.nts.gov>.

<sup>2</sup> *Allision of Hong Kong-Registered Containership M/V Cosco Busan with the Delta Tower of the San Francisco-Oakland Bay Bridge, November 7, 2007*, Marine Accident Report NTSB/MAR-09/01 (Washington, DC: National Transportation Safety Board, 2009), available at <http://www.nts.gov>.

Following the *Eagle Otome* accident, the VTS Port Arthur supervisor confirmed to NTSB investigators that VTS Port Arthur uses the vessel name when communicating by radio. However, the first pilot on board the *Eagle Otome* did not refer to the ship by name in his radio communication with the *Dixie Vengeance* master. According to the Federal Communications Commission's "Bridge-to-Bridge Communication Procedure" at 47 *Code of Federal Regulations* (CFR) 80.331, the vessel name should be used in radio communication that takes place on designated navigational frequencies. The *Dixie Vengeance* master referred to his vessel by name but did not ask the first pilot for the name of the tankship. During the radio communication leading up to the accident, the *Dixie Vengeance* master referred to the *Eagle Otome* only as "inbound ship." This was similar to the way in which the first pilot had referred to the ship in his earlier radio communication with the towboat master ("first of two inbound tankers").

As the Chinese master of the *Cosco Busan* indicated, radio communication in a foreign language may be difficult for a bridge crew to comprehend, especially if the crew is not specifically concentrating on it. Considerable radio exchange can take place during the course of a long transit (between pilot and dispatcher, pilot to pilot, and general vessel-to-vessel communication) and frequently does not pertain to the navigation of that specific vessel at that exact moment. A bridge crew is therefore more likely to heed and take action when its vessel's name is called out. Had the *Eagle Otome* master and bridge crew heard the *Dixie Vengeance* master ask, "*Eagle Otome* lookin' okay?" as opposed to "Inbound ship lookin' okay?" they might have questioned the pilots about the call or answered the towboat master themselves when the pilots did not. The *Eagle Otome* master, an Indian national, did not indicate in postaccident interviews that he was uncertain whether the radio communication pertained to his vessel, nor does evidence indicate that the first pilot's not using the vessel's name was a factor in the accident. Nevertheless, the NTSB concluded that consistent use of a vessel's name in radio communication can help avoid confusion and enhance bridge team coordination.


Therefore, as a result of this accident investigation, the National Transportation Safety Board makes the following recommendation to the American Pilots' Association:

Advise your members to consistently identify vessels by name in bridge-to-bridge radio communication, as required by the Federal Communications Commission.  
(M-11-22)

The NTSB also issued safety recommendations to the U.S. Coast Guard, the Sabine Pilots Association, the Jefferson and Orange County Board of Pilot Commissioners, and governors of states and territories in which state and local pilots operate.

In response to the recommendation in this letter, please refer to Safety Recommendation M-11-22. If you would like to submit your response electronically rather than in hard copy, you may send it to the following e-mail address: [correspondence@ntsb.gov](mailto:correspondence@ntsb.gov). If your response includes attachments that exceed 5 megabytes, please e-mail us asking for instructions on how to use our Tumbleweed secure mailbox. To avoid confusion, please use only one method of submission (that is, do not submit both an electronic copy and a hard copy of the same response letter).

Chairman HERSMAN, Vice Chairman HART, and Members SUMWALT, ROSEKIND, and WEENER concurred in this recommendation.

A handwritten signature in black ink, appearing to be 'DAPH', with a long horizontal flourish extending to the right.

By: Deborah A.P. Hersman  
Chairman

**§ 80.331 Bridge-to-bridge communication procedure.**

(a) Vessels subject to the Bridge-to-Bridge Act transmitting on the designated navigational frequency must conduct communications in a format similar to those given below:

(1) This is the (name of vessel). My position is (give readily identifiable position, course and speed) about to (describe contemplated action). Out.

(2) Vessel off (give a readily identifiable position). This is (name of vessel) off (give a readily identifiable position). I plan to (give proposed course of action). Over.

(3) (Coast station), this is (vessel's name) off (give readily identifiable position). I plan to (give proposed course of action). Over.

(b) Vessels acknowledging receipt must answer "(Name of vessel calling). This is (Name of vessel answering). Received your call," and follow with an indication of their intentions. Communications must terminate when each ship is satisfied that the other no longer poses a threat to its safety and is ended with "Out".

(c) Use of power greater than 1 watt in a bridge-to-bridge station shall be limited to the following three situations:

(1) Emergency.

(2) Failure of the vessel being called to respond to a second call at low power.

(3) A broadcast call as in paragraph (a)(1) of this section in a blind situation, e.g., rounding a bend in a river.