U.S. Department of Homeland Security

United States Coast Guard

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DEC 19 2017

STEAM SHIP EL FARO (O.N. 561732) SINKING AND LOSS OF THE VESSEL WITH 33 PERSONS MISSING AND PRESUMED DECEASED NORTHEAST OF ACKLINS AND CROOKED ISLAND, BAHAMAS ON OCTOBER 1, 2015

ACTION BY THE COMMANDANT

The record and the report of the Formal Investigation convened to investigate the subject casualty have been reviewed. The record and the report, including the findings of fact, analysis, conclusions, and recommendations are approved subject to the following comments and the enclosure.

COMMENTS ON THE REPORT

1. The loss of the EL FARO and all 33 persons aboard was a tragic and preventable accident. I offer my sincere condolences to the families and friends of the mariners whose lives were lost. The Coast Guard will take appropriate action on all that we have learned from this investigation.

2. I thank the members of the Marine Board of Investigation (MBI) for their exhaustive work and independent recommendations. The MBI conducted nearly their entire investigation in public view via live video, audio and online forums, providing an unprecedented degree of transparency to their proceedings. As a result, some vessel owners and operators were able to apply lessons learned in near real time, enhancing the safety of their own operations.

3. While many factors contributed to this marine casualty, by far the most prominent was the Master's decision to sail the ship in close proximity to a Category 3 hurricane. There were multiple opportunities to take alternate, safer routes as the storm approached. There was adequate information available regarding the threat posed by hurricane Joaquin, despite the unusually unpredictable nature of the storm's path and intensity. There were warnings and recommendations from the mates on successive watches to alter course to avoid the storm, but they were not heeded. The combination of these actions and events placed the EL FARO in harm's way near the eye of the storm, and subjected her to wind and sea conditions that prudent mariners avoid. In the case of the EL FARO, those conditions led to a chain of events, the effects of which were irreversible.

4. The ROI notes numerous failures on the part of TOTE Services, Inc. (TSI) to properly fulfill its obligations under the International Safety Management (ISM) Code. These include substandard materiel conditions aboard EL FARO's sistership, failure to provide basic safety training to the onboard riding gang, failure to conduct proper lifeboat drills, among others.

Most relevant to this casualty, however, was the company's failure to provide the necessary shoreside support for the master to perform his duties safely. The overriding authority of the master does not absolve TSI of their obligation under the ISM Code to provide such support. While TSI's Operation Manual - Vessel (OMV) did address heavy weather, it placed the entire responsibility for weather planning and preparation on the master, which is inconsistent with fundamental stated objectives of the ISM Code. According to TSI's former Designated Person Ashore (DPA), the company deliberately abandoned the practice of assisting masters with heavy weather voyage planning, storm system monitoring, and avoidance. [1] Understanding that the company routinely provided liner service in an area prone to hurricanes during hurricane season, the decision to abandon such a crucial support system is irresponsible and inexcusable.

5. The Coast Guard entrusts classification societies to carry out an extensive list of delegated functions that impact the safety of U.S. ships. The Coast Guard relies most heavily on the functions performed by the American Bureau of Shipping (ABS), an organization that provides vessel classification services for 92% of the U.S. deep draft fleet. Throughout the proceedings of the MBI, it was revealed that ABS failed to uncover or otherwise resolve longstanding deficiencies that adversely affect the safety and seaworthiness of vessels on multiple occasions. This casualty is a call to action. ABS can and must do better.

6. This casualty did not occur due to a lack of standards or requirements; rather it was the result of poor seamanship compounded by failure of the safety framework that should have triggered a series of corrective actions that likely would have prevented it. The Coast Guard, after the vessel owner and ABS, was the final element of the safety framework, responsible for ensuring that minimum standards were met. A competent and functional national administration is the cornerstone of maritime safety. As the lead agency of the U.S. Flag Administration, the Coast Guard is ultimately responsible to monitor the performance of third parties that perform delegated functions and also to guarantee the effectiveness of vessel inspections and surveys. Yet the Coast Guard failed to adequately oversee the third party in this case, and the investigation reveals that the Coast Guard has not sustained the proficiency and policy framework to do so in general. The Coast Guard is fully committed to rectifying the shortcomings that led to these failures.

7. As the pace and complexity of maritime commerce and operations have increased, third parties have enabled the regulatory regime to evolve and keep up with increasing demand. Third party programs, such as the Alternate Compliance Program (ACP), have transitioned from an option to a necessity upon which both the Coast Guard and the maritime industry rely. Responding to the recommendations on the 1983 capsizing and sinking of the S.S. MARINE ELECTRIC, the Commandant dissented with the MBI and concluded that the poor quality of surveys aboard that vessel could not be justifiably expanded to condemn the entire system of third-party delegations. The same is true in this case. The Coast Guard relies far more heavily on third parties today than at the time of the MARINE ELECTRIC casualty. Now, more than ever, the system requires reform. The Coast Guard must, and will, establish a risk-based and enduring policy framework that is simpler to execute and enables more robust oversight of delegated functions. Further, recognizing that the ACP is only one

[1] NTSB Interview transcript, Former Manager of Safety and Operations, DPA, March 27, 2017.

program among many that rely on delegation of technical functions and services to third parties, it is imperative that the lessons learned be applied universally to all programs that rely on a similar structure.

8. Parties in Interest and the families of the crew of the EL FARO were invited to submit comments to the Coast Guard on the MBI's Report of Investigation for my consideration. The results of my review and consideration of those comments regarding the findings of fact, analysis and conclusions is attached as an enclosure.

9. The MBI could not determine whether or not the sea suction piping of the emergency fire pump installed in cargo hold #3 was damaged by cargo that may have broken free in the hold, potentially contributing to flooding. Because of the potential for such damage, however, it is appropriate to ensure that vital systems and through hull penetrations fitted in cargo holds be protected from physical damage. The Coast Guard will consider requiring such protection in future regulatory initiatives.

10. This is a call to action for the entire maritime community. TOTE, ABS, and the Coast Guard must learn and move with a sense of urgency. This tragic story points to the need for a strong and enduring commitment at all elements of the safety framework. First and foremost, the company must commit to safety culture by embracing their responsibilities under the ISM Code. Secondly, Recognized Organizations (ROs) must fully and effectively perform their duties and responsibilities. Finally, the Coast Guard must, and will, provide the final safety net with sustainable policy, oversight, and accountability.

ACTION ON RECOMMENDATIONS

Safety Recommendation #1 – High Water Alarms. It is recommended that Commandant direct a regulatory initiative to require high water audio and visual alarms, capable of providing audible and visual alarms on the navigation bridge, in cargo holds of dry cargo vessels. Furthermore, it is recommended that Commandant work with the International Maritime Organization (IMO) to amend the applicability of SOLAS Chapter II-1/25 (2015 consolidated) to include all new and existing multi-hold cargo ships.

Action: I concur with this recommendation. Cargo hold flooding detection and audible/visual alarms on the navigation bridge should be fitted aboard new and existing cargo vessels, as recommended. This would be a practical means for the crew to detect and mitigate possible flooding conditions, particularly when heavy weather precludes safe access to these spaces. The Coast Guard will pursue a domestic regulatory initiative and work with the IMO to expand the applicability of SOLAS Chapter II-1/25 to include new and existing multi-hold cargo ships other than bulk carriers, which are already addressed separately.

Safety Recommendation #2 – Ventilators and Other Hull Openings for Cargo Ships. It is recommended that Commandant direct a review of U.S. regulations, international conventions, and technical policy to initiate revisions to ensure that all ventilators or other hull openings, which cannot be closed watertight or are required to remain normally open due to operational

reasons such as continuous positive pressure ventilation, should be considered as down-flooding points for intact and damage stability. Additionally, fire dampers or other closures protecting openings required to remain normally open due to operational reasons such as continuous positive pressure ventilation should not be considered weathertight closures for the purpose of the applicable Load Line Convention. These changes should apply to new and existing vessels.

Action: I partially concur with this recommendation. Existing regulations already require that all hull openings below the freeboard deck be fitted with watertight closures on all vessels. For vessels constructed after June 2016, SOLAS II-1/Reg 7-2 (in conjunction with the Unified Interpretation per MSC.1/Circ.1539) requires that ventilation for engine rooms and emergency generator rooms be considered as unprotected down-flooding points for damage stability purposes even if fitted with a closure. The Coast Guard will consider extending this interpretation to ventilation in RO-RO cargo spaces on both new and existing vessels, since ventilation systems for such spaces are generally of similar design to that installed in engine rooms and emergency generator rooms. However, for hull openings situated on any deck above the freeboard deck, there is no evidence to support that current closure requirements are insufficient. With regard to dual-purpose fire dampers, existing Coast Guard policy requires that they be strongly constructed, gasketed, and capable of being secured weathertight. However, it is noted that such dual purpose closures can cause confusion amongst the crew and may be impractical in situations where both flooding and fire are of concern. The company's Safety Management System (SMS) should ensure that crew members are familiar with the location of hull openings and their closures, to include appropriate operational procedures in their SMS. The Coast Guard will address this matter in the flag state action described in the planned action on Safety Recommendation #15.

Safety Recommendation #3 – Addressing Safety Concerns Related to Open Lifeboats. It is recommended that Commandant initiate a Legislative Change Proposal and direct a regulatory initiative to eliminate open top gravity launched lifeboats for all oceangoing ships in the U.S. commercial fleet. As an immediate interim safety measure, it is recommended Commandant direct all Officers in Charge of Marine Inspection (OCMIs) to conduct a concentrated inspection campaign on all existing vessels outfitted with gravity launched open lifeboats, including a Coast Guard supervised launching and underway operational test of every lifeboat in service. This concentrated inspection campaign should also ensure that companies have adequately identified and addressed the hazards related to operating with open top gravity launched lifeboats in their identified Safety Management System (SMS) risks.

Action: I concur with the intent of this recommendation. The Coast Guard agrees that open lifeboats should be phased out of operation and supports proposals from vessel owners and operators or legislation to accomplish this. In 1989, the Coast Guard proposed retrofitting all oceangoing vessels with enclosed lifeboats by July 1, 2001 (54 FR 16236). However, due to cost-benefit and competiveness concerns, and insufficient support at IMO for a similar U.S. proposal, the requirement was removed in the Interim and subsequent Final Rule (61 FR 25276 and 63 FR 52817, respectively). For existing vessels fitted with open lifeboats, the Coast Guard will initiate a concentrated inspection campaign to ensure that the lifeboats remain in serviceable condition. The inspection will include the launching, maneuvering and recovery of open lifeboats, and the review of related SMS procedures.

Safety Recommendation #4 – Indicators for Watertight Closures on Bridge Alarm Panels. It is recommended that Commandant direct a regulatory initiative to require open/close indicators on the bridge of all existing cargo ships, for all watertight closures that are identified as watertight on the conditions of assignment for assignment of load line form for unmanned and cargo spaces. Furthermore, it is recommended that Commandant work with the IMO to amend the applicability of paragraph 3 of SOLAS II-1/13-1 (2015 consolidated) to include all existing cargo ships. This change would require open/close indicators on the bridge of all existing cargo ships, for all watertight closures (e.g., doors, scuttles, fire dampers) that are identified as watertight on the conditions of assignment for assignment of load line form for unmanned compartments and cargo spaces.

Action: I concur with the intent of this recommendation. All cargo ships constructed after 1992 are required to meet damage stability criterion and existing regulations require that most watertight doors, access hatches and external openings be fitted with open/closed indicators on the bridge. However, vessels built before 1992 are not required to meet damage stability criterion and therefore lack regulatory established watertight boundaries. Thus, there is no defined list of "watertight" openings in regulation on which indicators should be fitted. Accordingly, load line conditions of assignment forms do not necessarily identify all watertight fittings (e.g. the load line conditions of assignment form for the EL FARO did not indicate that the cargo hold access/escape scuttles on the 2nd deck were to be watertight fittings). Notwithstanding the absence of damage stability regulations prior to 1992, the concept of watertight integrity has always been fundamental from a ship design and operational standpoint. In the flag state guidance described in the planned action on Safety Recommendation #15 below, the Coast Guard will recommend that companies identify, in their SMS, watertight and weathertight openings which should be remotely monitored, and the circumstances under which they should be opened or closed.

Safety Recommendation #5 – Requirement for Closed Circuit Television (CCTV) Camera Installation in Stowage Areas. It is recommended that Commandant direct a regulatory initiative to require the installation of CCTV cameras to monitor unmanned spaces from the bridge cargo vessels, such as cargo holds and steering compartments. Furthermore, it is recommended that Commandant work with the IMO to create a new requirement to install and utilize CCTV cameras, or other similar technology, in cargo stowage areas on cargo ships.

Action: I concur with the intent of this recommendation. Cargo hold water detection with remote bridge alarms (see Action on Safety Recommendation #1), coupled with existing fire detection requirements, will provide early notification of the most common anomalies and give the crew an opportunity to investigate conditions in the hold. CCTVs could, under certain conditions and space configurations, provide valuable information about the condition of unmanned spaces. The Coast Guard has no objection to the use of CCTVs to supplement other means to monitor the condition of such spaces. If certain unmanned spaces would be inaccessible under adverse weather conditions, other means of monitoring the space may be appropriate, and should be addressed in the Safety Management System risk assessment.

Safety Recommendation #6 – Vessel Weight Change Tracking. It is recommended that Commandant direct a regulatory initiative to require that a company maintain an onboard and shore side record of all incremental vessel weight changes, to track weight changes over time so that the aggregate total may be readily determined.

Action: I concur with the intent of this recommendation. The preferred method to accurately determine the impact of incremental weight changes on a vessel is to conduct a periodic deadweight survey. SOLAS already requires a full deadweight survey for passenger vessels at least every five years. The Coast Guard has attempted to implement these requirements in regulation twice in the past without success. We have contracted with the National Academy of Sciences, Transportation Research Board, Marine Board, to identify and recommend appropriate updates to 46 CFR Subchapter S – Subdivision and Stability to improve its clarity and consistency with internationally recognized standards. In the next revision of Subchapter S, the Coast Guard will again propose requirements for periodic deadweight surveys for all vessels required to undergo a stability test.

Safety Recommendation #7 – Approval of Software for Cargo Loading and Securing. It is recommended that Commandant direct a regulatory initiative to require review and approval of software that is used to perform cargo loading and securing calculations. Furthermore, it is recommended that Commandant work with the IMO to implement international requirements for review and approval of such software.

Action: I concur with the intent of this recommendation. There is no causal link between this casualty and unapproved Cargo Loading and Securing software. However, the Coast Guard agrees that any software used to evaluate cargo loading and securing arrangements must produce results consistent with the Loading Manual, if required, and the Cargo Securing Manual. The responsibility for the accuracy of such software ultimately lies with the company.

Safety Recommendation #8 - Review and Approval of Stability Software. It is recommended that Commandant update policy to address Coast Guard review and approval of stability software, and delegate review and approval authority to ACSs, where appropriate. This should include establishing specific policy and assigning technical requirements for review and approval of stability software by the Coast Guard, which may be required to review and approve such software for vessels that do not fall under the Alternate Compliance Program (ACP) or Navigation and Vessel Inspection Circular (NVIC) 3-97 authorities.

Action: I concur with this recommendation. The Coast Guard will update policies related to both Coast Guard and Authorized Classification Society (ACS) review and approval of stability software.

Safety Recommendation #9 – Float-free Voyage Data Recorder (VDR) Equipped with an Emergency Position Indicating Radio Beacon (EPIRB). It is recommended that Commandant direct a regulatory initiative to require that all VDR capsules be installed in a float-free arrangement, and contain an integrated EPIRB for all domestic vessels currently required to be

equipped with a VDR. Furthermore, it is recommended that Commandant work with the IMO to amend SOLAS V/20 (2015 consolidated) to require this VDR configuration for existing vessels.

Action: I partially concur with this recommendation. U.S. vessels subject to SOLAS must carry a VDR and this requirement was retroactively applied to existing vessels. While the requirement to carry a VDR was applied retroactively, the non-mandatory performance guidelines, including those involving float free arrangements and locating signals, were not. VDR performance guidelines vary based on a vessel's date of construction. The most recent VDR performance guidelines apply to installations after July 1, 2014, and include criteria for float free medium. The Coast Guard supports the current SOLAS VDR carriage requirements and performance guidelines for existing vessels, and will propose at IMO that all new VDR installations be *required* to float free and contain appropriate means to indicate location, which may include an integrated EPIRB.

Safety Recommendation #10 – Locating and Marking Objects in the Water. It is recommended that Commandant direct an examination of the reliability rate of SLDMBs and other similar technology used during Coast Guard Search and Rescue operations. Additionally, the Coast Guard should develop pre-deployment protocols to conduct circuit testing on beacons prior to deploying them on-scene.

Action: I concur with the intent of this recommendation. The Coast Guard already has a program to evaluate the reliability of Self-Locating Datum Marker Buoys (SLDMBs) on a continual basis. The previous version of the SLDMB, which was in use by the Coast Guard at the time of the casualty, had a success rate ranging from 30% to 50%, depending on the manufacturing batch. Those devices have been taken out of service and replaced with the latest version, which has demonstrated a success rate of 92%. SLDMBs are commercially designed and produced. The Coast Guard will continue to work with manufacturers to improve SLDMB functionality and increase their reliability, and will explore the possibility of pre-deployment self-testing capability.

Safety Recommendation #11 – Attachable Beacon for Assisting in Relocating Search Objects that are Initially Unrecoverable. It is recommended that Commandant identify and procure equipment that will provide search and rescue units the ability to attach a radio or Automated Identification System/strobe beacon to a found search object that is not immediately retrievable. This beacon should be able to be quickly activated and attached to the object, and have a lanyard of sufficient length to keep the beacon on the surface of the water if the object sinks below the surface.

Action: I concur with this recommendation. The ability to mark and track the position of floating objects in the water would benefit several Coast Guard missions. While not designed for this purpose, existing Coast Guard policy provides for the use of SLDMBs to mark such objects. The Coast Guard has identified several products that are better suited for tracking unrecoverable objects and is currently evaluating acquisition options.

Safety Recommendation #12 – Personal Locator Beacon Requirement. It is recommended that Commandant direct a regulatory initiative to require that all Personal Flotation Devices on oceangoing commercial vessels be outfitted with a Personal Locator Beacon.

Action: I concur with the intent of this recommendation. The Coast Guard recognizes the importance of timely and accurate detection and location of persons in the water. The Coast Guard is working with various national and international standards development organizations, including the International COSPAS-SARSAT Programme, to identify the best mechanisms for integrating distress signaling and location technology into personal lifesaving appliances. Once an appropriate standard is established, we will consider mechanisms for implementation.

Safety Recommendation #13 – Anonymous Safety Reporting to Shore for Ships at Sea. It is recommended that Commandant direct the development of a shipboard emergency alert system that would provide an anonymous reporting mechanism for crew members to communicate directly with the Designated Person Ashore or the Coast Guard while the ship is at sea. The system would be in place to report urgent and dire safety concerns that are not being adequately addressed onboard the ship or by shore based company resources in a timely manner.

Action: I concur with the intent of this recommendation. There already are requirements which, if followed, provide crew adequate means for contacting shore. As required by the ISM Code, the SMS should have defined levels of authority and lines of communication between, and amongst, shore and shipboard personnel. Also, to provide for the safe operation of the ship, the ISM Code requires a designated person ashore with direct access to the highest level of management. A fully implemented SMS would have provided mechanisms for the crew to report safety concerns. Furthermore, with respect to safety concerns, the Coast Guard, in agreement with the Occupational Health and Safety Administration (OSHA), has authority to protect seafarers from retaliation for filing safety complaints pursuant to 46 USC 2114. Finally, the Maritime Labour Convention (MLC) 2006, requires that companies maintain onboard complaint procedures (MLC Regulation 5.1.5). While the U.S. is not signatory to the MLC, the Coast Guard has created a voluntary compliance mechanism that most U.S. companies operating oceangoing ships have chosen to implement. In fact, while the EL FARO did not hold an MLC Certificate of Voluntary Compliance, such certificates have been issued to numerous other vessels operated by TSI.

Safety Recommendation #14 – National Oceanographic and Atmospheric Administration (NOAA) Evaluation of Forecast Staffing and Products for Maritime Interests. It is recommended that Commandant request that NOAA evaluate the effectiveness and responsiveness of current National Weather Service (NWS) tropical cyclone forecast products, specifically in relation to storms that may not make landfall but that may impact maritime interests. To improve service to marine stakeholders the evaluation should consider the inclusion of past track waypoints for the tropical system for a period of 48 hours and a graphical depiction of the forecast model track of the best performing prediction models.

Action: I concur with this recommendation. The Coast Guard will engage with NOAA regarding their weather forecast products and delivery to ensure optimal service to maritime stakeholders.

Safety Recommendation #15 – Clarification of Flag State Expectations for SMS Implementation. It is recommended that Commandant direct the development and implementation of policy to make it clear that the Coast Guard has a shared responsibility to assess the adequacy of a company's SMS. This responsibility includes, but is not limited to, assessing identified risks and contingency plans (as described in IMO Resolution A.1072(28)), and ensuring that the duties, authorities, and qualifications of the Designated Person Ashore and other shore side management who support vessel operations while underway are specifically described.

Action: I partially concur with this recommendation. The responsibilities of the company, the flag state, and any recognized organizations acting on their behalf are sufficiently described in the ISM Code and the guidelines provided in IMO Resolution A.1071(28). The responsibilities, qualifications, training and experience of the DPA are adequately defined in the ISM Code and MSC-MEPC.7/Circ.6. ISM Code (3.2) specifically requires that the company define and document the responsibility, authority, and interrelation of all personnel. While the company is responsible to develop the content of their SMS, the Coast Guard is ultimately responsible to ensure that the requirements of the ISM Code are fully and effectively implemented. The Coast Guard will promulgate supplemental flag state guidance regarding the development, implementation, and verification of SMSs. This guidance will include provisions for assessing identified risks and developing contingency plans for emergency shipboard situations (e.g. heavy weather procedures, damage control information, closure of watertight and weathertight openings, etc.), as well as provisions for the Coast Guard to issue observations and identify potential non-conformities.

Safety Recommendation #16 – Damage Control Information for Existing Cargo Vessels. It is recommended that Commandant direct a regulatory initiative to require that all cargo ships have a plan and booklets outlining damage control information. Furthermore, it is recommended that Commandant work with the IMO to amend the applicability of SOLAS Chapter II-1/19 (2015 consolidated), to apply to all existing cargo ships, ensuring these ships have the damage control information.

Action: I concur with the intent of this recommendation. The Coast Guard agrees that all oceangoing ships should be prepared to mitigate the effects of damage incurred at sea. Since 1992, SOLAS has required that comprehensive damage control information be provided aboard cargo ships (see SOLAS 90 regulations II-1/23-1 and II-1/25-8 and SOLAS 2009 II-1/19). The IMO decided not to apply these standards retroactively. Similarly, U.S. ships constructed after 1992 are required to have similar information in their stability booklets in accordance with 46 CFR 170.110, including guidance for the safe operation of the vessel under emergency conditions. The most expeditious means to provide appropriate damage control information aboard ships built before these standards became effective is for the company to include appropriate operational procedures in their SMS. The Coast Guard will address this matter in the flag state guidance described in the planned action on Safety Recommendation #15 above.

Safety Recommendation #17 – Ship Specific Damage Control Competency. It is recommended that Commandant direct a regulatory initiative to update 46 CFR to establish damage control training and drill requirements for commercial, inspected vessels. Furthermore, it is recommended that Commandant work with the IMO to amend SOLAS to establish similar requirements.

Action: I concur with the intent of this recommendation. 46 CFR 11.307 already requires that officers at the management level be trained in advanced stability, and 11.309 requires that officers at the operational level be trained in stability and ship construction. The STCW standards, incorporated by reference in 46 CFR Part 11, specifically require that management level members of the crew aboard seagoing vessels meet the standard of competence in Section A-II/2 of the STCW Code, which includes developing emergency and damage control plans and the handling of emergency situations. In addition, 46 CFR 15.405 requires that each credentialed crewmember must become familiar with the relevant characteristics of the vessel appropriate to his or her duties and responsibilities, including emergency duties and responsibilities, prior to assuming those duties.

Safety Recommendation #18 – Evaluation of Mariner Training Institutions and Coast Guard Merchant Mariner Credentialing Process. It is recommended that Commandant direct a review of the EL FARO VDR transcript and this Report of Investigation, specifically focusing on the effectiveness of the Coast Guard credentialing exams and third party provided training including navigation simulators, heavy weather avoidance, cargo lashing/securing, stability, damage control, and bridge resource management. The Coast Guard should use the review to identify potential areas and competencies needing improvement and expeditiously develop a plan to implement those findings into the mariner credentialing process.

Action: I concur with this recommendation. STCW, as implemented by Coast Guard regulations in 2010 and 2013, already requires competency in voyage planning (to include severe weather conditions), cargo handling and stowage (to include lashing, securing, and stability), responding to emergencies (to include damage control), and bridge resource management. The Coast Guard has already effectively implemented training for these required competencies into the merchant mariner credentialing process. The current training process is sufficient in most areas. However, following a review of the ROI and VDR transcript, the Coast Guard has identified two areas where the process could be improved.

First, the Coast Guard will provide policy guidance to approved maritime training schools offering management level training in advanced meteorology to ensure the curriculum includes the following topics: characteristics of weather systems, including tropical revolving storms; advanced meteorological concepts; the importance of sending weather observations; heavy-weather preparations; use of technology to transmit and receive weather forecasts (such as NAVTEX or weather routing providers); and, ship routing services (capabilities and limitations). Additionally for management level training in advanced ship handling, the Coast Guard will ensure the training includes ship maneuvering using advanced simulators in heavy weather, and launching of lifeboats and liferafts in heavy weather.

Second, the Coast Guard will provide policy guidance to approved maritime training schools offering operational level training in meteorology to ensure it includes the following topics: characteristics of weather systems, weather charting and reporting, importance of sending weather observations, sources of weather information, and interpreting weather forecast products.

Safety Recommendation #19 – Electronic Records and Remote Monitoring of Vessels at Sea. It is recommended that Commandant direct a regulatory initiative to require electronic records and periodic electronic transmission of records and data to shore from oceangoing commercial ships. This requirement would include records such as bridge and engine room logs, Standards of Training Certification and Watchkeeping (STCW) records, significant route changes, critical alarms, and fuel/oil records. The regulation should ensure Coast Guard access to these records regardless of their location. Furthermore, it is recommended that Commandant work with the IMO to amend SOLAS to require this same electronic transmission of records from all oceangoing commercial ships.

Action: I do not concur with this recommendation. The findings of this investigation do not provide sufficient justification for the recommended action.

Safety Recommendation #20 – Prevention Training Course for Prospective Coast Guard Sector Commanders and Deputies. It is recommended that Commandant explore adding an OCMI segment to Training Center Yorktown's Sector Commander Indoctrination Course for prospective officers who do not have the Prevention Ashore Officer Specialty Code, OAP-10. The recommended OCMI training segment would be similar to the additional Search and Rescue (SAR) Mission Coordinator Course that is currently required for prospective Sector Commanders and Deputies who lack previous SAR experience.

Action: I concur with this recommendation. Although there is a segment on OCMI authorities in the existing Sector Commander's indoctrination course, the Coast Guard will expand and enhance this training and related qualification procedures as necessary to ensure that Sector Commanders, or their designee, are qualified, fully understand their responsibilities, and are equipped to properly discharge or delegate their OCMI authorities.

Safety Recommendation #21 – Coast Guard Oversight of ACSs that Conduct ACP Activities. It is recommended that Commandant update NVIC 2-95 and Marine Safety Manual Volume II to require increased frequency of ACS and Third Party Organizations (TPOs) direct oversight by attendance of Coast Guard during Safety Management Certificate and Document of Compliance audits. Additionally, the Coast Guard shall perform a quality audit specific to the ACS representation and performance on U.S. flag vessels. The Coast Guard personnel conducting the oversight should be fully trained and certified to conduct audits, and given clear authority to issue non-conformities to a vessel, company, or ACS.

Action: I concur with this recommendation. In its capacity as the lead agency for the U.S. flag administration, the Coast Guard must maintain adequate oversight of all delegated functions, including those SMS verification functions that have been delegated to an RO. However, rather than arbitrarily increasing oversight frequency, the frequency of Coast

Guard attendance at SMS verifications will be risk based and data-driven. The Coast Guard will enhance its data systems, develop an SMS oversight policy, refine internal risk models, and establish key performance indicators. These indicators will be used to direct additional oversight of ACS performance. In addition, as described in the RO Code, the Coast Guard will establish a process to conduct Vertical Contract Audits to ensure proper execution of delegated functions. Finally, the Coast Guard will ensure that Marine Inspectors are trained in the ISM Code and SMS audits, and will create a process to identify potential nonconformities and refer them to the RO for resolution.

Safety Recommendation #22 – ACP Efficiency and Manageability. It is recommended that Commandant direct a regulatory initiative to revise 46 CFR § 8.430 in order to eliminate the use of U.S. Supplements that currently exist for each ACS authorized to conduct all delegated activities. The regulatory revision should clarify that ACS personnel shall default to 46 CFR requirements in circumstances identified in the Critical Ship Safety Systems Table in the Federal Register on February 13, 1998 (63 FR 7495).

Action: I partially concur with this recommendation. The original intent of the U.S. Supplement was to capture those rules or regulations that existed in the CFR but were not embodied in either the ACS Rules or the international Conventions, or to provide interpretation where certain items were left "to the satisfaction of the Administration." However, through IMO engagement and convergence of IACS members' rule sets, the gaps between U.S. regulations and international standards have largely been closed. Further, as additional ACS's were authorized to participate in the ACP, inconsistency between the supplements of the various ACS's, multiple versions of the same supplement, and the lack of consistent reviews/updates has led to an anthology of supplements that have created more confusion than clarity. The Coast Guard will work with ACP authorized ACSs to create a single U.S. supplement primarily focused on critical systems.

Safety Recommendation #23 – ACS Accountability and Transparency. It is recommended that Commandant establish and publish an annual report of domestic vessel compliance. This report shall include domestic vessel no-sail rates for each type of inspected subchapter, and a methodology for associating a Coast Guard-issued no-sail control action with an ACS, for vessels found to have deficiencies or major non-conformities that were misclassified, or not previously identified during an ACS-led inspection or survey.

Action: I concur with this recommendation. The Coast Guard will issue an annual domestic vessel compliance report, as recommended. This report will include relevant vessel, ACS and RO performance statistics to ensure full transparency of Coast Guard oversight activities.

Safety Recommendation #24 – ACS Surveyor Performance and Interactions with OCMIs. It is recommended that Commandant direct the implementation of a policy requiring that individual ACS surveyors complete an assessment process, approved by the cognizant OCMI, for each type of delegated activity being conducted on behalf of the Coast Guard. The assessment shall ensure vessel surveys and audits meet the Coast Guard marine inspection standard. If an OCMI determines that an ACS surveyor's performance is substandard, that OCMI should be given the authority to revoke the Surveyor's authority to conduct surveys on their behalf.

Action: I partially concur with this recommendation. As is true of classification societies working on behalf of any flag administration, ACS surveyors performing delegated functions on behalf of the Coast Guard must be sufficiently trained to apply and determine compliance with relevant standards as interpreted by the flag administration. Under the terms of the RO Code and their individual agreements with the Coast Guard, ACSs are responsible to ensure that surveyors are sufficiently trained. Further, the RO Code specifically requires that flag states verify and monitor the adequacy of RO performance via assessment of their quality management system, to include surveyor training. The Coast Guard will establish a procedure to assess the effectiveness of ACS surveyor training programs, and will implement policy to ensure appropriate corrective actions are taken when the Coast Guard identifies inadequate ACS performance. This policy will include a provision to revoke an individual surveyor's authority to conduct surveys on U.S. Flag vessels. These procedures and policies will be implemented Coast Guard wide to ensure consistency across all OCMI zones.

Safety Recommendation #25 – Competency for Steamship Inspections. It is recommended that Commandant direct a study to explore adding a Steam Plant Inspection course to the Training Center Yorktown curriculum. The course should be required for Coast Guard Marine Inspectors and made available to ACS surveyors who conduct inspections on behalf of the Coast Guard. The steam inspection course could serve as an interim measure until an Advanced Journeyman Course covering steam vessel inspections is implemented (please see Safety Recommendation #26).

Action: I concur with this recommendation. The Coast Guard recently created and convened a steam plant inspection training program, and is in the process of refining the course before integrating it into the larger marine inspection training framework and qualification procedures. To further improve knowledge, communication, and coordination between Coast Guard marine inspectors and ACS surveyors, the course will be made available for surveyor enrollment on a space available basis.

Safety Recommendation #26 – Competency for Marine Inspections and ACS Surveyors Conducting Inspections on Behalf of the Coast Guard. It is recommended that Commandant direct the addition of an Advanced Journeyman Inspector course to the Training Center Yorktown curriculum. The course should cover ACS oversight, auditing responsibilities, and the inspection of unique vessel types. The course should be required for senior Coast Guard Marine Inspectors and made available to ACS surveyors who conduct inspections on behalf of the Coast Guard.

Action: I concur with this recommendation. The Coast Guard will establish an Advanced Journeyman Inspector course to provide advanced training on alternate inspection programs, third party oversight, auditing principles and other advanced and contemporary topics (e.g., alternative fuels, ballast water management systems, dynamic positioning systems, etc.). To further improve knowledge, communication, and coordination between Coast Guard marine inspectors and third parties, the course will be made available to third party representatives on a space available basis.

Safety Recommendation #27 – Coast Guard Major Conversion Determinations for Vessels. It is recommended that Commandant direct the review of policies and procedures for making and documenting major conversion determinations, including use of the Precedence Principle.

Action: I concur with this recommendation. The Coast Guard will conduct the recommended review.

Safety Recommendation #28 – Intact and Damage Stability Standards Review. It is recommended that Commandant direct a review of current intact and damage stability standards to improve vessel survivability in extreme wind and sea conditions.

Action: I concur with the intent of this recommendation. The Coast Guard continuously examines the adequacy of intact and damage stability standards. We are participating in IMO's development of second generation intact stability criteria, which considers the full spectrum of wind and sea conditions for critical stability failure modes. With respect to damage stability standards, IMO recently completed its review and revision of SOLAS damage stability standards (Res. MSC.421(98), adopted 15 June 2017). These standards take into account the probability of extreme sea conditions during a flooding casualty. The Coast Guard has contracted with the National Academy of Sciences, Transportation Research Board, Marine Board, to identify and recommend appropriate updates to 46 CFR Subchapter S – Subdivision and Stability. The Coast Guard will consider the independent recommendations of the Marine Board when determining any necessary revisions of intact and damage stability standards.

Safety Recommendation #29 – Applying Intact and Damage Stability Standards to Existing Cargo Vessels. It is recommended that Commandant direct a regulatory initiative to require that all existing cargo vessels meet the most current intact and damage stability standards.

Action: I do not concur with this recommendation. The findings of this investigation do not provide sufficient justification for the recommended action.

Safety Recommendation #30 – Third Party Oversight National Center of Expertise. It is recommended that Commandant consider creation of a Third Party Oversight National Center of Expertise to conduct comprehensive and targeted oversight activities on all third party organizations and ACSs that perform work on behalf of the Coast Guard. The Center of Expertise should be staffed with Subject Matter Experts that are highly trained inspectors, investigators, and auditors with the capability and authority to audit all aspects of third party organizations. As an alternative, the Coast Guard could add a new Third Party Oversight Office at Coast Guard Headquarters with a similar staffing model as the proposed Center of Expertise. The new Third Party Oversight Office could function similar to the Traveling Inspector Office and report directly to the Assistant Commandant for Prevention Policy.

Action: I concur with this recommendation. The Coast Guard will consider these and other means to monitor the global performance of the U.S. flag fleet and the ACSs/ROs that

perform delegated functions on our behalf and implement any necessary changes to our organizational structure and related authorities, roles and responsibilities.

Safety Recommendation #31 – Technical Review of Critical Propulsion System Components. It is recommended that Commandant immediately review a representative sample of existing engineering system plans and implement a policy to ensure future Coast Guard or ACS reviews of such plans consider the full designed operating range when reviewing design elements for critical propulsion system components (e.g., the operating range for lube oil systems should ensure satisfactory function for the full range of allowable oil sump levels and vessel lists.)

Action: I concur with the intent of this recommendation. The SOLAS, ACS and Coast Guard standards for minimum angles of inclination at which machinery must be designed to operate have been in place for many years. There is no compelling evidence to suggest that U.S. vessels are not designed in compliance with these standards, or that the standards require revision. Regardless, these standards cannot guarantee that machinery will function as intended under the conditions actually experienced in service. These standards only require that certain static heel and trim conditions not interfere with the machinery's operation. The actual performance of such engineering systems is highly dependent on their particular design and configuration, the seakeeping characteristics of the vessel in which they are installed, and the crew's routine and engineering casualty control procedures. Only through operational experience can the limitations of these systems be determined. To reduce the potential for similar casualties, the Coast Guard will publish a Marine Safety Alert to inform maritime operators of the MBI's findings regarding the role that main propulsion lube oil sump level played in this casualty. The Alert will recommend that operators verify compliance with minimum SOLAS, Class and regulatory standards, and ensure that their operating procedures address critical propulsion system limitations and actions that should be taken to mitigate the consequences when those limitations are exceeded.

Administrative Recommendation #1 – Acquiring DNA Sample for Identification of Human Remains. It is recommended that Commandant direct the development and implementation of Coast Guard policy for the collection of DNA samples by Coast Guard personnel when deceased individuals are unable to be recovered during Search and Rescue cases or post-incident marine casualty investigations. These DNA samples could be used to provide identification of human remains.

Action: I do not concur with this recommendation. The Coast Guard believes it is important to properly identify and honor the deceased whenever possible. However, Search and Rescue operations are inherently dynamic and time sensitive, and it is impracticable for the Coast Guard to collect DNA samples from human remains during ongoing Search and Rescue operations. However, as noted in the action that will be taken in response to Safety Recommendation #11 above, I will pursue the capability to mark human remains in the water so that they may be relocated and addressed when operations permit.

Administrative Recommendation #2 – VDR Performance Standards. It is recommended that Commandant direct a regulatory initiative to require that all VDRs capture all communications on ship's internal telephone systems. Furthermore, it is recommended that Commandant work with the IMO to amend SOLAS and update performance standards to ensure that all VDRs capture these two-way internal ship communications.

Action: I partially concur with this recommendation. VDR performance guidelines are prescribed by IMO, and U.S. vessels subject to SOLAS must carry a VDR. The Coast Guard will propose to IMO that additional data sources be captured by the VDR, including all communications between shipboard control stations, rather than pursuing a domestic regulatory initiative.

Administrative Recommendation #3 – VDR Data and Audio Access. It is recommended that Commandant initiate a Legislative Change Proposal to amend 46 U.S.C. Chapter 63, to ensure that, notwithstanding NTSB statutory authority, the Coast Guard has full access and ability to use VDR data and audio in marine casualty investigations, regardless of which agency is the investigative lead.

Action: I concur with this recommendation. The Coast Guard will pursue the recommended Legislative Change Proposal.

Administrative Recommendation #4 – MISLE Documentation of Deficiencies that the OCMI refers to an ACS. It is recommended that Commandant require the addition of specific MISLE data fields for documenting deficiencies that the OCMI refers to an ACS for correction. The deficiency should remain open in MISLE until the ACS provides the OCMI who issued the deficiency with a written report documenting corrective action has been completed or the condition has been appropriately recorded in the Class database. This will ensure that vessel compliance history is documented and accessible to Coast Guard Marine Inspectors and investigators.

Action: I concur with this recommendation. The Coast Guard will upgrade and enhance the Marine Information for Safety and Law Enforcement (MISLE) system to support the recommended features in addition to others that will allow us to capture, track and analyze key data, including deficiencies issued by Marine Inspectors to vessels enrolled in the ACP. In addition, these features will support trend analysis across the inspected vessel fleet as well as the establishment and monitoring of key performance indicators for third party organizations that perform delegated functions on behalf of the Coast Guard.

Enforcement Recommendation #1 - It is recommended that Sector Jacksonville initiate civil penalty action against TSI for the following offenses:

- *Failure to comply with the work-rest requirements detailed in 46 U.S.C. § 8104 and 46 CFR § 15.1111 for EL FARO crew members on multiple dates prior to the accident voyage.*

- *Failure to comply with emergency procedures for special personnel detailed in 46 CFR § 199.180. Specifically, Polish ship rider Mr. Marek Pupp testified that he continued to conduct work on EL FARO during the emergency muster and abandon ship drills.*

- *Failure to notify the Coast Guard or ABS of repairs to primary lifesaving appliances that were conducted on September 28, 2015 just prior to EL FARO's departure from Jacksonville on the accident voyage and on July 7, 2015, while at sea, EL YUNQUE effected repairs to a non-operable diesel powered lifeboat.*

- *Failure to notify the Coast Guard or ABS of repairs to EL FARO's main propulsion boiler superheating piping on August 24, 2015.*

Action: I concur with this recommendation. The investigation has determined that there is evidence that TSI may have committed multiple violations of law or regulation. As such, the alleged violations identified in this recommendation will be referred to the Officer in Charge, Marine Inspections, Jacksonville, for investigation and enforcement action, as appropriate.

PAUL F. ZUKUNFT
Admiral, U.S. Coast Guard

Enclosure (1) Response to Comments on the Coast Guard EL FARO Report of Investigation

Response to Comments on the Coast Guard EL FARO Report of Investigation

The Coast Guard, in an effort to maintain transparency as well as ensure the families and Parties in Interests (PIIs) rights were balanced by the agency, implemented measures that allowed families and PIIs to provide greater input than required in a Marine Board of Investigation (MBI). The Coast Guard published the Report of Investigation (ROI), including findings, analysis, conclusions, and safety recommendations prior to completion of the Commandant's Final Agency Action (FAM). The Coast Guard invited families and PIIs to submit comments on the ROI for consideration by the Commandant.

The Coast Guard received 59 comments from nine entities, including 18 comments that were treated as requests to re-open the investigation pursuant to Coast Guard Marine Safety Manual Volume V, Part A, Chapter 7. The Marine Safety Manual contains general examples for when re-opening an ROI may be appropriate. It also contains general reasons to decline a request to re-open. The MBI is responsible, as the fact finder, for gathering and evaluating the relevant evidence and assigning the appropriate weight to that evidence. Findings of fact must be corroborated by evidence. Conclusions and safety recommendations are developed by the MBI and are based on an adequate analysis of the relevant evidence presented. An ROI makes recommendations; it does not constitute final agency action. For the Coast Guard to reopen the investigation, challenges to findings, causal analysis, conclusions or safety recommendations must be based on overt errors or credible new evidence that bears directly on ROI conclusions. In this case, each request to re-open the ROI was considered but ultimately denied based upon determinations that relevant evidence was adequately evaluated during the original investigation.

As the FAM was developed, the Coast Guard reviewed and considered each comment received. The Coast Guard considered comments on the ROI's findings, causal analysis, conclusions, and recommendations. Although the MBI made safety recommendations, the disposition of those recommendations remains the purview of the Commandant. The comments and the Coast Guard response are summarized below.

1. *The Coast Guard received one comment noting that contrary to a statement in the ROI, Safety Management Certificates (SMCs) are issued to a vessel, not the Company, and that per the ISM Code, vessel audits are performed twice in five years, not annually.* The Coast Guard concurs that the ROI statement is not clear. To clarify, as per Section 13.2 and 13.7 of the ISM Code, the Flag Administration or an organization recognized by the Flag Administration, in this case the recognized organization (RO), is responsible for issuing a Document of Compliance (DOC) to the operating company and an SMC to the vessel operated by that company. The Company Safety Management System (SMS) is subject to annual external audits from the RO at the operating company level through the DOC. The SMC issued to the vessel only requires one intermediate verification audit between the second and third anniversary date of the issuance of the SMC. The Coast Guard considers this comment as an administrative clarification and no further action is needed.

2. *The Coast Guard received one comment noting that contrary to a statement in the ROI, TOTE Services, Inc (TSI) did have a Shoreside Manual which incorporated the SMS requirements of the ISM Code.* The Coast Guard concurs. TSI had an extensive list of manuals that in aggregate formed their SMS. These manuals included various shoreside support roles and functions. However, as noted in the FAM, the ROI pointed out numerous failures on the part of TSI to fully implement their SMS. No changes were made to the safety recommendations as a result of this comment.

3. *The Coast Guard received one comment noting that an ISM auditor is not a consultant. Therefore it is not the auditor's role to provide guidance to the ship-owner. The ROI stated that "[a]t the time of the accident voyage the Coast Guard did not require, and ABS provided no guidance on which shipboard emergencies should be considered in the SMS."* The Coast Guard partially concurs. The Coast Guard agrees that ISM auditors are not consultants as this would violate the Independence and Impartiality clauses of the RO Code (see RO Code Regulations 2.3 and 2.4, respectively). However, the ROI statement highlights that ABS could have, *in its capacity as an auditor,* raised an observation regarding potential emergency situations that should be included in an SMS by using the guidance provided in IACS Recommendation No. 41. This comment informed the FAM response to Safety Recommendation #15.

4. *The Coast Guard received one comment stating that IACS Recommendation No. 41 is a recommended guidance instrument for use by auditors. It is not, however, a mandatory procedural requirement. The ROI stated that "Guidance for International Association of Classification Societies (IACS) Auditors to the ISM Code No. 41 section 8 (2005), provides examples of emergency situations auditors should sample ... ABS, as the Recognized Organization for TSI vessels, is a member of IACS, and should follow the procedures established in IACS Guidance."* The Coast Guard partially concurs. IACS Recommendation No. 41 is a guidance instrument. However this comment is dismissive in nature because it fails to account for why the guidance should not be followed. IACS Recommendation No. 41 states: "This guidance is intended for use by IACS Member Societies' auditors when performing certification under the ISM Code, unless the relevant Administration has provided special instructions that indicate otherwise." No further action was taken as a result of this comment.

5. *The Coast Guard received one comment that took issue with the statement that "ABS external auditors did not engage with TSI management regarding the development of integrated contingency plans ..."* The Coast Guard concurs that ABS external auditors are not consultants. No further action was taken as a result of this comment.

6. *The Coast Guard received one comment that took issue with a statement in the ROI that ABS did not require that the lifeboats be lowered into the water during the last annual survey. The comment stated that an ISM auditor may elect to carry out drills, which would require lowering and release of the lifeboats, but doing so is not required by existing Coast Guard policy or the ISM Code.* The Coast Guard partially concurs. Neither the ISM Code nor Coast Guard policy require an ISM auditor to conduct drills. However, ABS surveyors should ensure all boats are lowered and maneuvered at least once every three months according to the ABS Annual Safety Equipment Survey checklist. Ultimately, both the Coast Guard and ABS failed to ensure that the lifeboats were launched and maneuvered as required by SOLAS III/19.3.3.3. The Coast Guard will provide additional guidance to clarify roles and responsibilities for the lowering and release of lifeboats on vessels enrolled in the ACP.

7. *The Coast Guard received one comment disputing the ROI's finding that as operated and loaded for the accident voyage, El Faro's stability would not have met the stability criteria for a new cargo ship. The vessel did not meet the righting arm criteria for new cargo ships based on limited available area (righting energy) above 30 degrees of heel and an insufficient angle of maximum righting arm.* The Coast Guard partially concurs. The comment is accurate that the EL FARO would have met the 2009 SOLAS damage stability criteria. However, it would not have met the 2009 intact stability criteria. No changes were made to the safety recommendations as a result of this comment.

8. *The Coast Guard received one comment disputing the finding that EL FARO was enrolled in the ACP in 2006, instead stating that EL FARO was enrolled in 2010.* The Coast Guard concurs and adopts December 21, 2010 as EL FARO's enrollment date into the ACP. The Coast Guard considers this an administrative clarification that does not materially impact the ROI conclusions or safety recommendations.

9. *The Coast Guard received one comment regarding testimony by the Coast Guard, stating that the EL FARO was scheduled to be added to the 2016 ACP targeted list due to the occurrence of a crew injury, not because of the age, ship type or any other issue related to the physical condition of the vessel.* The Coast Guard partially concurs. The performance monitoring protocols used to generate the targeted vessel list are designed to focus increased Coast Guard compliance efforts on those U.S. vessels and operators most often associated with substandard risk factors, including those related to vessel age, ship type, and marine casualty history, among others. The Coast Guard agrees that a death due to heart attack was errantly included in the risk analysis due to a software error. However, the Coast Guard disagrees that vessel age and ship type were not considered. In fact, these two factors were the leading risk indicators that resulted in the EL FARO being placed at the threshold for inclusion on the targeted vessel list. The Coast Guard ensured that only vessel-related marine casualties were considered in the preparation of the FY 2018 targeted vessel list. The software used to

automatically generate the targeted vessel list will be updated as part of an upcoming Coast Guard database enhancement.

10. *The Coast Guard received one comment that disagreed with the ROI conclusion that the emergency fire main did not contribute to the flooding in Hold 3.* The Coast Guard does not concur with this comment. The ROI gave full consideration to the fire pump as a possible cause of flooding and admitted that "damage to the suction piping would have resulted in flooding...at a substantial pressure and volume" (ROI p. 185). Ultimately, however, the exact nature and extent of damage to the fire pump could not be confirmed. As noted in the ROI, "regardless of the initial source or sources of flooding on EL FARO during the accident voyage, the free surface associated with the floodwater in the cargo holds combined with hurricane force winds and seas would have inevitably resulted in the capsizing of the vessel"(ROI p. 180). However, because of the potential for such damage, it is appropriate to ensure that vital systems and through hull penetrations fitted in cargo holds be protected from physical damage. As noted in paragraph 9 of the FAM, the Coast Guard will consider requiring such protection in future regulatory initiatives.

11. *The Coast Guard received one comment disagreeing with the ROI conclusion that water was able to enter Hold 3 through the open scuttle, and likely through deteriorated internal structures and open cargo hold ventilation dampers, which compromised watertight integrity. The comment asserts that this conclusion represents a speculative and unwarranted assumption based on the condition observed on the EL YUNQUE.* The Coast Guard does not concur and believes it was reasonable for the MBI to make certain assumptions based on the condition of a sister vessel, of similar age, operated by the same company, and engaged in the same trade on the same route.

12. *The Coast Guard received one comment disagreeing with the ROI conclusion that even after securing the scuttle to Hold 3, water continued to flood into cargo holds through ventilation openings, and also likely between cargo holds through leaking gaskets on large watertight cargo hold doors. The comment asserted that this conclusion constituted a speculative and unwarranted assumption based on alleged Coast Guard observations of the hose testing of watertight doors aboard the EL YUNQUE.* The Coast Guard does not concur. It was reasonable for the MBI to make certain assumptions based on the condition of a sister vessel, operated by the same company and engaged in the same trade.

13. *The Coast Guard received one comment focusing on the role of the auditor that disputed the ROI conclusion that a lack of effective training and drills by crew members, and inadequate oversight by TSI, Coast Guard and ABS, resulted in the crew and riding crew members being unprepared to undertake the proper actions required for surviving in an abandon ship scenario. The comment stated that the ISM Code does not require or even anticipate that the auditor will perform oversight of crew training.* The Coast Guard does not concur with the comment.

The Coast Guard agrees that it is the company's responsibility to train the ship's personnel, including the riding gang, in a working language or languages understood by them (see ISM Code 6.6). However, as the RO that issued the SMC, ABS had a role in ensuring that the company met this requirement during vessel audits. The conclusion in question was supported by evidence within the ROI.

14. *The Coast Guard received one comment disputing the conclusion that there were no domestic regulations or policy for Coast Guard approval of stability software and the Coast Guard had not delegated such approval authority to an ACS.* The Coast Guard does not concur. See Safety Recommendation #8 within the FAM. The Coast Guard will update policies related to both Coast Guard and ACS review and approval of stability software.

15. *The Coast Guard received one comment that took issue with the ROI safety recommendation that the Commandant update policy to address Coast Guard review and approval of stability software, and delegate review and approval authority to ACSs, where appropriate. The commenter advocated for establishing specific policy and assigning technical requirements for review and approval of stability software by the Coast Guard, which may be required to review and approve such software for vessels that do not fall under the Alternate Compliance Program (ACP) or Navigation and Vessel Inspection Circular (NVIC) 3-97 authorities. The commenter asserted that there are existing international requirements for stability software which the Coast Guard has already accepted through its adoption of the entire 2008 IMO Intact Stability Code under the ACP.* The Coast Guard concurs with this comment and it was taken into consideration during the development of the FAM's response to Safety Recommendation #8.

16. *The Coast Guard received one comment supporting the safety recommendation that the Commandant direct a regulatory initiative to require that all cargo ships have a plan and booklets outlining damage control information and expounded on the ROI recommendation to state that the plans or booklets be approved by the Coast Guard or ABS.* The Coast Guard partially concurs and agrees that such information is important, but does not support "approval" of such information due to lack of established standards for vessels built prior to 1992. As such, the Coast Guard will include provisions in flag state guidance for development and verification of SMSs for companies to conduct a risk assessment and develop appropriate damage control procedures within the SMS. See the FAM's response to Safety Recommendation #16.

17. *The Coast Guard received one comment noting that applying current intact and damage stability standards to existing cargo vessels may not be feasible or even possible without major modifications to many vessels in the U.S.-Flagged fleet.* The Coast Guard concurs with this comment and addressed it within the FAM's response to Safety Recommendation #29.

18. *The Coast Guard received one comment asserting that there was conflicting evidence regarding several key aspects of the investigation, and the MBI Report failed to analyze (and in many cases does not mention) significant evidence in direct conflict with its factual and other findings.* The Coast Guard does not concur with this comment. The MBI is the finder of fact within the investigation and it is within its purview to assign appropriate weight to each piece of evidence. The purpose of the ROI is not to detail every point and counter point that was raised throughout the course of an investigation, but rather to holistically determine the most likely causal factors and then develop sound safety recommendations.

19. *The Coast Guard received one comment asserting that many of the conclusions are overly broad and non-specific, and do not cite any particular evidence or specific findings of fact in support.* The Coast Guard does not concur with this comment. ROI conclusions may be specific or broad so long as they are supported by some evidence. The MBI is the finder of fact within the investigation and it is within its purview to assign appropriate weight to each piece of evidence.

20. *The Coast Guard received one comment noting that as a general matter, many of the conclusions presuppose that shoreside managers are (or should be) involved in certain operational aspects and decision making regarding their vessels. Traditionally by practice – and in some cases by law – such decisions are left to the Master's discretion and overriding authority while at sea, within the bounds of the company's Safety Management System, and do not involve shoreside management.* The Coast Guard partially concurs with this comment. The Coast Guard agrees that the master must always have "overriding authority" to make decisions with respect to safety (ISM Code 5.2), and that the degree to which the company is involved with day to day vessel operation can and will vary depending on the company. However, the conclusion as to whether or not the company should have taken a more active role to assist the master with avoiding extreme weather, is completely within the purview of the MBI to evaluate based on operational norms throughout the industry. Ultimately, this comment was considered in the FAM's response to Safety Recommendation #15.

21. *The Coast Guard received one comment that noted, as a general matter, in a number of respects, the MBI Report incorrectly concluded that some event or action did not occur, simply because there was no evidence on the VDR transcript.* The Coast Guard does not concur. The MBI's conclusions were adequately supported by evidence within the ROI.

22. *The Coast Guard received one comment disputing the conclusion that TSI did not identify and address heavy weather as a risk in its SMS, consistent with the ISM Code and other relevant provisions of law. The commenter requested that the Commandant disapprove conclusion 9.1.1.2 of the ROI, and disapprove similar statements at pages 49 and 119.* The Coast Guard partially concurs. While TSI's

Operation Manual - Vessel did in fact have a section on heavy weather, it was poorly implemented. It placed the entire responsibility for weather planning and preparation on the master, which is inconsistent with fundamental stated objectives of the ISM Code. According to TSI's former Designated Person Ashore (DPA), the company deliberately abandoned the practice of assisting masters with heavy weather voyage planning, storm system monitoring, and avoidance. In this instance the ship was ultimately guided into a hurricane. Therefore, the conclusion was adequately supported.

23. *The Coast Guard received one comment disputing the conclusion that the Master did not adequately identify the risk of heavy weather when preparing, evaluating, and approving the voyage plan prior to departure on the accident voyage. The commenter requested that the Commandant disapprove conclusion 9.1.1.3 of the ROI.* The Coast Guard does not concur. There was adequate evidence to support the conclusion that the master did not adequately identify the risks related to heavy weather.

24. *The Coast Guard received one comment disputing the conclusion that TSI did not ensure the safety of marine operations and failed to provide shore side nautical operations supports to its vessels. It disputed the conclusion that TSI did not provide adequate support and oversight to the crew of EL FARO during the accident voyage. The commenter requested that the Commandant disapprove conclusions 9.1.1.1 and 9.1.1.6 of the ROI.* The Coast Guard does not concur with this comment. These conclusions were adequately supported by the evidence.

25. *The Coast Guard received one comment disputing the conclusion that the Master, the Chief Mate, and the crew did not ensure that stevedores and longshoremen secured cargo in accordance with the Cargo Securing Manual, which contributed to RO/RO cargo breaking free. The commenter requested that the Commandant disapprove conclusion 9.1.2.7.* The Coast Guard does not concur with this comment. The ROI drew this conclusion based upon the fact that CargoMax was routinely used as a loading instrument, which was inconsistent with cargo securing arrangements specified in the approved Cargo Securing Manual.

26. *The Coast Guard received one comment disputing the conclusion that a lack of effective training and drills by crew members, and inadequate oversight by TSI....resulted in the crew and riding crew members being unprepared to undertake the proper actions required for surviving in an abandon ship scenario. The commenter requested that the Commandant disapprove conclusion 9.1.6.1.* The Coast Guard does not concur with this comment. See the response to comment number 13 within this enclosure.

27. *The Coast Guard received one comment disputing the conclusion that TSI was required to notify ABS or the Coast Guard when maintenance and repairs were performed on the lifeboat winch clutches, prior to departure on September 29,*

2015. The commenter requested the Coast Guard and ABS update the ACP Supplement, and provide clear guidance to owners and operators, regarding the line between routine service, maintenance, and repairs of lifesaving equipment (which are not to be reported to the OCMI) on the one hand, and "extensive repairs or alterations" on the other (which are to be reported to the OCMI). It also requested the Commandant modify the ROI conclusion and recommendation in this regard, including the conclusion regarding there being evidence of acts subject to a civil penalty. The Coast Guard takes no action on this comment at this time. This comment is directed towards potential civil penalty enforcement and will be referred to Sector Jacksonville's OCMI for adjudication.

28. *The Coast Guard received one comment disputing the conclusion that there was sufficient evidence of acts subject to civil penalty of "potential violation of 46 U.S.C. § 8106(a)(4) - no safety orientation of Coast Guard approved Basic Safety Training (BST) for the Polish riding crew. The commenter requested that the Commandant disapprove the conclusion.* The Coast Guard takes no action on this comment at this time. This comment is directed towards potential civil penalty enforcement and will be referred to Sector Jacksonville's OCMI for adjudication.

29. *The Coast Guard received one comment that noted the ROI, in two locations, incorrectly states that that the TMPR Terminal Manager found an error in the CargoMax stability calculations for the departure loading condition on October 1, after EL FARO was reported missing.* The Coast Guard concurs with this comment. The Coast Guard acknowledges and adopts the fact that the TMPR terminal Manager was aware of the CargoMax stability calculation error before EL FARO sailed on September 29, 2015, and that he corrected the error in the system on October 1, 2015, after EL FARO was missing. No additional action was taken as a result of this comment.

30. *The Coast Guard received one comment that took issue with the ROI language that cited the VDR transcript, stating "[a]t 5:55 AM, the C/M called the Master on a UHF radio and reported a flooded hold on the starboard side with knee deep water." The commenter notes that this incorrectly suggests that the Chief Mate was reporting that the level of water in the hold was knee deep. The actual quote from the VDR transcript starting at 05:55:00.4 is: "(ya got) water against the side just enough to (go/throw/pour) over the edge of scuttle about knee deep (in here) water (rolls) right over." It is clear from this that he is referring to there being knee deep water on the starboard side on Second Deck, and that water was high enough (knee deep) to allow it to pour over the edge/coaming of the scuttle and into Hold 3. The commenter requests that the ROI be corrected.* The Coast Guard does not concur with this comment. The language is quoted directly from the EL FARO VDR, and was not taken out of context within the ROI.

31. *The Coast Guard received one comment that took issue with the ROI interpretation of the VDR language citing the Chief Engineer who was assigned to supervise the riding crew, who stated at 5:11 AM on October 1, 2015 "I've*

*never seen it list like this— you gotta be takin' more than a container stack *. I've never seen it hang like this." The commenter stated that the ROI was incorrect to interpret the comment to mean that there were lashing failures and leaning containers at this point in the voyage. The commenter requested that the ROI be corrected.* The Coast Guard does not concur with this comment. The challenged language is located within the analysis section which required the MBI to interpret evidence and make reasonable conclusions based on the evidence. The MBI analysis was supported by the evidence.

32. *The Coast Guard received one comment that took issue with the ROI's finding that TSI had not established any written policies or checklists to ensure that the tasks performed by the TMPR personnel were completed in the same manner for each vessel port call. The commenter felt this was not correct and ignored evidence that established there were in fact such policies and checklists.* The Coast Guard partially concurs. TSI did have written policies and checklists. However, there was also evidence that indicated these were not always followed or even known by all TSI employees. No additional action was taken as a result of this comment.

33. *The Coast Guard received one comment that took issue with the ROI's analysis that stated "[t]he vehicles in Hold 3 were likely adrift and moving around in Hold 3 for at least 90 minutes while EL FARO was transiting through heavy seas with a starboard list." The commenter noted that by approximately 6:00 AM, the vessel had switched to a port list, and, while the vessel may have been subject to heavy seas in that period, it is not accurate to state the vessel was transiting through heavy seas at a time she was without propulsion.* The Coast Guard does not concur with this comment. The challenged language is located within the Analysis section of the ROI, which required the MBI to interpret evidence and make reasonable conclusions based on the evidence. The MBI analysis was supported by evidence.

34. *The Coast Guard received one comment that noted the ROI detailed six separate "Events," with numerous sub-points under each event which were listed as "contributing factors." The commenter pointed out that the ROI does not list one contributing factor as more important than any other contributing factor although the first event listed is that the EL FARO sailed within close proximity to Hurricane Joaquin. Further, when the Coast Guard published the ROI, it concurrently published on its Coast Guard Maritime Commons official blog that the ROI concluded that "the primary cause" was the decision to navigate El Faro too close to the path of Hurricane Joaquin. The commenter took issue with blog statement and requested that it be addressed in the FAM.* The Coast Guard does not concur with the comment and finds that the evidence was adequately evaluated during the course of the investigation. As indicated, the ROI listed the decision to sail near the hurricane as the first event, and while it was not labeled as such, being listed as the first event signaled that it was the "primary" or "initiating" event.

35. *The Coast Guard received two comments that stated the FAM must make it clear that there was no single primary cause for this incident. Instead, similar to what occurred in the Deepwater Horizon incident, the EL FARO sinking was the tragic result of a series of thirty-eight contributing factors that had a cumulative effect of causing the sinking. The commenters felt that the ROI made conclusions that were unsupported by the facts, and in many instances, contrary to the evidence obtained during the MBI.* The Coast Guard partially concurs. This was a tragedy with many factors contributing to this marine casualty, the most prominent of which was the Master's decision to sail the ship in close proximity to a Category 3 hurricane. As also noted within the FAM, other significant factors included TSI's failure to adequately fulfill their obligations under the ISM Code, ABS's failure to uncover or resolve deficiencies, and the Coast Guard's failure to execute an adequate oversight program. The Coast Guard does not concur that the ROI's conclusions were unsupported by the facts. Each conclusion was supported by evidence considered by the MBI. No additional action was taken as a result of these comments.

36. *The Coast Guard received two comments that stated the ROI failed to include in its findings a complete and accurate account of sworn testimony during the public hearings relating to the Master's professionalism, bridge resource management skills, and strong safety culture. The commenter requested that the ROI be amended.* The Coast Guard does not concur. The evidence was adequately evaluated during the course of the investigation. It is within the purview of the MBI to assign appropriate weight to each piece of evidence. The purpose of the ROI is not to detail every point and counter point raised throughout the course of an investigation, but rather to build the case for the safety recommendations.

37. *The Coast Guard received one comment that noted in 2008 the Coast Guard identified deficiencies and vulnerabilities with applying weather criteria to vessels like the EL FARO (low freeboard, high wind profile, flush deck vessels), but the ROI failed to adequately address these vulnerabilities and the role they played in the loss of the EL FARO. The commenter requested that the ROI be amended to address this issue.* The Coast Guard partially concurs. The ROI was not amended, but this issue was addressed within the FAM's response to Safety Recommendation #28.

38. *The Coast Guard received one comment that stated the ROI failed to adequately address the fact that a significant amount of water entered the vessel through the starboard side scuttle leading to Cargo Hold #3, which was inadvertently left open or unsecured after the Chief Mate and Master ordered the decks secure for heavy weather. The commenter requested that the ROI be amended.* The Coast Guard does not concur. The MBI did consider the impact of water entering Cargo Hold #3. Regardless of "the initial source or sources of flooding…the free surface associated with the floodwater in the cargo holds combined with hurricane

force winds and seas would have inevitably resulted in the capsizing of the vessel"(ROI p. 180).

39. *The Coast Guard received one comment that stated the ROI failed to include in its findings an accurate analysis of the events during the hours between 2000 on September 30 to 0400 on October 1. The commenter requested that the ROI be amended.* The Coast Guard does not concur. The Coast Guard finds that the evidence was adequately evaluated during the course of the investigation.

40. *The Coast Guard received three comments stating that all the safety, administrative and enforcement recommendations should be enacted.* The Coast Guard partially concurs. The Coast Guard's position on each recommendation is included within the FAM. The Coast Guard "concurred", "partially concurred" or "concurred with the intent" of 28 of the 31 safety recommendations within the ROI and "non-concurred" with three. The Coast Guard "concurred" or "partially concurred" with three administrative recommendations and "non-concurred" with one. The Coast Guard "concurred" with the single enforcement recommendation within the ROI.

41. *The Coast Guard received one comment stating that conclusions 9.1.1.8 through 9.1.1.12 are unsupported by the testimony and facts of the investigation and should be removed from the ROI.* The Coast Guard does not concur. The MBI is the finder of fact within the investigation and it is within its purview to assign appropriate weight to each piece of evidence. The conclusions in question were supported by evidence gathered and evaluated by the board and therefore will not be overturned.

42. *The Coast Guard received one comment noting that the last paragraph of the ROI states that the MBI does not recommend any suspension or revocation action against any credentialed mariner, which is in contrast to a response to a reporter's question given by the MBI Chairman. The comment requests that the Coast Guard redact the public statement and issue an apology for misleading the media and placing blame on the Master.* The Coast Guard does not concur with this comment. The ROI recommendation to take no action against any credentialed mariner is not in conflict with the response the MBI Chairman gave to a reporter during the press conference.

43. *The Coast Guard received one comment stating that there should be a several year gap before any Coast Guard officers accept any positions within the shipping industry.* The Coast Guard does not concur. There are multiple laws and regulations that govern the conduct of both civilian and military Coast Guard members as they transition out of Federal Service into non-federal employment. All former Coast Guard members must comply with all federal post-government employment ethics requirements.

44. *The Coast Guard received one comment stating untested computer SAR*

programs should not be launched during hurricane season. The Coast Guard concurs and will review development and deployment scheduling for these systems.

45. *The Coast Guard received one comment disputing the conclusion that TSI did not provide the tools and protocols for accurate weather observations and that the Master and navigation crew did not adequately or accurately assess and report observed weather conditions.* The Coast Guard does not concur. The MBI is the finder of fact within the investigation and it is within its purview to assign appropriate weight to each piece of evidence. The conclusion in question was supported by evidence gathered and evaluated by the board.

46. *The Coast Guard received one comment stating that any penalties sought should be high enough to send a message to the shipping industry of the necessity to comply with statutes and regulations.* The Coast Guard takes no action on this comment at this time. This comment is directed towards potential civil penalty enforcement and will be referred to Sector Jacksonville's OCMI for adjudication. Any resulting penalties will be assessed in accordance with established statutory provisions.

47. *The Coast Guard received one comment that took issue with the generalized conclusion that a lack of effective training and drills by crew members, and inadequate oversight by TSI, Coast Guard and ABS, resulted in the crew and riding crew members being unprepared to undertake the proper actions required for surviving in an abandon ship scenario. The commenter noted that the blanket statement does not take into account the individual experience of some crew members who were quite prepared for the eventual crisis.* The Coast Guard does not concur with this comment. Although individuals may have had different levels of experience, the Coast Guard finds that the ROI conclusion is supported by the evidence.

48. *The Coast Guard received one comment disputing the conclusion that the crew's complacency, lack of training and procedures, and EL FARO's design contributed to the crew's failure to assess whether the vessel's watertight integrity was compromised, since there were many unknowns regarding the exact source of the flooding.* The Coast Guard does not concur with this comment. The MBI is the finder of fact within the investigation and it is within its purview to assign appropriate weight to each piece of evidence. The conclusion in question was supported by evidence gathered and evaluated by the board.

49. *The Coast Guard received one comment noting that NTSB had the Human Performance Factors Group included in their investigation, and that there should have been an expert witness in the field of study of decision making.* The Coast Guard does not concur with this comment. The Coast Guard disagrees that human factors were not adequately considered. The Coast Guard was a party to

the NTSB investigation and participated in all phases of that process. There was a great deal of information shared between the two investigations, and the analysis of human factors played a critical part in the MBI and the ROI.

50. *The Coast Guard received one comment noting that there should be more involvement from shipyards during incident investigations.* The Coast Guard does not concur with this comment in regards to this investigation. Coast Guard Investigating Officers have authority to subpoena testimony and records, including from shipyards. It is up to each Investigating Officer to make a determination as to what evidence is necessary to conduct a thorough investigation.

51. *The Coast Guard received one comment disputing the conclusion that the Master, Chief Mate, and crew did not ensure that stevedores and longshoremen secured cargo in accordance with the Cargo Securing Manual. The commenter noted that testimony showed that the PORTUS stevedores had never seen a Cargo Securing Manual or Lashing Manual, the National Cargo Bureau found that TSI photographic examples for securing were incorrect and that correct angles of securing were not performed by those whose job it is to know that information; to blame the crew, therefore, is unfair.* The Coast Guard does not concur with this comment. While stevedores were hired by TSI to conduct securing operations, the ultimate responsibility for the vessel remained with the Master, the crew and the company. The MBI is the finder of fact within the investigation and it is within its purview to assign appropriate weight to each piece of evidence. The conclusion in question was supported by evidence gathered and evaluated by the board.

52. *The Coast Guard received one comment stating that there needs to be better communications and integrations between deck and engineering officers. Bridge resource management needs to be expanded and all parties should take ship specific refresher courses together. The Masters, the Chief Mates, the bridge officers, the Designated Persons Ashore and the port engineers or ship supervisors need to all sit down in a classroom together.* The Coast Guard does not concur with this comment. The Coast Guard has already implemented the bridge resource management (BRM) and engineroom resource management (ERM) requirements in STCW, and this casualty does not provide objective evidence that the current curriculum is insufficient.

53. *The Coast Guard received one comment stating that shore-side managers need to start taking some of the same classes that Masters are required to take, including basic weather training.* The Coast Guard concurs that designated persons should be adequately trained in accordance with ISM Code and MSC-MEPC.7/Circ.6. This comment was considered in formulating the FAM's response to Safety Recommendation #15.

54. *The Coast Guard received one comment concerning the interruption of the EL YUNQUE inspection.* The Coast Guard concurs that the marine inspectors should have continued their expanded exam. Coast Guard policy states that an expanded exam should be conducted when clear grounds indicate that the ship has not effectively implemented its SMS. Serious material deficiencies constitute clear grounds to expand the exam. This comment was considered in the FAM's response to Safety Recommendation #20.

55. *The Coast Guard received one comment stating a concern that there will be a lack of follow through by the Coast Guard on the safety recommendations. The commenter recommended that there be an independent monitor or ombudsman appointed to ensure compliance with the safety recommendations, and that any punitive fines paid in this case be used to pay for that position.* The Coast Guard does not concur with this comment. While an independent monitor or ombudsman may be required in a criminal case, these costs are born directly by the party rather than paid for by the government and reimbursed through civil penalties. With regard to "follow through," the Coast Guard takes the implementation of these safety recommendations very seriously and is committed to providing sustainable policy, oversight and accountability both internally and externally.