National Transportation Safety Board

Office of Marine Safety

Washington, D.C. 20594

Group Chairman's Factual Report

Human Performance Group

Caribbean Fantasy

DCA16FM052

March 23, 2018

1 Accident Information

Vessel: *Caribbean Fantasy*
Accident Number: DCA16FM052
Date: August 17, 2016
Time: 0725 Atlantic standard time (coordinated universal time – 4)
Location: Atlantic Ocean, 3 miles north of San Juan, Puerto Rico
18°30.1N, 66°8.0' W
Accident type: Fire
Injuries: 23

2 Human Performance Group

Chairman: Carrie Bell, Investigator
Office of Marine Safety
National Transportation Safety Board

Member: [redacted] Marine Inspector/Instructor
Cruise Ship National Center of Expertise
US Coast Guard

NOTE: Mr. [redacted] no longer holds this position with USCG

Member: LT [redacted], Inspector
7 District Inspections and Investigations
US Coast Guard

3 Accident Summary

See master document for Accident Narrative.

4 Investigation

See master document for Accident Narrative.

5 Vessel Information

5.1 General

See master document for Accident Narrative.

6 Personnel

Crew certification and training records were recovered from a binder maintained by the safety officer on board. Some personnel records for the crew, including performance evaluations, were provided by Baja Ferries. However, other information, such as contractual documents, were not provided.

6.1 Recruitment and Manning

Baja Ferries utilized two third-party crewing agencies for the recruitment and manning of the *Caribbean Fantasy*'s deck and engineering personnel. Those agencies were Ship Supply of Florida Inc. and Midocean (IOM) Limited, which is a division of the Peter Döhle Group. According to the *Caribbean Fantasy*'s Designated Person Ashore (DPA), both agencies conducted recruitment, first level vetting and processing (including background checks), and verification of required crew certification. Deck officers were recruited by Ship Supply of Florida while Midocean recruited engine crew officers. The hotel staff were provided by America Cruise Ferries (ACF), as the time charterer of the *Caribbean Fantasy*.

Although the Baja Ferries CEO stated that the company performed no initial vetting of these crew members, the DPA stated to investigators that follow-on vetting, management of the crew, and overall evaluations of crew were conducted by the vessel master and the technical superintendent. Additionally, promotions were sometimes given on board through consultation of the respective department head, the master, and the company.

The crew were supplied through crewing agencies under short term contracts. Deck and engineering officers worked for about 4 months with 2 months off, and hotel staff typically worked 6–9 months with two months off. If the crewmember remained on board beyond the contract time, the time was extended.

Use of manning agencies is common for companies that do not employ crewmembers directly. Recruitment agencies typically assign mariners based on availability and minimum qualifications required by the vessel operators. Personnel often come onto a vessel for one rotation and do not return. A company can request a crewmember return if that person is available and not assigned to another vessel, but crew supplied on short term contracts rotate frequently and are

unfamiliar with the company, the vessel, and their policies and procedures. A handover period is typically required, therefore, to acclimate the new crewmember.

6.2 General Crew Organization

The *Caribbean Fantasy*'s deck organization was similar to the cruise industry model. The master was in overall command, followed by the staff captain, who reported directly to the master. The staff captain was responsible for the deck department and all deck operations on board, including safety. The safety officer reported to the staff captain and was responsible for all crew safety training, the maintenance and inspection of safety equipment, and compliance with the ship's emergency plan and station bill. In addition to these officers, the ship had three watchkeeping deck officers who each worked the traditional watchkeeping periods. Of the watchkeeping officers, two were second officers and one was a third officer. A deck cadet, an apprentice officer in training, was also assigned to the vessel and stood training watches on the bridge.

According to the *Caribbean Fantasy*'s safety management system (SMS), the chief engineer was the head of the vessel's "Technical Department" and was directly responsible to the master with functional responsibility to the managing director of the company.[1] He advised the master on all engineering matters and was responsible for ensuring that those areas of the International Safety Management (ISM) code that applied to the engine department were maintained. According to the SMS, the first engineer was responsible for monitoring the technical operation of the ship and any other relevant matters, including the efficiency and maintenance of all machinery within the main and auxiliary engine room spaces; the cleanliness of the machinery spaces and their cosmetic appearance; and the discipline and control of all engine room staff assigned to the maintenance and operation of the engine room.

The hotel department was larger than both the deck and engine departments and was managed by the hotel director. The hotel director reported directly to the master and was

[1] Marine safety management systems (SMSs) are programs designed to identify hazards and reduce risk in order to ensure safety at sea, prevent injury or loss of life, and avoid damage to the environment and to the vessel. A safety management system is used to documents procedures to use aboard a ship during normal operations and emergencies. SMSs must also include an audit process to identify when the SMS is not followed and a process for implementing corrective actions. SMSs are a requirement under the International Safety Management (ISM) code for ships sailing under SOLAS regulations.

responsible for running all aspects of the hotel department, including any matter affecting the safety of the ship, passengers, and crew. According to the company SMS, he was responsible for the efficient mustering of passengers and was the leader for the evacuation control team. His direct reports included the purser, housekeeper, executive chef, dining room manager, bar manager, entertainment staff, and ship's doctor.

6.3 Experience and Formal Training of Officers and Other Safety Critical Personnel

According to the Seafarer's Training, Certification and Watchkeeping (STCW) code, crisis management and human behavior training was required to be completed by the master, chief engineer, chief mate, second engineers, and any person having responsibility for the safety of passengers in emergency situations.[2] Because the *Caribbean Fantasy* was a passenger ferry, hotel crew (including any person having responsibility for the safety of passengers in emergency situations) were also required by the STCW code to complete the crowd management training. Investigators found documentation that training had been completed for the crewmembers listed above. Training records were not sent shoreside; they were maintained onboard within the safety officer's computer and in a binder titled "SOLAS and STCW Certification Records." Some training completion dates were not recorded in the binder and unable to be verified through electronic documentation. Investigators recovered the safety officer's computer from the vessel but were unable to access its contents.

Key positions designated to control firefighting operations, including the master, staff captain, safety officer, chief engineer, and fire squad leaders, were required to have advanced firefighting training. The third officer was the leader of fire squad no. 1 and the second engineer was the leader of fire squad no. 2. All personnel required to complete this training were in compliance with that requirement.

The company did not require any additional training outside of what was required by the STCW code.

The master, staff captain, safety officer, cadet, second officer, bosun, chief engineer, first engineer, third engineer, hotel director, and chief purser played critical roles in the safety of

[2] STCW Section A-V/2, paragraph 3.

passengers and crew, as well as management of personnel, lifesaving equipment, and firefighting equipment. A detailed description of these officers' experience and training follows.

6.3.1 Master

The master of *Caribbean Fantasy* was 62 years of age and a French national. He was certificated both as an engineer and a deck officer. He had been sailing since 1974 and held a master of unlimited tonnage vessels certificate of competency, which was valid until November 2020 and endorsed by the flag of Panama. He had sailed as master for 20 years on car ferries and seagoing tugboats, and also spent time as a chief mate and engine officer. The master was hired through Ship Supply of Florida and began working for Baja Ferries in March 2016. Near the end of April, he worked with the previous master of *Caribbean Fantasy* conducting a handover of the vessel. His contract, which included the accident voyage on *Caribbean Fantasy,* began on August 5, 2016.

The master's training included the following courses: Bridge Resource Management and Engine Room Management (July 2016); Electronic Charting and Display Information System (ECDIS) (July 2016); Basic Safety Training (May 2016); Ship Security Officer (July 2016); Global Maritime Distress and Safety System (GMDSS) (November 2015); Medical Care (March 2016); Crowd Management and Passenger Safety (July 2016), Survival Craft and Rescue Boats, including Fast Rescue Boats (June 2016); Advanced Firefighting (June 2016); Crowd Management (November 2015); Safety Training for Personnel Providing Direct Service to Passengers (November 2015); Crisis Management and Human Behavior (November 2015); and Passenger Safety, Cargo Safety and Hull Integrity (November 2015).

The master's most recent medical certificate for service at sea was completed on March 8, 2016, stating that he met the medical conditions for all duties on board including lookout, with no restriction or limitation of fitness for duty.[3]

The master's native language was French. In his correspondence with investigators, he demonstrated conversational proficiency and answered questions appropriately in the English language; however, the company provided no information indicating that he had completed an

[3] See SOLAS and STCW Certification of Records-Deck Dept.

English language proficiency exam. This exam was not required by Baja Ferries, although the DPA stated that the company was considering implementing a program that would require completion of the exam. (Additionally, the *Caribbean Fantasy*'s safety officer was documenting which crew members had taken the exam and their corresponding results.)

6.3.2 Staff Captain

The staff captain, 56 years of age, held a master's unlimited certificate in his home country of Greece, which was endorsed by the flag of Panama. His certificate was current at the time of the accident and set to expire December 31, 2016. At the time of the accident, he had been sailing with Baja Ferries for about six months and was on his second contract with the company as staff captain of the *Caribbean Fantasy*. Prior to his work with Baja Ferries, he had worked in Greece for 10 years on high speed craft as both master and staff captain. He stated that his total sea time was approximately 15 years. His last rotation on *Caribbean Fantasy* began on June 1, 2016. The staff captain was employed through Ship Supply of Florida.

The staff captain's training included the following courses: Bridge Resource Management and Bridge Maneuvering Simulator (June 2001); ECDIS (May 2016); Hazardous Materials (January 2005); and Basic Safety Training (April 2016). Other training related to safety and survivability or specific to on-the-job duties included: Proficiency in Survival Craft and Fast Rescue Boat (April 2016); Advanced Firefighting (April 2016); Crisis Management and Human Behavior (October 2015); Crowd Management (October 2015); and medical first aid. Each of these certifications was obtained in April 2016. The staff captain also completed the VIKING marine evacuation system training in June 2014.[4]

The staff captain's native language was Greek, though he was able to speak English. He completed an English language proficiency test in October 2015 and scored 85%.

6.3.3 Safety Officer

The safety officer, 35 years of age, was a Panamanian national. She held a chief mate's certificate from Panama, which was to expire in October 2020. She had held the license since August 2009. She had been sailing with Baja Ferries since 2013, with about 9 years of previous

[4] This training was taken at a VIKING facility in Piraeus, Greece. It was not clear which evacuation system model was used in the training or if it was similar to those systems used on the *Caribbean Fantasy*.

sea time on cargo vessels. She sailed as a third mate, second mate, and safety officer on board the *Caribbean Fantasy*. Her most current certificate was obtained in October 2015. She had started her contract on *Caribbean Fantasy* on October 31, 2015, as second officer and was promoted to safety officer on June 10, 2016. This was a transition from her standard watchkeeping role to a senior leadership role in safety management. As safety officer, she was responsible for all crew training and management of crew training and certificates. The safety officer was employed through Ship Supply of Florida. She had been on the ship without vacation for over 9 months.

The safety officer's training included Ship Simulator and Bridge Teamwork (October 2015) and Radar, ARPA, Bridge Teamwork and Search and Rescue-Management Level (September 2015). Training related to emergency duties included Advanced Firefighting (August 2014), Proficiency in Survival Craft and Fast Rescue Boats (October 2015), GMDSS (October 2015), Crisis Management and Human Behavior (February 2012), and Crowd Management (February 2012).

The safety officer's primary language was Spanish, and she was proficient in conversational English as demonstrated in her interviews with investigators. She completed an English language proficiency test in October 2015 and scored 80%.

6.3.4 Second Officer on Watch

The second officer on watch at the time of the fire was 27 years of age and a Panamanian national. He held a certificate of competency as a chief mate, unlimited tonnage vessels, from Panama, which he obtained in August 2015. He was sailing on a 3-month contract on *Caribbean Fantasy* at the time of the accident, which began on May 8, 2016. It appeared that this contract had been extended, though the crew certificates list had not been updated with a date beyond August 9, 2016.[5] He had been employed on the *Caribbean Fantasy* since May 8, 2016. The second officer was employed through Ship Supply of Florida.

The second officer's training included Radar, ARPA, Bridge Teamwork and Search and Rescue-Management Level (September 2015) and Basic Safety Training (November 2010). His training related to emergency duties included Advanced Firefighting (October 2013), Proficiency

[5] Caribbean Fantasy Crew Certificates List

in Survival Craft and Rescue Boats (December 2015), GMDSS (August 2013), Crisis Management and Human Behavior (October 2011), Crowd Management (October 2011), and Personal Safety and Social Responsibilities (November 2010).

There was no record of the second officer having had an English proficiency exam.

6.3.5 Deck Cadet

The deck cadet was 21 years of age at the time of the accident and was a French national. He did not hold a certificate of competency. He was on a 3-month contract and had been on the ship since July 1, 2016 (six weeks). This was his second contract on *Caribbean Fantasy*. As a cadet, he spent time in both the engine room and on deck.

The cadet's training included Basic Safety Training (April 2015), Personal Survival Techniques (April 2015), Personal Safety and Social Responsibilities (April 2015), Crowd Management (November 2015), and Security Awareness (April 2015).

The deck cadet was multilingual. He spoke French as his native language, English and, according to interview testimony, some Spanish. There was no record of the cadet having had an English proficiency exam.

6.3.6 Bosun

The bosun joined the vessel on June 03, 2016 as assistant bosun but was promoted to bosun about a week prior to the accident. In emergencies, he was the lifeboat preparation and launching team leader. The bosun's training included Crowd Management (November 2012), Basic Safety Training (November 2012), Proficiency in Survival Craft and Rescue Boat (November 2012), and Advanced Firefighting (November 2012).

There was no record that he had completed an English proficiency test during his time with Baja Ferries.

6.3.7 Chief Engineer

The chief engineer was 49 years of age at the time of the accident. He held a chief engineer certificate of competency from his home country of Poland, with valid endorsements from Panama. He had been sailing since 1991 and received his unlimited chief engineer certificate of competency

in 2005. He was sailing on a 3-month contract at the time of the accident. and was employed through Midocean.

The chief engineer joined the *Caribbean Fantasy* near the end of dry dock on July 17, 2016 and relieved a chief engineer who had been terminated by the company. At the time, another chief engineer who was on vacation was brought back to the ship to assist the new chief engineer's transition. That handover and familiarization period lasted until a US Coast Guard port state control inspection was completed on August 9, 2016, a period of about 3 weeks.

The chief engineer's training included Advanced Firefighting, Proficiency in Survival Craft other than Rescue Boats, Crowd Management, Crisis Management and Human Behavior, Safety Training for Personnel Providing Direct Service to Passengers in Passenger Spaces on board Passenger Ships, Passenger Safety, Cargo Safety and Hull Integrity on Ro-Ro Passenger Ships, and all required ship security training. Training records indicate these courses were completed in July 2016.

There was no record on file that indicated he had completed an English proficiency test during his time with Baja Ferries.

6.3.8 First Engineer

The first engineer was 28 years old at the time of the accident and held a chief engineer certificate of competency from his home country of Poland, which was endorsed by Panama. He had 6 years of experience at sea working on oil/gas pipeline diving vessels and accommodation ships. He had been a second engineer on other ships before joining the *Caribbean Fantasy*. He joined the ship on July 26, 2016, under his first contract with the vessel. As first engineer, he was the direct supervisor for all engineers, motormen, and wipers. He was employed through Midocean.

The first engineer's training included Advanced Firefighting, Proficiency in Survival Craft other than Rescue Boats, Crowd Management, Crisis Management and Human Behavior, Safety Training for Personnel Providing Direct Service to Passengers in Passenger Spaces on board Passenger Ships, Passenger Safety, Cargo Safety and Hull Integrity on Ro-Ro Passenger Ships,

and all required ship security training. Training records indicate these courses were completed in June 2015.

The first engineer had completed an English language proficiency test in April 2015 and scored 95%.

6.3.9 Engineer on Watch (Third Engineer)

The third engineer who was on watch at the time of the accident was a Slovakian national and held a certificate of competency from Poland as a third engineer (engineer of the watch), which was endorsed by Panama. His certificate of competency was valid until February 2020. He was on his first contract on the *Caribbean Fantasy* and had been on board since July 17, 2016. He told investigators that previous to joining the ship he had worked on a bulk carrier for about 4 months as third engineer and about 11 months as an engine cadet. The third engineer was employed through Midocean. At the time of the accident he was 33 years of age.

The engineer on watch's training included: Advanced Firefighting, Engine Room Resource Management, Proficiency in Survival Craft other than Rescue Boats, Crowd Management, Crisis Management and Human Behavior, Safety Training for Personnel Providing Direct Service to Passengers in Passenger Spaces on Board Passenger Ships, Passenger Safety, Cargo Safety and Hull Integrity on Ro-Ro Passenger Ships, and all required ship security training. This training was completed between 2011 and 2016.

There was no record that he had completed an English proficiency test during his time with Baja Ferries.

6.3.10 Hotel Director

The hotel director had been working various contracts on the *Caribbean Fantasy* since 2011 and had been on his current contract since June 16, 2016. As the head of the hotel department, the largest department on the ship, he was directly responsible to the master with for running all aspects of the hotel department which included any matter affecting the safety of the ship, passengers and crew. According to the company SMS, he was responsible for the efficient mustering of passengers and was the leader for the evacuation control team. The hotel director's training included (but was not limited to) Crisis Management and Human Behavior Including Passenger Safety (June 2016), Crowd Management (June 2016), and Basic Safety Training

(September 2014). Although there was no copy of a certificate of proficiency in survival craft and rescue boats on file on board the *Caribbean Fantasy*, the hotel director told investigators that he had completed this training. The hotel director was employed through Ship Supply of Florida by the charter party, America Cruise Ferries.

6.3.11 Chief Purser

The chief purser, who reported directly to the hotel director, had been on the *Caribbean Fantasy* since May 19, 2016, when the vessel was in the shipyard. This was her first contract on the vessel. She spent two months on the ship in Gibraltar and Cadiz before it transited Santo Domingo. She had worked on passenger vessels for 22 years at the time of the accident. Her training included Crisis Management and Human Behavior (February 2012), Crowd Management (February 2012), and Basic Safety Training (February 2016). In an emergency, she was the evacuation control deputy team leader and was responsible for preparation of passenger and crew manifests and the list of handicapped persons. This included ensuring manifests were handed over the muster station leaders. Additionally, she handled crew documentation and money from the hotel department. The chief purser was employed through Ship Supply of Florida by the charter party, America Cruise Ferries.

There was no record that the chief purser had completed an English proficiency test during her time with Baja Ferries.

6.3.12 Other positions

The safety officer was responsible for ensuring that all personnel had the required training. Deck and engine crew in safety critical positions had required training in crisis management and human behavior, basic safety training, and security training, as well as up to date medical certificates.

Hotel crew were not required to have a mariner certificate of competency; however, most were required to have specific training necessary to fulfill their emergency duties as personnel designated on muster lists to assist passengers in emergency situations, shipboard familiarization training, and safety training for personnel providing direct service to passengers in passenger spaces.

On August 8, 2016, the safety officer sent an email to Ship Supply of Florida, one of the *Caribbean Fantasy*'s crewing agencies, noting that she had incomplete documentation on 40 crew members, including missing crowd management training certificates, expired medical exam certificates, and a lack of seaman's books.[6] A return email from the company stated that they were still waiting for the crowd management certificates for nearly half of the crew listed, though no plan to provide training or certification was discussed in the email. According to a company management representative, this issue was rectified, stating, "the situation was addressed, certificates were onboard, Ship Supply sent them via several emails to safety officer".

6.4 Crew Turnover

The company decided to change out the crewing agency they were using for the engineering department, therefore, several of the engineering officers were new to *Caribbean Fantasy* and had been rotated in during the time the ship was in the shipyard. The air conditioning (A/C) engineer, motorman, and storekeeper had been on the ship prior to shipyard work, though the chief, first, and second engineers had only worked on the vessel since July 2016.

Handover notes were required per the company's SMS. However, since the previous chief engineer had been terminated, no written handover instructions or notes were on record for the turnover to the accident chief engineer. Likewise, no notes were on record from the former chief engineer who had been brought back to assist in the shipyard. He then remained onboard to familiarize the new engineer with the vessel. The familiarization had been about three weeks long. According to the DPA, the accident chief engineer was the official chief engineer from the day he joined the vessel.

Though STCW records were eventually obtained for all of the officers, the STCW certificates log maintained by the safety officer did not include any of the engineering officers who were working on the vessel at the time of the accident. Sign on dates found on the crew list indicated that the chief, first, second and third engineers had all signed on the vessel for the first time less than a month prior to the accident.

[6] Crew members were from various departments: hotel cleaner, beauty salon, security, concessionaire, doctor, reception, restaurant and galley.

7 Shipboard Training

Training records, logs, and the emergency plan and station bill database were maintained on the *Caribbean Fantasy* safety officer's computer. Although the computer was recovered from the accident site, NTSB investigators were not able to gain access to the device. The safety officer maintained a spreadsheet of crew training, licenses, and certificates subdivided into deck, engine, and hotel crew that included expiration dates. This electronic file was maintained on her computer and the most up to date file was not recovered. According to the company, these records were maintained on board and none of these records were sent ashore. Therefore, information regarding shipboard training was gathered from crew interviews and the SOLAS and STCW Certification Records binder that was recovered from the safety officer's office.

Safety training on board the ship was carried out by the safety officer. Mainly, this consisted of induction training where new and rejoining crew members would undergo training and familiarization. The training included a pre-departure and five induction phases. The pre-departure phase was held prior to getting under way from the port of embarkation and would cover emergency duties, alarms, lifejackets use, emergency stations, opening and closing of fire and watertight doors, and how to raise an alarm. Phase one training would encompass firefighting familiarization training, phase two lifesaving appliances and familiarization with the equipment, phase three company policies and procedures, phase four lifeboat exercises and first aid/CPR, and phase five survival and shipboard health. Records of attendance were maintained by the safety officer in a binder. Rejoining crew members would have to retake the induction training on an annual basis. As applied to lifesaving equipment, the training required a demonstration of a liferaft, a guide through a stowed lifeboat, and an exercise in a lifeboat during a drill.

7.1 Drills

Weekly drills were conducted onboard the *Caribbean Fantasy*; however, investigators were unable to verify crewmember attendance. Attendance checklists were printed from the safety officer's computer using the emergency plan database and, according to her, attendance records were maintained within that database. It was not possible to recover these records from the safety officer's computer.

The last general drill, which included fire and abandonment, was conducted on August 9, 2016. These drills were observed by the Coast Guard during their Annual Certificate of

Compliance (COC) and documented on the second page of the issued COC. Before that, a general fire and abandon ship drill was documented to have taken place on July 2, 2016.

On a July 2016 schedule spreadsheet titled Monthly Drills and Training Return (Baja Ferries form SAF22), which was maintained by the safety officer and sent to the company, an X was marked in the date boxes for July 3, 9, 17, 24, and 31 for weekly drills. The official logbook and the spreadsheet matched, with the exception of one-day discrepancies for the July 3 and July 17 drills which were recorded one day earlier in the logbook. The August 2016 schedule found on the bridge after the accident had drills scheduled for August 5 and 12. The safety officer stated that these drills had been completed, though there were no logbook entries indicating these drills had taken place. There were, however, logbook entries that a marine evacuation system video was shown to the crew on August 4 and a liferaft training drill was carried out on August 7.

Drills were required to take place no less than weekly based on SOLAS regulations. The last drill recorded in the logbook prior to the July drill was listed as March 16, 2016.[7] During the time the *Caribbean Fantasy* was in the shipyard in Bizerte, Tunisia (March 26–July 4, 2016) no drills were held. The ship was not operational at that time and only about 14 crew members were on board.

In addition to fire, general emergency, and abandon ship drills, individual drills were also carried out with the safety officer and crewmembers. Paper records were kept in the safety officer's office and attendance was recorded by a signature next to the attending crewmember's name. The last record of attendance for the MES deployment video was on March 1, 2016, before the *Caribbean Fantasy* went into the shipyard, despite the logbook entry for August 4.

Individual fire squad drills were also carried out. The last record of this being completed was July 25, 2016, for fire squads no. 1 and no. 2 and the boundary cooling and breathing apparatus bottle filling teams. There was no record of attendance for this drill.

The last record of individual lifeboat crew drills was on January 2, 2016. Many of the crew members listed in attendance were not assigned to the boats on which they drilled.

[7] SOLAS Chapter III Part B, Section 19.5.

There was no lesson plan or drill details found for any of the individual drills conducted.

7.2 Marine Evacuation System Training

The staff captain stated that he had not been trained on the marine evacuation system (MES) on the *Caribbean Fantasy*. During the Coast Guard formal hearing on the accident, he explained that he had experience on various MESs, but because the systems are sealed in boxes, it was not possible to physically train on the systems or see them working in real time.[8] The master told investigators that during a drill held on board the vessel on August 4, 2016, he and the safety officer showed the crew how to operate the system by presenting an MES training video. However, as noted previously, no record of crew attendance was found. The training video was presented only in English and the MES video was not specific to the *Caribbean Fantasy* MES.

Marine evacuation systems are designed and marketed to be fast, safe, and easy to operate. Although the performance standards state that the system shall be capable of being deployed by one person, the equipment manufacturer recommended five crew members for its effective use. Current SOLAS regulations for MES systems require crew drills to exercise the procedures required for deployment of such a system up to the point of immediately preceding actual deployment of the system. It is further required that this be augmented by regular onboard training aids such as the video used on the *Caribbean Fantasy*. Additionally, every system party member is required to participate in a full deployment of a similar system into the water either on board the ship or ashore, at intervals of no longer than two years but in no case longer than three years.[9] Neither the company nor shipboard records recovered by investigators provided evidence that crewmembers aboard the vessel during the accident had attended full MES deployment as required by safety regulations. There was, however, record of each port and starboard system being deployed within a 6-year maintenance interval, as prescribed by SOLAS Chapter III / Regulation 20.8.2.

7.3 Lifeboat Familiarization and Training

The *Caribbean Fantasy* was fitted with two partially-enclosed lifeboats (lifeboats no. 1 and no. 2) and one fully-enclosed lifeboat (lifeboat no. 3). The fully-enclosed boat was different in the

[8] Coast Guard Formal transcript- Day 2, page 156.

[9] SOLAS III Reg 19, 3.3.8

way that it was boarded (a platform versus embarkation deck), its engine starting procedure, and the loading process. The launching and release process was the same as the other two boats. There is no evidence that the crew received specific familiarization training with the fully-enclosed lifeboat. Furthermore, investigators found that the lifeboat launching instructions placard posted on the bulkhead at the embarkation deck was for a different type of lifeboat and posted instructions in the lifeboat for starting the engine were completely different from the actual procedure.

All lifeboats had new davit release hooks installed while the *Caribbean Fantasy* was in the shipyard. SOLAS Regulation III/B/I/9.2.1 requires posters or signs containing the relevant instructions and procedures for operating the hooks to be placed near survival craft launching controls. Post-accident, investigators found posted instructions in lifeboat no.3 that explained how to release the newly installed hooks. However, instruction sheets found in lifeboats no. 1 and no. 2 were for the previously removed release hooks. The installation procedure for the new hooks stated that the technician was to provide a hook instruction poster in the lifeboat.

According to the third officer, who was the commander of lifeboat no. 2 at the time of the accident, there was no training on how to operate the new hooks. He stated that he read the manual but was not directed to read it by senior officers.[10] He also said that the manual explained that when the lifeboat touched the water, the hooks should have released automatically, but they did not. Investigators found that, contrary to the third officer's statement, there was no automatic means to release the lifeboats once in the water.

No record of training was found in logs and training records, and witnesses interviewed on-scene confirmed that they had not completed any training related to the hydrostatic onload release nor emergency override operation of the newly installed lifeboat hooks. Crew were trained only to learn and demonstrate manually releasing the hooks from the blocks from outside the lifeboat in calm waters during drills.

7.4 New Crewmember Familiarization Training

The Baja Ferries SMS provided a formal checklist (Safety and Environmental Protection [SAF] form 93) for familiarizing newly employed and rejoining crewmembers with the vessel.

[10] Interview Transcript- Third Officer (August 22, 2016).

Investigators found logs documenting the familiarization, although not all crew members had signed off on them. For deck and engineering officers, the familiarization was to be completed within a specified duration. There were tasks to be familiar with prior to taking a navigational or engineering watch, other higher priority tasks to be familiar with within one week, and lower priority tasks to be familiar with within one month. No documentation was found in the SMS regarding vessel-specific training.

The chief engineer stated that he did not receive any training or familiarization from Baja Ferries after he reported for duty onboard the vessel. However, investigators found record of his completed familiarization form, signed by him on July 17, 2016.[11]

The first engineer stated that, upon his arrival on July 26, 2016, he worked with a new first engineer conducting a turnover for about one week prior to sailing from the shipyard in Tunisia. He stated that he had familiarization training with the safety officer, which included where the CO_2 fixed firefighting system components were located, where his assigned muster station was, and other typical familiarization items. He said that the safety officer also documented that he was familiar with the engine room equipment and systems.

A new second officer, who had joined the ship 4 days prior to the accident, stated that he did not have familiarization training and answered, "no comment" to numerous questions from investigator related to training for new crewmembers onboard the *Caribbean Fantasy*. He also stated that he was not trained on vessel-specific information about his assigned lifeboat, stating, "no comment," when asked by investigators. He stated that he did not attend any crew musters or fire drills during his time on the vessel. The familiarization checklist for this second officer was not found in the binder that held all crew familiarization records.

8 Working Language

8.1 Company Policy and Proficiency Requirements

According to IMO Maritime Safety Committee Circular 681, a vessel's posted information, including printed procedures and announcements, should be in a language "likely to be understood

[11] Crew Familiarization form (SAF 93, Page 572).

by all persons of nationalities normally using the service."[12] Additionally, crewmembers who are assigned to direct and assist passengers in an emergency should be able to communicate with passengers in the language or languages appropriate to the primary nationalities of passengers carried on that particular route.

The "Company Policies" section of Baja Ferries' Fleet Operations Manual defined "working language" as:

Language used for communications on board for all ISM related, which is English, and all crew members must be able to communicate between each other, read, hear and understand ISM instructions.[13]

The manual further stated: [14]

> The Master and C/E must verify that the appropriate manuals are written in a language that can be understood by themselves. If not, assistance must be immediately requested from the Fleet Superintendent.

According to the DPA, the company was having issues with crewmembers not "communicating sufficiently in English."[15] The DPA stated that this was more of an issue with hotel staff whose primary communications were with passengers, who were predominately Spanish-speaking. Officers and crew were not required to complete an English-language proficiency exam, although several had records of these exams and scores in their STCW documentation found in onboard records. The DPA stated that this was because they had started having crewmembers take the Marlin English Proficiency Test.[16] In that interview he said that he believed crewmembers were expected to pass the test with at least a 70 percent score. During on-scene interviews, some of those officers and crewmembers who had a record of a passed English

[12] MSC/Circular .681—Guidelines for Passenger Safety Instruction on Ro-Ro Passenger Ships (Adopted on 31 May 1995)

[13] Fleet Ops Manual, Company Policies, Section 3, Version 1, Revision, August 2014

[14] Fleet Ops Manual, Tech Operations, Section 227, Version 1, January 2014

[15] DPA Interview Transcript, January 17, 2017.

[16] Marlins is a UK based company that has been established to provide English language training solutions for the shipping industry. It uses shipboard and shoreside-based software to both train and evaluate competency of seafarers in the English language.

proficiency exam stated that they could not speak English and required a translator. Each individual crewmember's ability to speak English could not be determined.

8.2 Spoken Languages

8.2.1 Internal

Bridge team. According to both the master and the deck cadet, there were three languages being spoken on the bridge of the *Caribbean Fantasy*: English, Spanish, and French. The official working language on the ship was English. The cadet explained that the only time languages, aside from English, were spoken on the bridge, were when they were related to personal matters. According to the vessel's voyage data recorder (VDR) recording, all three languages were being spoken on the bridge during the accident sequence.

Passenger announcements. The *Caribbean Fantasy*'s emergency plan and station bill stated that the master was responsible for making announcements to passengers in an emergency. However, the master stated that the bridge officer on duty on the day of the accident was tasked with making the announcements and activating the alarms. The master directed the cadet to make the initial announcement informing the passengers of the fire. The cadet made the announcement in English at 0746 and, in turn, the second officer made the announcement in Spanish because the ship's passengers largely spoke Spanish. The master's intended announcement, given by the cadet, directed passengers to go to their muster stations. However, the second officer's Spanish announcement directed passengers and crew to abandon ship. Because the master did not speak Spanish, he did not realize that the abandon ship announcement was being made at that time.[17] The emergency plan and station bill did not prescribe any person dedicated to make announcements in Spanish during emergencies. No manual activation of bells or whistles were heard on the VDR audio before or after the announcement. However, an automated fire alarm could be heard overhead prior to the passenger announcements[18].

8.2.2 External

Using VHF channel 16, the accident response on scene coordinator aboard the Coast Guard cutter *Joseph Tezanos* (WPC-1118) communicated with the master of the *Caribbean Fantasy* in

[17] Coast Guard formal hearing testimony, master.

[18] See Operations Factual Report for additional information pertaining to automated fire alarms.

English, while communicating with some of the other response vessels in Spanish. At one point, as recorded on the *Caribbean Fantasy*'s VDR, the master said over the VHF radio, "please speak English!" as he was unsure who was speaking to whom. The cadet stated in his interview that he was attempting to assist the master with communications because internal and external communications were on two different VHF channels and "it was not easy to revert."[19]

8.3 Placards, Instructions, Labels, and Operating Manuals

Most of the crew and passengers spoke Spanish, yet instructions for emergency equipment and procedures were primarily in English. Moreover, upon examination of the vessel, investigators found multiple cases of drawings, instructions, placards, and emergency equipment manuals in other languages. Ship drawings were in Japanese and engineering drawings were in both Italian and Japanese. Old lifeboat hook operating instructions, which were still onboard after the hooks had been replaced, were in English and Italian. The water-mist fixed firefighting system manual, as well as the operating instructions in the CO_2 room, were written in English and Italian. The SOLAS training manual aboard the vessel was from previous ownership; the content had not been updated when the ship changed hands to Baja Ferries ownership (although it had a new stamp and a title change to *"Caribbean Fantasy"*); and the languages were in Italian and English. Additionally, some of the written instructions were translated to English but difficult to understand due to poor translation.

Baja Ferries policy BF 227, volume 2, stated that manuals and drawings on board were to be updated and in good condition and that the master and chief engineer must verify that the appropriate manuals were written in a language that can be understood by themselves. Throughout the investigation there were numerous instances where manuals, drawings and reference material were found to be obsolete, out of date, or not in the official or working language of the ship. Examples include:

- The safety training manual – contained obsolete material and information.
- Engineering drawings and diagrams – contained only Japanese language (the ship was built in Japan)

[19] Interview transcript- deck cadet, August 20, 2016.

- Instructions for the operation of the water mist system – instructions were in English and Italian. A supplementing instruction memo from RINA, the classification society, was found to be in Italian, which neither the deck nor engineering crew spoke.
- Lifeboat release hook placards for one of the lifeboats were for the release hooks that were replaced and were in English and Italian.
- Lifeboat engine start instructions were in English and Italian.
- The CO_2 instruction manual was in Italian and the drawings were in Italian and English.
- Lifeboat survival manuals were in English and Italian.
- Lifejacket donning instructions were in Italian or Japanese and English.
- Emergency instructions in case of fire were not consistent with what was in place on board the *Caribbean Fantasy*.
- Engineering drawings such as fuel oil piping diagrams, and approved drawings from 1984 for the 58/64 type engines, serial numbers D164023 and D164024 were in Japanese.

Figure 1. Left: Emergency instruction sign, in English and Italian, on the back of a deck 6 cabin door. The fire instructions are also incorrect as they state in case of a "great fire" the signal is "two long blasts followed by the alarm bells." Also note the masking tape covering the outer edges of the emergency instructions. Right: Lifejacket donning instruction sign, in English and Japanese, found on deck 6 near fire locker no. 2. The instructions are not for the lifejacket types carried on board at the time of the accident.

9 Emergency Plan and Station Bill (Muster List)[20]

According to SOLAS Chapter III Regulation 8 ("muster list and emergency instructions"), the following are required of all vessels:

(a) Clear instructions to be followed in the event of an emergency shall be provided for every person on board in the language or languages required by the ship's flag State and in the English language.

(b) Muster lists and emergency instructions shall be exhibited in conspicuous places throughout the ship including the navigation bridge, engine-room and crew accommodation spaces.

(c) The muster list shall specify details of the general emergency alarm and public address system and action to be taken by crew and passengers when this alarm is sounded. The muster list shall also specify how the order to abandon ship will be given.

Two months prior to the accident, the *Caribbean Fantasy*'s emergency plan and station bill was updated to address personnel turnover and language barriers. The safety officer assigned emergency stations based on English proficiency. She stated that some of the crew's emergency positions were changed in the emergency plan and station bill to accommodate crewmembers' ability, or lack thereof, to speak fluent English.

During interviews on scene, as well as at the Coast Guard formal hearing into the accident, there was confusion as to which station bill was in use at the time of the fire. A RINA-stamped station bill was dated February 2, 2016, yet a locally-stamped station bill was approved in the shipyard on July 3, 2016. During the hearing, questions about the station bill were not clearly answered by Baja Ferries or RINA. The station bill was modified based at the vessel owners' request, yet who specifically requested the modification was not provided during the hearing. This was a major change to the previously implemented plan, including new code words and changes to the duties of crewmembers and officers. Though the company's SMS addressed crew

[20] *Muster list* and *station bill* are interchangeable terms for a listing of instructions and crewmembers' responsibilities during an emergency. The *Caribbean Fantasy* used the term "Emergency Plan and Station Bill," whereas the US *Code of Federal Regulations* (CFR) uses "muster list."

familiarization and instructing new crewmembers on their respective station bill positions and duties, investigators found no evidence and were not made aware of any plan or timeline constructed in order to carry out the implementation of a new updated emergency plan (February-approved plan). There was also no record of a timeline for the implementation. Additionally, no process was in place for the company to manage major changes to the station bill. For example, there was no requirement or process for training the crew on the new station bill duties. A local RINA surveyor stamped and approved the July station bill along with the master.

The Emergency Contingency Plan that was found on the bridge was out of date (revision 4 issued 05/10) and was a document controlled by their previous management company, V Ships (V. Ships Leisure, Monaco) management structure. The company organization chart was out of date and did not reflect the current organization of the ship. This document was different from the emergency plan and station bill and included a company organization chart which was different from the one found in the Fleet Operations Manual. After technical review of this report, Baja Ferries provided a copy of the company's most current Emergency Contingency Plan, which was dated May 2014, stating that this version existed electronically onboard. Per ISM Code 11.2.3, obsolete documents are to be promptly removed. Further, the ISM code requires that valid documents be available in relevant locations, such as the bridge.

During the accident, the crew followed neither of the approved station bills. According to crew interviews, the master diverted some crew members from their assigned emergency duties to complete other assignments. For example, after experiencing issues with a gap between the embarkation deck and lifeboat no. 2, the master diverted the lifeboat no. 2 commander—the second officer (not on watch)—to lifeboat no. 1. This second officer had only been on the ship for four days prior to the accident.

On lifeboat no. 3, two crewmembers assigned to assist in operating the lifeboat did not muster and did not abandon ship on this lifeboat. The second officer (on watch), who commanded lifeboat no. 3, stated that there should have been five crewmembers at the lifeboat, as they typically drilled, including a second commander and an engineer. Neither the second commander nor the engineer showed up at the boat when it was ready to be launched.

The July 3 station bill assigned five crewmembers to the bridge during an emergency. However, following the initial report of fire in the engine room, only three people remained on the bridge, including the deck cadet. The staff captain volunteered to leave the bridge and perform duties that were not assigned to him. Per the station bill, the cadet had no emergency duties, yet the master assigned the cadet responsibilities such as communicating with passengers, shoreside firefighters, and response vessels on scene and senior officers.

When the deck cadet was asked what his emergency duties were, he said, "to assist the captain." He understood that he did not have any other assigned duties in an emergency. He stated that, in case of abandon ship, he was to go to the starboard MES liferaft no. 21, although he was not sure if this was correct. The master and the cadet were the last two people on the bridge during the evacuation.

The emergency plan and station bill assigned pursers and assistant pursers to each muster station as team leaders. They were directed to retrieve a passenger manifest located at the ship's reception desk and take a roll-call at the muster station. That manifest was to be retrieved by the chief purser from the bridge at the commencement of an emergency. However, the manifest was not found on the bridge and, therefore, was never used in the accountability of passengers.

An "Emergency Contingency Plan," which was different from the emergency plan and station bill, was also found on the bridge following the accident. The document was out of date, having been last revised in May 2010, and was issued by the *Caribbean Fantasy*'s previous management company, V. Ships Leisure. The Emergency Contingency Plan did not reflect the current organization of the ship, and a company organization chart found within was different than the chart in the Baja Ferries SMS[21].

10 Company Oversight

10.1 Safety Management System

The owner of the *Caribbean Fantasy*, Baja Ferries, had an SMS that defined the roles and responsibilities of all personnel, provided safe practices in ship operations and navigation, and

[21] As previously noted, the company provided an electronic copy on February 10, 2018, dated May 2014 though hardcopies were not located on the vessel. The electronic copy had an updated organizational chart that more accurately reflected deck officer organization.

established safeguards against certain identified risks. As required by the ISM code, the company was to provide a copy of the SMS to the ship's personnel in a working language or language understood by them, and the SMS was to clearly define and document that the ship's master was responsible for implementing the SMS on board, for motivating the crew in the observation of that policy, for verifying that applicable procedures and requirements were adhered to, for periodically reviewing the SMS for areas of improvement, and for reporting all deficiencies to the DPA.

In chapter 22 of the company's SMS, the concept of "Condition Red" was discussed. Paragraph 22.1 stated, that to ensure safe navigation there are times when the bridge and engine teams are to remain focused and undisturbed. Such times include, but are not limited to:

- Arrival and departure from port
- Restricted visibility
- Navigation in areas of concentrated traffic
- Navigation in hazardous areas
- Any other time assessed as "critical" by the Master or Officer of the Watch

The cadet stated in his interview that he had called reception and informed them that they were in a "red condition." This was routine as the ship commenced entry into the port where they would be navigating in a hazardous or busy waterway.

The SMS included checklists for events such as fire and abandonment. However, there was no evidence that either of those checklists were used on the bridge or in the engine room at the time of the emergency, nor were records provided to investigators that showed the use of such checklists post-accident.

10.1.1 Company and Vessel Organization

A company organizational chart was found in the SMS. Figure 1 depicts the reporting structure from the shoreside perspective.

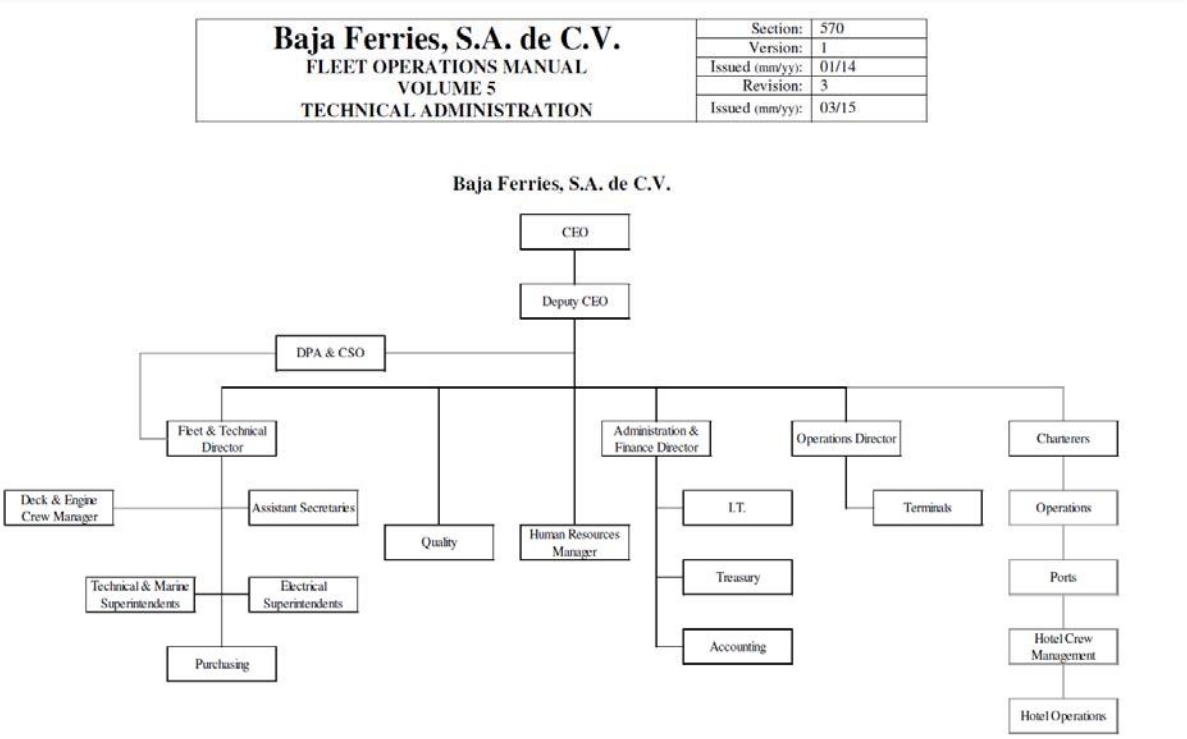

Figure 2. Baja Ferries, S.A. de C.V. organizational structure.

As noted earlier, a description of the organizational structure on the ship was found in the Emergency Contingency Plan (ECP); however, it did not include the staff captain or safety officer and did not appear to be updated to follow the structure of the vessel. Likewise, the outdated SOLAS training manual found on board the *Caribbean Fantasy* described the emergency organization but did not include either the staff captain or the safety officer.

10.2 Decision Support System

SOLAS Chapter III Part B, Section I Regulation 29 requires companies to institute a decision support plan. This plan should consist of, at a minimum, a printed emergency plan with all foreseeable emergency situations, such as fire, damage to the ship, threats to safety and security of the vessel and its passengers/crew, pollution, personnel accidents, cargo accidents, and emergency assistance to other vessels. According to records from RINA, *Caribbean Fantasy* had a decision support system that was to be used in emergencies, in accordance with the SOLAS regulation. Based on the master's interview, investigators determined that this system was not used during the accident. Investigators requested a copy of the document from RINA but learned that

the classification society did not possess material related to the decision support system. Further, when company representatives were asked about the decision support system, they stated there was none in place.

In the spreadsheet that documented drills and training held on board the *Caribbean Fantasy*, a section for the weekly drills had the following text "ECP [emergency contingency plan]/masters decision support system." The outdated V. Ships Leisure Emergency Contingency Plan found on the bridge did contain decision support checklists, communication forms, and other standard forms, but crewmembers interviewed after the accident could not recall that a decision support system was in use.

Company officials later provided investigators with a more current electronic version of the ECP, which included a decision support system. An appendix in this document contained ECP/SOPEP Master's Decision Support System, which included checklists, communication forms and media Pro formas related to foreseeable emergencies.

10.3 Documentation

There were numerous documents, drawings, and instructions found on the *Caribbean Fantasy* that were out of date or obsolete (in addition to not being in the working language of the ship, as previously noted). This resulted in problems in use, familiarization, and understanding of such material. Some documentation was recovered from the safety officer's office, though it was not fully up to date at the time of the accident. Additionally, obsolete documents and drawings recovered from the vessel added complexity to the investigation when trying to determine the validity or interpret the language in the material. Also challenging to investigators was the inability to access to the safety officer's computer. Any updated documentation, training logs, etc., that may have been newly modified could not be found. The ISM code requires that obsolete documents be promptly removed.[22]

[22] ISM Code 11.2.3

10.4 Evaluation of Crew Performance

Performance evaluations were found for some of the deck and engineering officers, as well as the deck cadet. Many crewmembers were new to the vessel and thus not yet scheduled to have performance evaluations completed. All of those that were completed and later reviewed by investigators included a recommendation for future employment on the vessel.

11 Work/Rest

The STCW code and the International Labour Organization (ILO) Maritime Labour Convention (MLC) state that officers in charge of a navigational watch and any rated person forming part of this watch must receive a minimum of 10 hours of rest in any 24-hour period. The STCW code requires that mariners have 77 hours off-duty in any 7-day period—the equivalent of a 91-hour-maximum work week. Further, the STCW code regulations also require that if rest periods are broken up within a 24-hour period at least one of the rest periods must be no less than 6 consecutive hours.

Crew members stated in interviews that they had time off while in port in Santo Domingo. However, watch schedules posted on the bridge did not indicate this time off. According to the record of seafarer's scheduled working arrangements for the *Caribbean Fantasy* in the month of August, all of the engineering staff were scheduled to work 13 hours per day, Sunday through Saturday. Similar details regarding the deck officers' schedules, including seafarer's scheduled working arrangements, were not provided to investigators. Additionally, work/rest histories were not available to investigators though they are typically taken immediately following an accident due to the perishable nature of the information.

The company's SMS stated in section 25, paragraph 25.3, that "Owners and Captains shall take steps to ensure that officers are adequately rested before they go on watch. It is essential, as a safety measure apart from other considerations, that their efficiency as watchkeeping officers is not impaired by fatigue or others." Though requested, the company did not provide work/rest logs for the crew. Crew contracts ranged from 3 months to 11 months, with no scheduled time off.

According to the chief engineer, work and rest hours were tracked on a computer program that was managed by the storekeeper. He could not remember if there was a procedure in the SMS

that specifically addressed work/rest. Investigators could not find a procedure that described the tracking of work and rest.

12 Toxicology Testing

The master, staff captain, safety officer, second officer on watch, able-bodied seaman (quartermaster) on watch, chief engineer, third engineer on watch, motorman on watch, and wiper on watch were tested for the presence of illegal drugs and alcohol per federal regulations.[23] However, testing was not completed during the 32-hour maximum time window for drugs and 8-hour maximum time for alcohol following an accident, as required by Title 46 *Code of Federal Regulations* (CFR) Part 4.06, as well as the company's SMS policy. This regulation (Part 4.06-3(a) states that alcohol testing must be conducted within two hours unless precluded by safety concerns…and must be completed as soon as the safety concerns are addressed…not required to be conducted more than 8 hours after the occurrence of the incident. It was completed the morning of August 20, 2016. All toxicology results were negative. However, alcohol testing was never conducted as required by regulation. The Coast Guard informed the NTSB that they were aware of these non-conformities. The company informed the Coast Guard, via CG form 2692 that they did not initially complete the drug tests "because of the evacuation and abandon operation". However, everyone was off the vessel within eight hours and could have been tested for alcohol within the required time limits.

[23] Federal regulations at Title 46 CFR Part 4.06 require postaccident drug and alcohol testing on all individuals engaged in or employed on board a vessel who are directly involved in any accident meeting the criteria of a serious marine incident as defined at Title 46 CFR 4.03-2. On June 20, 2006, new Coast Guard regulations (46 CFR 4.06-3) took effect requiring alcohol testing within 2 hours but no more than 8 hours of a serious marine incident and the collection of drug-test specimens within 32 hours. The five drugs for which tests are conducted are amphetamines, cocaine, marijuana, opiates, and phencyclidine.