NATIONAL TRANSPORTATION SAFETY BOARD
Public Meeting of June 5, 2018
(Information subject to editing)

Fire aboard Roll-on/Roll-off Passenger Vessel *Caribbean Fantasy*, Atlantic Ocean, 2 Miles Northwest of San Juan, Puerto Rico,
August 17, 2016
NTSB/MAR-18/01

This is a synopsis from the NTSB's report and does not include the Board's rationale for the conclusions, probable cause, and safety recommendations. NTSB staff is currently making final revisions to the report from which the attached conclusions and safety recommendations have been extracted. The final report and pertinent safety recommendation letters will be distributed to recommendation recipients as soon as possible. The attached information is subject to further review and editing to reflect changes adopted during the Board meeting.

Executive Summary

About 0725 on August 17, 2016, a fire broke out in the main engine room of the roll-on/roll-off (Ro/Ro) passenger vessel *Caribbean Fantasy* when fuel spraying from a leaking flange came in contact with a hot surface on the port main propulsion engine. The fire could not be contained, so the master ordered the ship to be abandoned. US Coast Guard and other first responder vessels and aircraft, along with good Samaritan vessels, helped transport all 511 passengers and crew to the port of San Juan, Puerto Rico. Several injuries, none life-threatening, occurred during firefighting and abandonment efforts. The burning vessel drifted in the wind and grounded on the sandy bottom outside the port. Three days later, the vessel was towed into the harbor, where shore-based firefighters extinguished the last of the fire. The accident resulted in an estimated $20 million in damage to the *Caribbean Fantasy*, which was eventually scrapped in lieu of repairs.

Safety issues identified in this accident include the following:

- machinery maintenance practices
- fuel and lube oil quick closing valves
- fire protection
- crew training on and familiarity with emergency systems and procedures
- implementation of the company's safety management system
- oversight by the flag state and the flag state's recognized organization

Findings

1. Electrical and steering systems, crew licensing and certification, and weather were not causal factors in the accident.

2. The fire on the port main propulsion engine started when fuel spraying from a leaking blank flange at the end of the engine's fuel supply line came into contact with the hot exhaust manifold and ignited.

3. Use of improper gasket material on the pressurized fuel supply end flange for the port main engine resulted in a breakdown of the gasket material and the eventual fuel spray that led to the fire.

4. The nonstandard blanking plate used on the end flange of the port main engine fuel supply system potentially exacerbated the leak that led to the fire.

5. Bolts inserted by *Caribbean Fantasy* engineering personnel into the quick-closing valves to prevent their closing were permanently in place for use during routine operations.

6. Testing during recent class surveys and port state control examinations did not adequately test the full functionality of the quick-closing valves.

7. Lack of adherence to manufacturer's guidance and proper machinery maintenance procedures contributed to the fire aboard the *Caribbean Fantasy*.

8. The water-mist fixed firefighting system did not suppress the fire likely due to the simultaneous activation of multiple coverage zones and a reduced water supply as a result of drencher system activation.

9. The carbon dioxide fixed firefighting system did not extinguish the fire due to ventilation dampers that failed to properly close.

10. The uninterrupted flow of fuel to the fire from the blocked-open quick-closing valves allowed the fire to exceed the design criteria of the structural fire protection for the engine room, and as a result the fire spread to the garage deck above.

11. The decision to abandon the *Caribbean Fantasy* was reasonable given the availability of nearby response resources, the proximity to a large port, and the uncertainty of the effects on the vessel from the fire.

12. The abandonment process on board the *Caribbean Fantasy* was disorganized and inefficient.

13. Crewmembers assigned to safety-critical roles on the lifeboats were not proficient with the procedures for opening the lifeboat release hooks, which delayed the abandonment and put lives at risk.

14. The crew assigned to deploy the marine evacuation system and liferafts were not adequately trained, which delayed the abandonment.

15. The crew did not follow the manufacturer's procedures when launching the starboard marine evacuation system liferafts, which resulted in the premature inflation of the liferafts.

16. The five ankle injuries resulted from using the marine evacuation system deployed at a steeper angle than designed.

17. The mass rescue operation was effective.

18. The presence of a passenger vessel safety specialist at Coast Guard Sector San Juan, who had trained and worked with local officials, contributed to the success of the *Caribbean Fantasy* mass rescue operation.

19. The company failed to successfully implement its safety management system, both ashore and on board the *Caribbean Fantasy*.

20. Baja Ferries possessed a poor organizational safety culture, as evidenced by management's lack of commitment to core safety programs and its disconnect from the training, maintenance, and operations on board the *Caribbean Fantasy*.

21. The recognized organization RINA Services, failed to meet its responsibilities, on behalf of the Panama Maritime Authority, to ensure that the *Caribbean Fantasy* met and remained in compliance with international and statutory requirements.

PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the fire aboard the roll-on/roll-off passenger vessel *Caribbean Fantasy* was Baja Ferries' poor safety culture and ineffective implementation of their safety management system on board the vessel, where poor maintenance practices led to an uncontained fuel spray from a blank flange at the end of the port main engine fuel supply line onto the hot exhaust manifold of the engine. Contributing to the rapid spread of the fire were fuel and lube oil quick closing valves that were intentionally blocked open, fixed firefighting systems that were ineffective, and a structural fire boundary that failed. Contributing to the fire and the prolonged abandonment effort was the failure of the Panama Maritime Authority and the recognized organization, RINA Services, to ensure Baja Ferries' safety management system was functional.

RECOMMENDATIONS

New Recommendations

As a result of this investigation, the National Transportation Safety Board makes new recommendations to the US Coast Guard, Baja Ferries S.A. de C.V., RINA Services S.p.A, the International Association of Classification Societies (IACS), and the Panama Maritime Authority.

To the US Coast Guard:

1. Require operators to perform full function tests of quick-closing valves during inspections and examinations, ensuring that the associated systems shut down as designed and intended.

2. Evaluate the feasibility of creating a passenger vessel safety specialist billet at each sector that has the potential for a search and rescue activity characterized by the need for immediate assistance to a large number of persons in distress, and staff sector-level billets, as appropriate, based on the findings of that evaluation.

To Baja Ferries S.A. de C.V.:

3. Perform a worst-case scenario risk assessment for all active water-based fire suppression systems on your vessels to evaluate whether the existing freshwater supply is sufficient.

4. Review your lifesaving appliance training program, including recordkeeping procedures, and revise the program to ensure that crewmembers have proficiency with onboard systems.

5. Provide formal and recurrent training to shoreside management and senior shipboard officers on the International Safety Management (ISM) Code to ensure that all senior leaders are fully knowledgeable about the policies and procedures in the safety management system.

To RINA Services:

6. Require operators to perform full function tests of quick-closing valves during surveys, ensuring that associated systems shut down as designed and intended.

7. Review the performance of auditors who conducted either International Safety Management Code document of compliance audits at Baja Ferries S.A. de C.V. or safety management certificate audits on the *Caribbean Fantasy* to ensure that their individual actions met the intent of RINA Service's rules and guidance.

To the International Association of Classification Societies:

8. Encourage all member organizations to require operators to perform full function tests of quick-closing valves during surveys, ensuring that associated systems shut down as designed and intended.

To the Panama Maritime Authority:

9. Review the performance of RINA Services, acting on behalf of the flag-state administration, to determine whether the classification society is meeting International Maritime Organization guidelines.

10. Review actions taken as the flag state of the *Caribbean Fantasy* and revise procedures to ensure future actions meet the intent of International Maritime Organization guidelines.