

Additional Information from Carnival Cruise Lines on the U.S. Coast Guard Carnival Splendor Fire Investigation Report Recommendations

Updated July 16, 2013

Coast Guard Recommendations from the Report	Carnival Cruise Lines Response
<p>1. Carnival should remove 40-second delay in automatic activation of the Hi-Fog system</p>	<p>As a result of our internal investigation, in March 2011 Carnival removed the Hi-Fog system delay on all ships. (Prior to the Carnival Splendor fire, this system delay, which was designed by the manufacturer and inspected by external and internal auditors, was common and accepted practice. The delay was originally designed to avoid false positive signals.)</p>
<p>2. Carnival should improve systems to eliminate or mitigate risk factors:</p> <ul style="list-style-type: none"> a) Corrosion and drainage issues in DGs b) Problems with slow turn feature of DG, time interval c) Lack of crew familiarity with immediate casualty control procedures for engine room fires d) Lack of crew familiarity with engine room layout and firefighting strategy and procedures for engine room fires e) Problems with CO2 system f) Splendor and Dream class vessel engine room electrical system design issues 	<p>Carnival has carried out an extensive evaluation and has addressed each of these points. More specifically:</p> <ul style="list-style-type: none"> a. On diesel generator 5, our independent third-party experts and the engine manufacturer jointly pressure tested the air cooler and confirmed that there was no leak. b. We are in the process of reviewing this finding with outside experts and the engine’s manufacturer to determine the best course of action. c. Our crew was familiar with the procedures for engine room fires. We have reviewed all of our procedures and have reinforced our training at all levels for firefighting. We have modified our approach to deploying the CO2 system. d. Our crew was familiar with the engine room layout and equipment and firefighting strategy and procedures. We have reviewed all of our procedures and have reinforced our training at all levels for firefighting. e. As the report notes, the CO2 system was approved for the ship class. To address reported problems, following our internal investigation, we modified testing and inspection of our CO2 systems. We have changed the sequence to avoid a situation where the valve could lock and prevent the system from deploying on the majority of our vessels. On the remaining ships, we have implemented a procedural change to avoid malfunctions until those ships are modified. f. On April 17, 2013 the company announced a \$300 million fleet-wide enhancement program that is currently underway. This program will significantly enhance emergency power capabilities, and is further strengthening existing fire safety systems by installing the most advanced technology available, and improving the level of operating redundancies across the company’s entire 24-ship fleet. The improvements include a reconfiguration of certain engine-related electrical components and rerouting of critical electrical cables.

3. Lloyd's Register should inspect CO2 systems on Dream class vessels	In addition to Lloyd's Register review, Carnival has carried out extensive inspections. In addition to monthly and quarterly inspections, we conduct an annual test of the systems under pressure with the service provider.
4. Coast Guard should enhance guidelines and procedures for fire drill evaluations	In addition to enhanced and reinforced guidelines for evaluation by the Coast Guard, Carnival has reviewed all of our procedures and we have enhanced and reinforced our training at all levels for firefighting.
5. Coast Guard should advocate improved guidance for fire drills on board all ships covered International Convention for the Safety of Life at Sea (SOLAS)	

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