

NATIONAL TRANSPORTATION SAFETY BOARD
Meeting of April 15, 2025
(Information subject to editing)

Fire aboard Roll-on/Roll-off Container Vessel *Grande Costa D'Avorio*
Newark, New Jersey
July 5, 2023
DCA23FM039

This is a synopsis from the NTSB's report and does not include the Board's rationale for the findings, probable cause, and safety recommendations. NTSB staff is currently making final revisions to the report from which the attached findings 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

What Happened

On July 5, 2023, about 2100 local time, the 692-foot-long roll-on/roll-off container (Ro/Con) vessel *Grande Costa D'Avorio* was docked at Port Newark, New Jersey, when a pusher vehicle (a passenger vehicle, owned by the cargo loading company and retrofitted with a steel front bumper), operated by shoreside workers who were loading used vehicles onto the vessel's garage decks, caught fire in an interior garage deck.

Vessel crewmembers attempted to put out the fire using portable fire extinguishers but were unsuccessful. The captain ordered the vessel's fixed gas (carbon dioxide [CO₂]) fire extinguishing system to be activated. The crew attempted to seal the garage decks where the CO₂ had been released to allow the CO₂ to smother the fire, but they were unable to close a large rampway door that was controlled from a single panel inside the garage where the fire was located. Land-based firefighters arrived on scene. While attempting to put out the fire, two of the land-based firefighters likely became disoriented, and, unable to find their way out of one of the smoke-filled garage decks, died. Six additional emergency responders were injured during the firefighting and rescue operations. The damage to the vessel was estimated to be over \$23 million.

What We Found

We found the vessel fire resulted from the overheated transmission fluid of a “pusher” vehicle—a passenger vehicle used for industrial purposes—which boiled over and ignited on a hot engine surface. Such a vehicle is not suitable for use as a power industrial truck because it did not meet Occupational Safety and Health Administration power industrial truck standards. We found that, although the vessel captain’s decision to release CO₂ into the fire protection zone that included the deck with the fire was appropriate, the deck 12 hydraulic garage door lacked operating controls outside the fire protection zone, which prevented the crew from safely closing the door and thus led to the ineffectiveness of the CO₂ to extinguish the fire.

By directing firefighters to enter the area where the CO₂ extinguishing system had been activated, contrary to general marine firefighting convention, firefighters were exposed to additional and unnecessary risk. The Newark Fire Division was not adequately prepared to respond to a vessel fire, and they lacked marine vessel firefighting training; therefore, their actions were ineffective and contributed to the fire’s spread and the vessel damage, and led to the firefighter casualties. When ports work with local municipalities in advance to coordinate vessel firefighting response preparedness and training, safety is improved and better outcomes are achieved. Lastly, the lack of an emergency procedure that contained a muster area or training in the event of an emergency on board a vessel increased the risk to life or injury to the shoreside workers.

We determined that the probable cause of the fire aboard the Ro/Con vessel *Grande Costa D’Avario* was Ports America’s use of a passenger vehicle as a pusher vehicle in an industrial application for which it was not intended, which led to the vehicle’s transmission fluid overheating, boiling over, and igniting on a hot engine surface. Contributing to the fire’s duration and severity was the absence of operating controls on the outside of one of the vessel’s fire boundary garage doors, which prevented the crew from safely closing the door and directly led to the ineffectiveness of the fixed gas fire extinguishing system. Also contributing to the severity of the fire was the Newark Fire Division’s lack of marine vessel firefighting training, which resulted in an ineffective response and led to the firefighter casualties.

What We Recommended

As a result of this investigation, we made recommendations to the Occupational Safety and Health Administration to inform their field personnel of the circumstances of the *Grande Costa D’Avario* fire and provide guidance in proper enforcement of the powered industrial truck requirements at marine terminals and during longshoring operations to assure safe and healthy working conditions. We also made recommendations to the Newark Fire Division and the Port Authority of New York and

New Jersey, the American Association of Port Authorities, the International Association of Firefighters, the International Association of Fire Chiefs, and the National Volunteer Fire Council, to improve land-based firefighting departments' marine vessel firefighting training and familiarity. To ensure that shoreside personnel are aware of what to do in the event of a fire on board a vessel, we recommended that Ports America and American Maritime Services develop policies, per 29 *Code of Federal Regulations* 1917.30 and 29 *Code of Federal Regulations* 1918.100, for such emergencies, including accounting for all employees.

In addition, we made a recommendation to Grimaldi Deep Sea, the ship owner, to inventory all their vessels to identify all openings that are part of a fire boundary and modify their vessels so that the openings are capable of being closed from outside the protected space. We also recommended that RINA Services, the vessel classification society, revise their procedures for review and approval of vessel plans to ensure compliance with all applicable international regulations. Lastly, we recommended that the US Coast Guard submit a proposal to the International Maritime Organization to clarify the *International Convention for the Safety of Life at Sea* regulation requiring that all openings capable of admitting admit air into or of allowing gas to escape from a protected space can be closed from outside the protected space applies, regardless of their expected operational condition when in port or at sea.

Conclusions

Findings

1. The ship's mechanical equipment and electrical systems were not causal to the fire.
2. Given the vessel crew's inability to put the fire out with handheld fire extinguishers and fire hoses, the captain's decision to secure the fire protection zone and activate the vessel's fixed fire extinguishing system, even with the deck 12 hydraulic garage door open, was appropriate.
3. Based on the witness accounts of the fire, the manufacturer's recall warning that the Jeep model transmission fluid was susceptible to overheating when used in rigorous offroad conditions, the Jeep's post-fire damage, and the Jeep's operating history in rigorous industrial conditions pushing nonrunning vehicles onto vessels, the fire originated when the Jeep's transmission fluid boiled over and ignited on a hot engine surface.
4. As a passenger vehicle, the Jeep was not suitable for use as a power industrial truck because it did not meet Occupational Safety and Health Administration's power industrial truck standards.

5. Other ports may not be aware of the Occupational Safety and Health Administration's interpretation that vehicles used as pusher vehicles, pushing nonrunning vehicles onto vessels, must comply with its power industrial truck standards.
6. The absence of operating controls outside the protected space at the deck 12 hydraulic garage door prevented the crew from safely closing the door, which resulted in the inability of the carbon dioxide extinguishing system to extinguish the fire.
7. Because the deck 12 garage door did not have operating controls outside of the protected space, the vessel did not meet International Convention for the Safety of Life at Sea fire boundary construction requirements, which are critical for containing vessel fires.
8. The Incident Commander and other on-scene Newark Fire Division chiefs reduced the effectiveness of the carbon dioxide extinguishing system, ultimately increasing the severity of the fire, by directing the firefighters to actively engage the fire in the fire protection zone where the extinguishing system had been activated, which allowed more carbon dioxide out and more oxygen in, contrary to general marine firefighting convention.
9. By directing firefighters into the fire protection zone and failing to notify all of those firefighters that the carbon dioxide extinguishing system had been activated, the Incident Commander and other on-scene Newark Fire Division chiefs exposed the firefighters to additional and unnecessary risk.
10. The smoky, unfamiliar, and Immediately Dangerous to Life or Health conditions likely caused two firefighters to become disoriented and unable to find their way out of the garage, which led to their deaths.
11. The Newark Fire Division's lack of marine vessel firefighting training left land-based firefighters unprepared to respond to a vessel fire, resulting in an ineffective response that contributed to the fire's spread and the vessel damage, and led to the firefighter casualties.
12. Awareness of the *Grande Costa D'Avorio* fire and its associated firefighting challenges would help other land-based fire departments identify necessary changes to improve the effectiveness of their shoreside vessel fire response.
13. Considering the Newark Fire Division's lack of marine vessel firefighter training, the Port Authority of New York and New Jersey could improve safety and achieve better outcomes when fires occur by working in advance with local municipalities to coordinate vessel firefighting response preparedness and training.

14. The lack of an emergency procedure providing a way to account for all employees after an emergency evacuation, such as a muster area, and the lack of training for Ports America or American Maritime Services employees in the event of a fire or emergency on board a vessel, increased the risk to life or injury to the shoreside workers.

Probable Cause

The National Transportation Safety Board determines that the probable cause of the fire aboard the roll-on/roll-off container vessel *Grande Costa D'Avorio* was Ports America's use of a passenger vehicle as a pusher vehicle in an industrial application for which it was not intended, which led to the vehicle's transmission fluid overheating, boiling over, and igniting on a hot engine surface. Contributing to the fire's duration and severity was the absence of operating controls on the outside of one of the vessel's fire boundary garage doors, which prevented the crew from safely closing the door and directly led to the ineffectiveness of the fixed gas fire extinguishing system. Also contributing to the severity of the fire was the Newark Fire Division's lack of marine vessel firefighting training, which resulted in an ineffective response and led to the firefighter casualties.

Safety Recommendations

As a result of this investigation, the National Transportation Safety Board makes the following new safety recommendations.

To the US Coast Guard:

1. Submit a proposal to the International Maritime Organization to clarify and emphasize that the existing *International Convention for the Safety of Life at Sea* regulation requiring that all openings capable of admitting air into or of allowing gas to escape from a protected space can be closed from outside the protected space applies regardless of their expected operational condition when in port or at sea. (M-25-XX)

To the Occupational Safety and Health Administration:

2. Inform your field personnel of the circumstances of the *Grande Costa D'Avorio* fire and provide guidance to assist Occupational Safety and Health Administration compliance officers in proper enforcement of the powered industrial truck requirements (Title 29 *Code of Federal Regulations* 1917.43 and 29 *Code of Federal Regulations* 1918.65) at marine terminals and during

longshoring operations to assure safe and healthy working conditions. (M-25-XX)

3. Inform your field personnel of the circumstances of the *Grande Costa D'Avorio* fire and provide guidance to assist Occupational Safety and Health Administration compliance officers in proper enforcement of the emergency procedures requirements (Title 29 *Code of Federal Regulations* 1917.30 and 29 *Code of Federal Regulations* 1918.100) at marine terminals and during longshoring operations to assure safe and healthy working conditions. (M-25-XX)

To the Newark Fire Division:

4. Require all chiefs and first responding companies and units that respond to vessel fires to complete specialized marine firefighting training that includes both classroom and practical firefighting training and incorporates the National Fire Protection Association's marine firefighting standards. (M-25-XX)

To the Port Authority of New York and New Jersey:

5. Establish procedures to facilitate training, drills, and vessel familiarization tours for responding firefighters to enable them to better prepare and respond to fires and other emergencies at your facilities and onboard vessels. (M-25-XX)

To RINA Services:

6. Revise your procedures for review and approval of vessel plans to ensure compliance with *International Convention for the Safety of Life at Sea* by requiring that all openings capable of admitting air into or allowing gas to escape from a protected space can be closed from outside the protected space, regardless of their expected operational condition in port or at sea. (M-25-XX)

To the American Association of Port Authorities:

7. Inform your members about the circumstances of the *Grande Costa D'Avorio* fire, highlighting that pusher vehicles used to load nonrunning vehicles aboard vessels are included in the Occupational Safety and Health Administration's definition of power industrial trucks and must comply with those standards. (M-25-XX)

8. Inform your members of the circumstances of the *Grande Costa D'Avorio* fire and encourage them to establish procedures with local fire departments to facilitate training, drills, and vessel familiarization tours for responding firefighters to enable them to better prepare and respond to fires and other emergencies at port facilities and onboard vessels. (M-25-XX)

To the International Association of Fire Fighters, the International Association of Fire Chiefs, and the National Volunteer Fire Council:

9. Advise your members of the circumstances of the *Grande Costa D'Avorio* fire and encourage those members that may respond to marine vessel fires to identify any gaps in their training for marine vessel fires and familiarize themselves with available resources, such as the National Fire Protection Association firefighting standards. (M-25-XX)

To Grimaldi Deep Sea:

10. Inventory all your vessels to identify all openings that are part of a fire boundary and modify the vessels, as necessary, so that the openings are capable of being closed from outside the protected space. (M-25-XX)

To Ports America and American Maritime Services:

11. Develop policies for fire and emergencies on board vessels, per Title 29 *Code of Federal Regulations* 1917.30 and 29 *Code of Federal Regulations* 1918.100, to include accounting for shoreside employees, and train employees on what to do in the event of a fire or emergency on board a vessel. (M-25-XX)