

Fire Investigation Summary

Cruise Ship Fire



**Miami, Florida
July 20, 1998**

A fire that began with an unsupervised cutting and welding operation resulted in serious damage to the mooring deck of a cruise ship within minutes after getting underway for a Caribbean cruise.



The failure to utilize proper cutting and welding procedures and the delayed discovery of the fire on the mooring deck led to damage throughout the aft portion of the ship. The prompt action of the ship's fire brigade limited damage to a single vertical zone.



**National Fire Protection Association
Fire Investigations Department**

On July 20, 1998, a fire occurred on the passenger cruise ship “Ecstasy,” as the ship was beginning a four-day trip to Cozumel, Mexico from the Port of Miami, Florida. This fire resulted in injuries to 60 people, including both passengers and crewmembers. At the time of the incident the ship was carrying 2557 passengers and 920 crewmembers.

The ship was constructed in 1990 in Finland and refurbished in 1995. The ship was 260.6 m (855 ft) in length and 31.7 m (104 ft) wide with a draught of 8 m (26 ft). The ship’s gross tonnage was 62,827.7 metric tons (70,367 tons). The vessel had a top speed of 40.7 km/h (22 knots) and was powered by two diesel-electric engines.

The ship contained 10 accommodation and entertainment decks, which housed a combination of passenger cabins and entertainment areas (i.e., casinos, nightclubs), as well as numerous dining areas. Most mechanical spaces were located on the lower three decks of the ship, with equipment closets and chases scattered throughout the ship.

The aft mooring deck, where the majority of the fire damage occurred, was located on Deck 4 (Riviera Deck). There was a similar mooring area in the forward portion of the ship on Deck 6 (Upper Deck). The mooring decks contained the large electric winches that controlled several hundred feet of mooring lines. The mooring lines consisted of polypropylene rope of approximately 63.5 mm (2-1/2 in) diameter.

The laundry area, where the fire is reported to have started, is located on Deck 2, forward of the freshwater tanks.

The laundry area consisted of washing and drying machines and associated pressing and folding equipment.

While maintenance personnel were conducting repairs on a pressing and folding machine (referred to as a “mangle”) in the laundry room, an arc from a welding rod reportedly ignited combustible lint in and around the machine. Attempts to extinguish the initial fire were unsuccessful as personnel were driven from the laundry area by smoke. As personnel were exiting the area the laundry room manager activated the fire alarm.

Smoke began to spread to the decks above and below the laundry area. Reports and alarms were initially received for smoke on Deck Nos. 1 through 5. Upon investigation by fire brigade members, smoke and fire was discovered on the aft mooring deck (Deck 4).

The on-board fire brigade was called upon and began to deploy to the aft portion of the ship. The brigade members closed fire doors and monitored the conditions in the deck areas surrounding the laundry room and the mooring deck. An intense fire was discovered on the aft mooring deck, apparently fueled by pallets of polypropylene rope. As the fire on the mooring deck grew in intensity, thick black smoke was seen billowing from the rear of the ship. This smoke became visible to United States Coast Guard cameras at the Port of Miami as well as residents of the Miami Beach area. The Coast Guard contacted the ship’s captain at 5:30 p.m. and asked about the smoke condition. At that point the captain indicated that the crew was controlling the fire and they needed no

further assistance. Approximately 30 minutes later, the captain contacted the Coast Guard to request assistance.

Coast Guard and other fire-fighting vessels were dispatched to the ship's location, now about five kilometers (2.7 miles) northeast of Miami Beach. In the meantime the ship had lost control of propulsion systems and began to drift northward. The Coast Guard and private assistance began arriving between 6:00 and 6:25 p.m.

The combination of the ship's fire brigade and the fire-fighting vessels brought the fire under control around 7:15 p.m. The vessel was then towed back to the Port of Miami and arrived at 2:20 a.m. on July 21, 1998. Once in port, those passengers and crewmembers that required further medical attention were transported to local hospitals. The injuries included smoke inhalation and chest pains. Seven were hospitalized overnight and another two remained in the hospital for an additional day for observation.

Fire damage was centered on the aft mooring deck (4), the thruster equipment room on Deck 1, the dry goods storage area on Deck 3, and the aft portion of the Main deck (5). Smoke and water damage was experienced throughout the aft portion of the ship on all decks. Sprinklers activated on Decks 3 through 7.

The ship was moored in the Port of Miami for four days while the investigation was conducted. The ship left on Friday July 24, 1998, under its own power and sailed to Newport News, Virginia, where extensive repairs were

completed. The ship was placed back into service on September 18, 1998.

On the basis of the fire investigation and analysis, the NFPA has determined that the following factors directly contributed to the fire:

- Cutting and welding without proper precautions
- Delay in discovery of the fire on the mooring deck
- Avenue of fire spread through ventilation ducts containing lint and dust accumulations



Photo showing damage on the port side of the ship, outside the mooring deck. The arrow shows the location of the bulkhead where the fire brigade held the fire's spread. (NFPA)

**Written by Robert Duval, Senior Fire Investigator
NFPA Fire Investigations Department**

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The National Fire Protection Association's Fire Investigations Department documents some of the most significant fires and incidents throughout the world. The objective of these investigations is to determine what lessons can be learned from these incidents. The information is then made available to the fire safety community to be used in developing future codes and standards. A complete listing of reports is available, either upon request or can be viewed on our web page.

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NFPA Fire Investigations Department

1 Batterymarch Park
PO Box 9101
Quincy, MA 02269-9101 USA
1-617-984-7263 (tel)
1-617-984-7110 (fax)
investigations@nfpa.org
<http://www.nfpa.org>

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