



NTSB National Transportation Safety Board

Office of Marine Safety

M/V Crown Princess Heeling Accident

Accident Overview

Board Meeting, January 10, 2008

Presentation Outline

- Ship and accident location
- Accident summary
- Animation video
- Safety issues
- Staff
- Parties

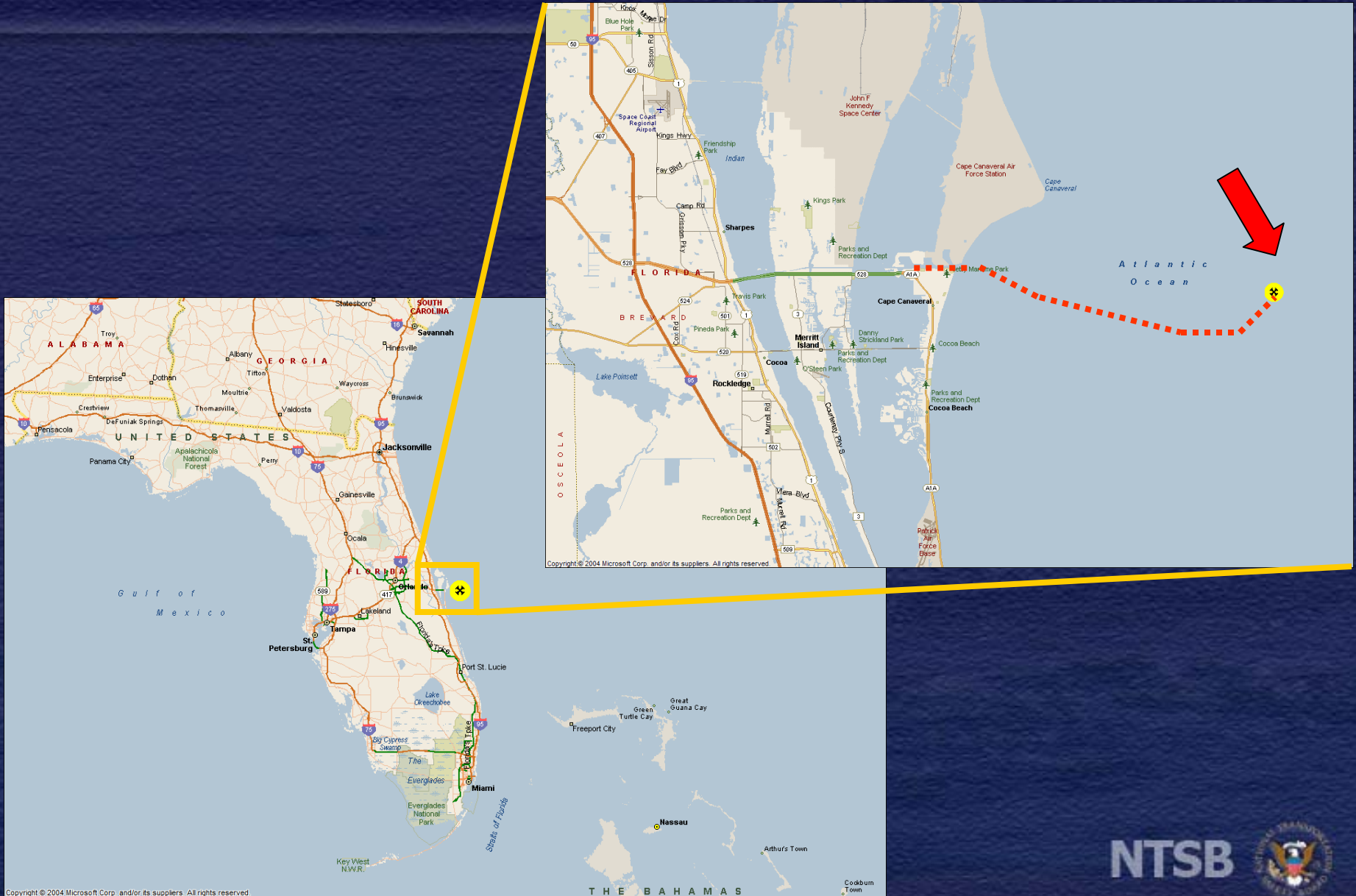
M/V *Crown Princess*



Princess Cruises

- **Length:** 947 ft
- **Breadth:** 118 ft
- **Speed:** 21.5 kt
- **Built:** Italy, 2006
- **Flag:** Bermuda
- **Propulsion:** diesel electric, twin screw
- **Tonnage:** 113,561
- **Passengers:** 3285
- **Crew:** 1260

Accident Location



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Accident Summary

- 10-day round trip from New York to Caribbean
- 1430 - Captain takes conn, pilot away
- 1501 - Autopilot engaged
- 1503 - Heading fluctuations, rudder limit alarms
- 1507 – 1513 - Autopilot adjustments

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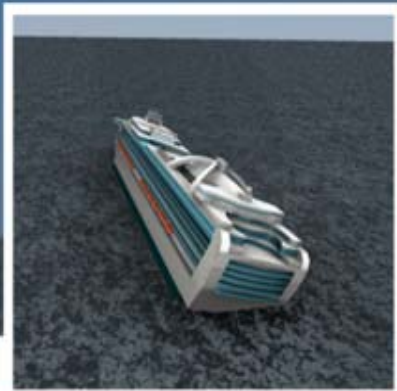
Accident Summary (cont'd)

- 1513 - 60 degree port turn starts
- 1518 - Captain turns over conn to second officer
- 1522 - Port turn completed, heading fluctuations resume
- 1522 - Captain & staff captain leave bridge
- 1524 - Second officer notices high turn rate, shifts to manual steering

Accident Summary (cont'd)

- 1525 - Senior officers return to bridge
- 1525 - Maximum heel angle
- 1527 - Ship back to even keel
- 1836 - Ship alongside pier

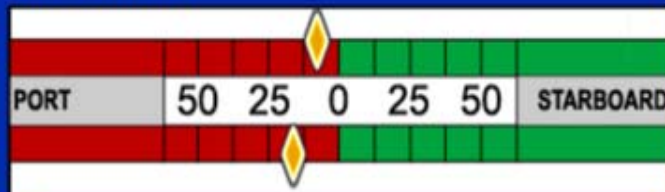
Animation - Preview



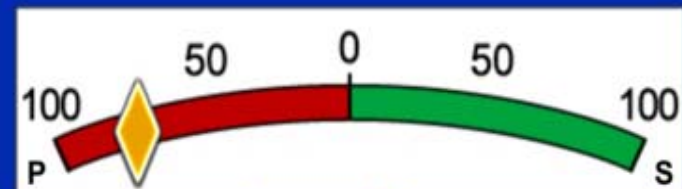
Time: **15:24:57**

Heeling: **24**

Command



Response



Rate of Turn

Exclusions

- Propulsion and steering
- Wind and sea conditions
- Crew fatigue
- Illegal drugs or alcohol impairment

Safety Issues

- Actions of second officer
- Actions of captain and staff captain
- Training in use of integrated navigation systems
- Reporting of heeling incidents
- Emergency response

Staff Contributing

- Tom Roth-Roffy
- Liam LaRue
- Brian Curtis
- Barry Strauch
- Charlotte Cox
- Mariette Burer
- Dennis Crider
- Doug Brazy
- Dennis Grossi
- Jim Cash
- Kristin Poland
- John O'Callaghan
- Alice Park
- Christy Spangler
- Mitch Garber
- Tom Jacky



Parties to Investigation

- U.S. Coast Guard
- Princess Cruises
- SAM Electronics

Flag state representative

- Bermuda Maritime Administration

Staff Presentations

- Engineering factors
 - INS, shallow water effects, heel angle estimate, VDR
- Vessel dynamics
 - Sideslip, rudder lag
- Human factors
 - Crew actions, INS training
 - Monitoring of heeling accidents
- Survival factors
 - Injuries and emergency response
 - Passenger accountability



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