



NTSB National Transportation Safety Board

Office of Marine Safety

Fire Origin and Cause

Nancy McAtee

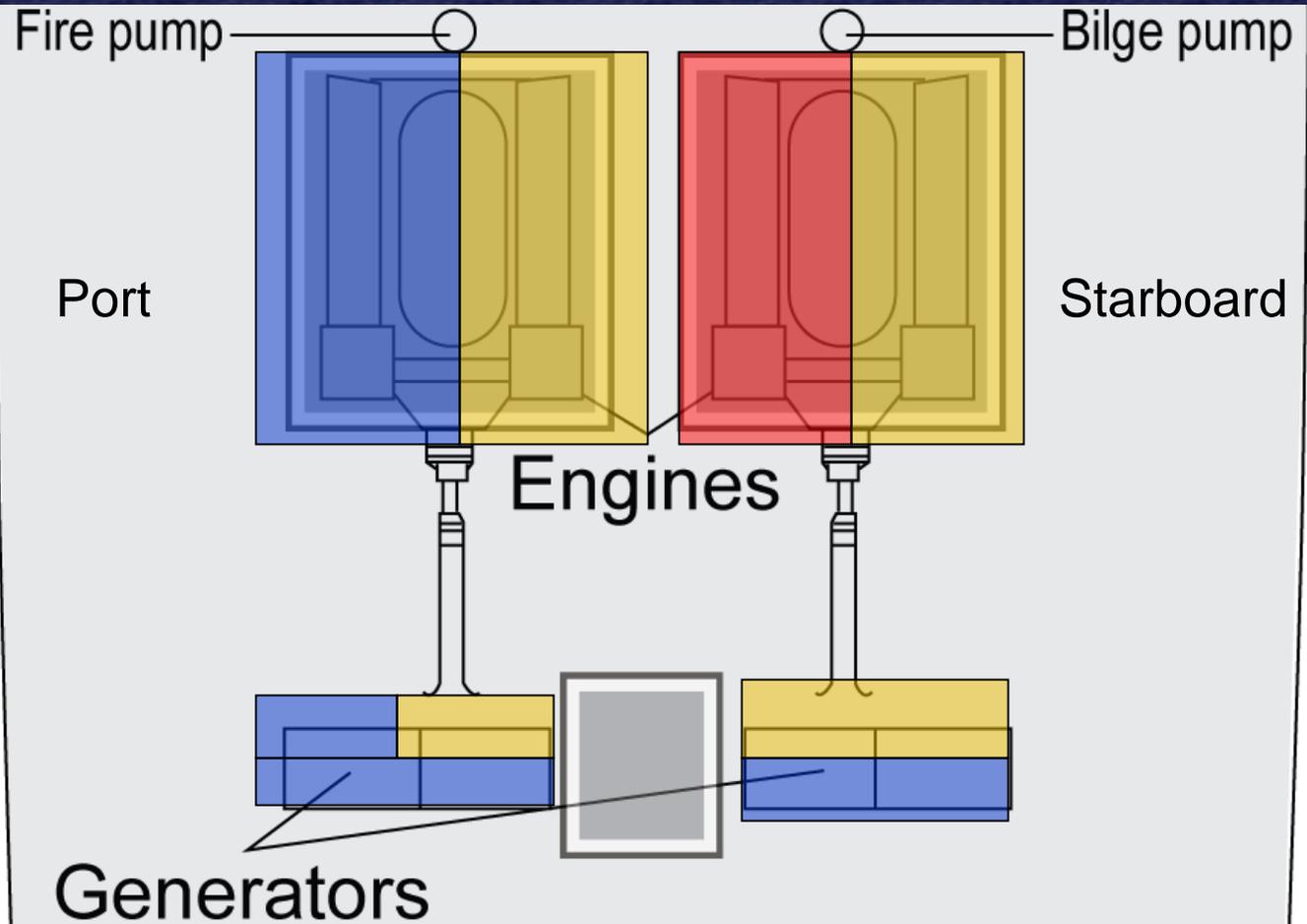
Fire and Explosion Specialist



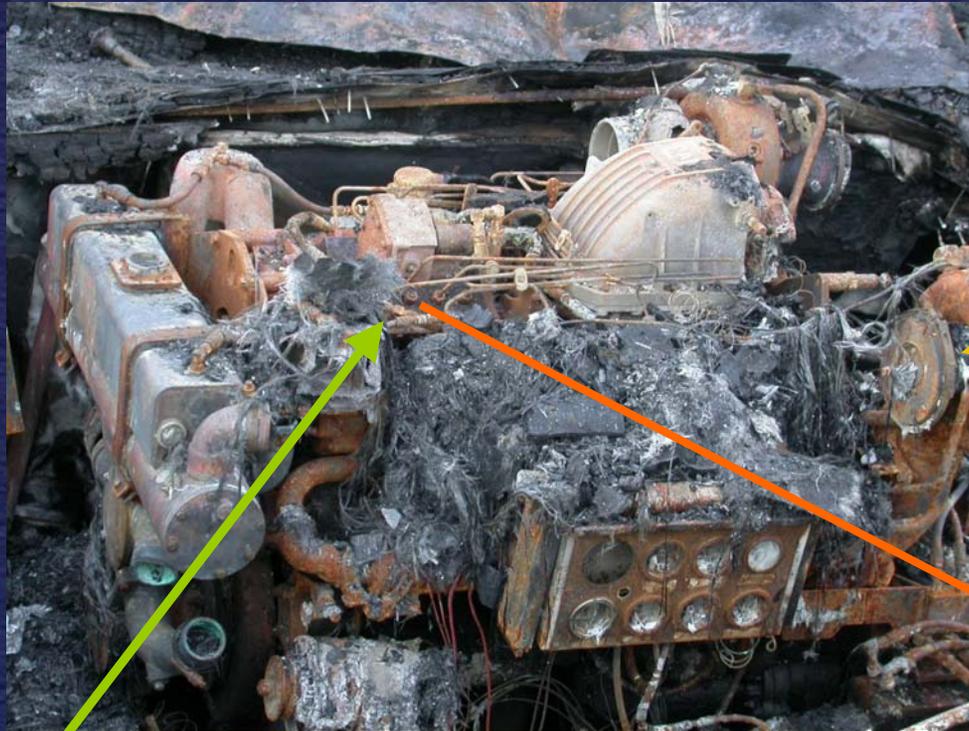
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Origin of Fire

Engineroom Overhead View



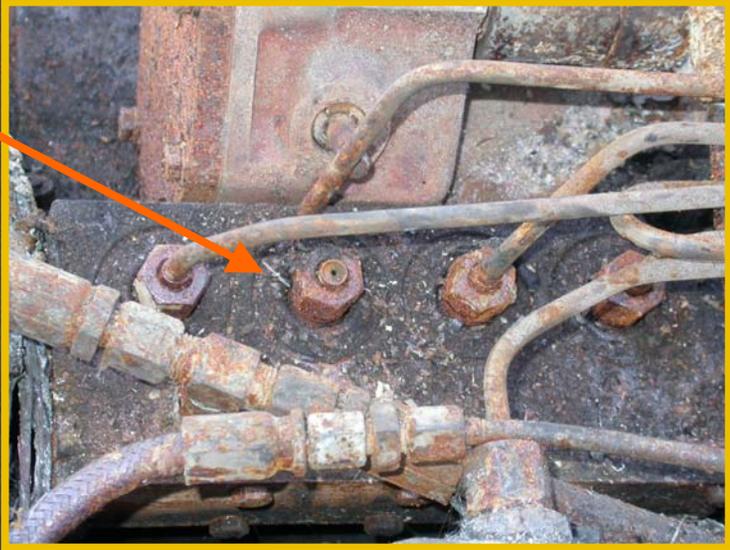
Cause of Fire



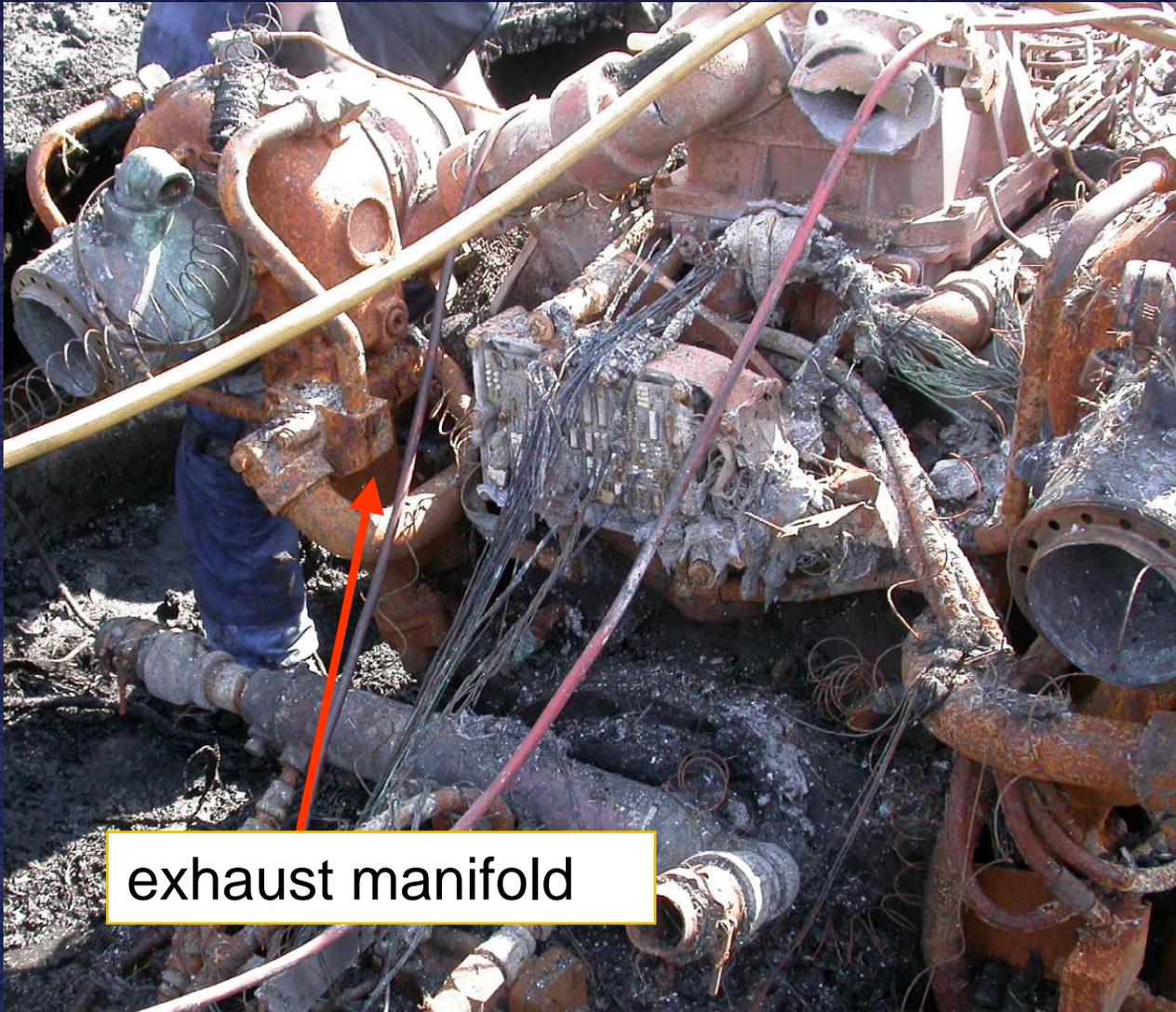
broken fuel line

broken fuel line

intake for inboard turbocharger



Cause of Fire

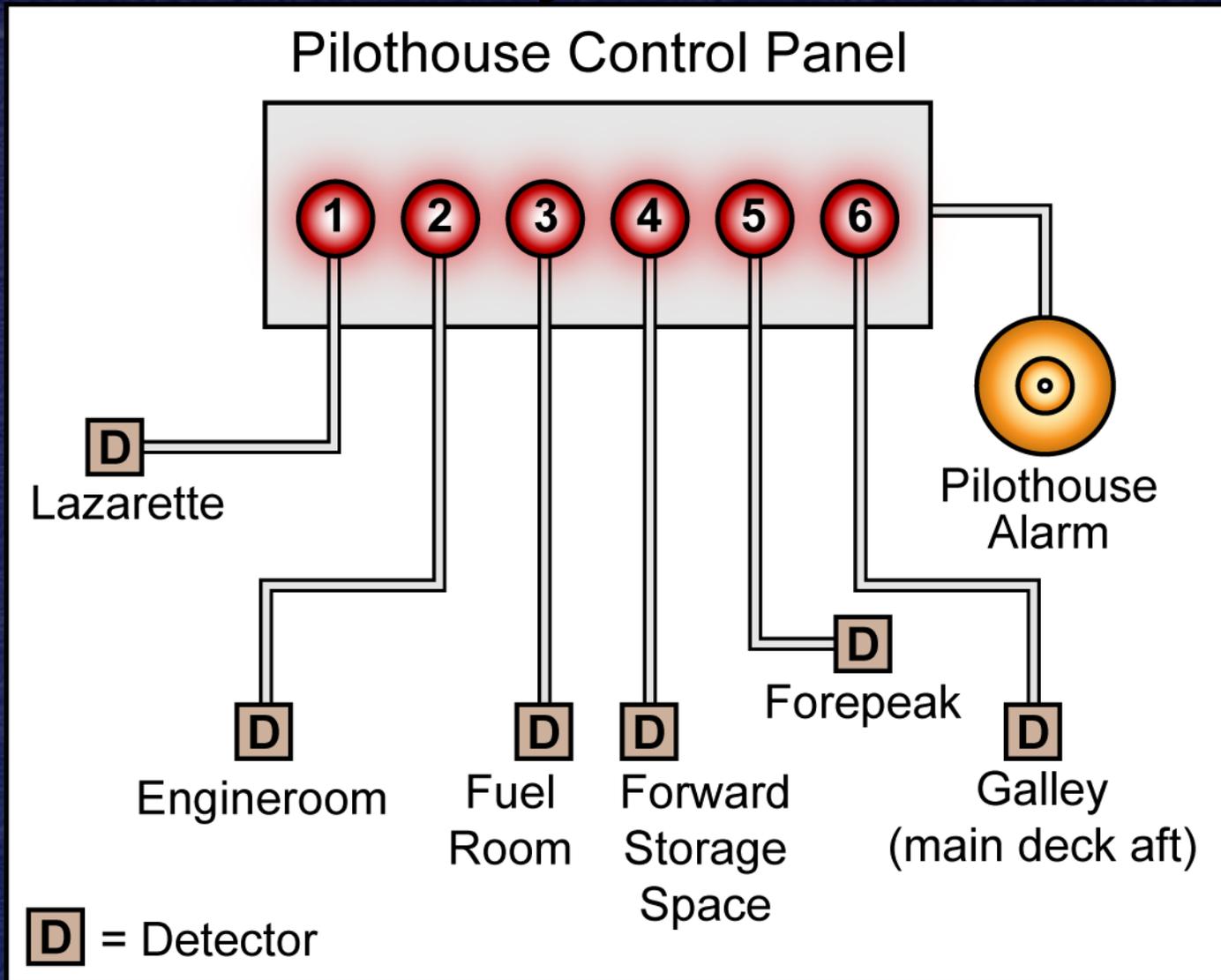


exhaust manifold

Contributing Factors

- Crew did not follow proper firefighting procedures
 - Master did not activate fixed fire suppression system
 - Crew opened engine hatches
- Fire detection system was not operating

Fire Detection System



Detection System Did Not Activate

- Crew heard no alarm and saw no lights on panel
- Components destroyed by fire
- Likely configuration based on
 - Diagrams of control panel
 - Design layout diagrams

Fire Detection Safety Issues

1. System approval did not comply with regulations
2. System was incorrectly installed

System Did Not Comply with Regulation

46 CFR 181.400(c)

A space containing propulsion machinery... must be equipped with a fire detecting system of an approved type...

Control panel was not approved for fire detection systems

System Was Incorrectly Installed

46 CFR 161.002-10(c) requires the alarm to sound if a fire detector circuit is interrupted

System Was Incorrectly Installed

- No evidence of an end-of-line resistor
- Without the resistor, control panel will not activate alarm system upon loss of circuit

Reasons for Failure of Fire Detection System

- Unapproved parts
- Incorrect installation

Importance of Fire Detection System

- Essential to early detection of a fire
- Other vessels may be equipped with fire detection systems similar to that on the *Express Shuttle II*



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