



# CARNIVAL CORPORATION & PLC

## Corporate Safety Perspective

Vice Admiral (ret) Bill Burke

Carnival Corporation

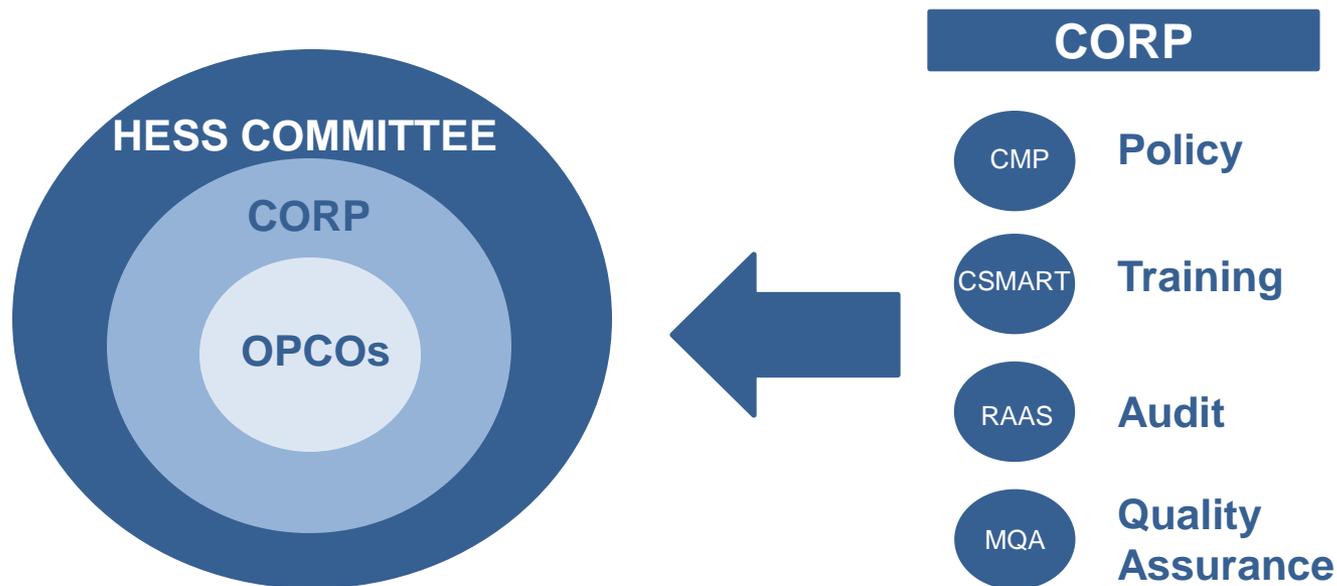
Chief Maritime Officer

NTSB-26 March 2014



# Ships and Practices Built On Layers of Safety

- Regulated at international, national, state, local and port levels
  - Principal convention and entities
    - IMO (SOLAS)
    - Flag states
    - Class societies
- Multiple levels within Carnival Corporation



# HESS Committee – Health, Environmental, Safety and Security

- Chartered in 2006
- The Health, Environmental, Safety & Security (HESS) Committee is a committee of the Boards of Directors of Carnival Corporation and plc.
  - Purpose: Assist Boards in fulfilling their responsibility to supervise and monitor policies, programs, initiative, results, and compliance with legal and regulatory requirements for:
    - Health
    - Environment
    - Safety
    - Security

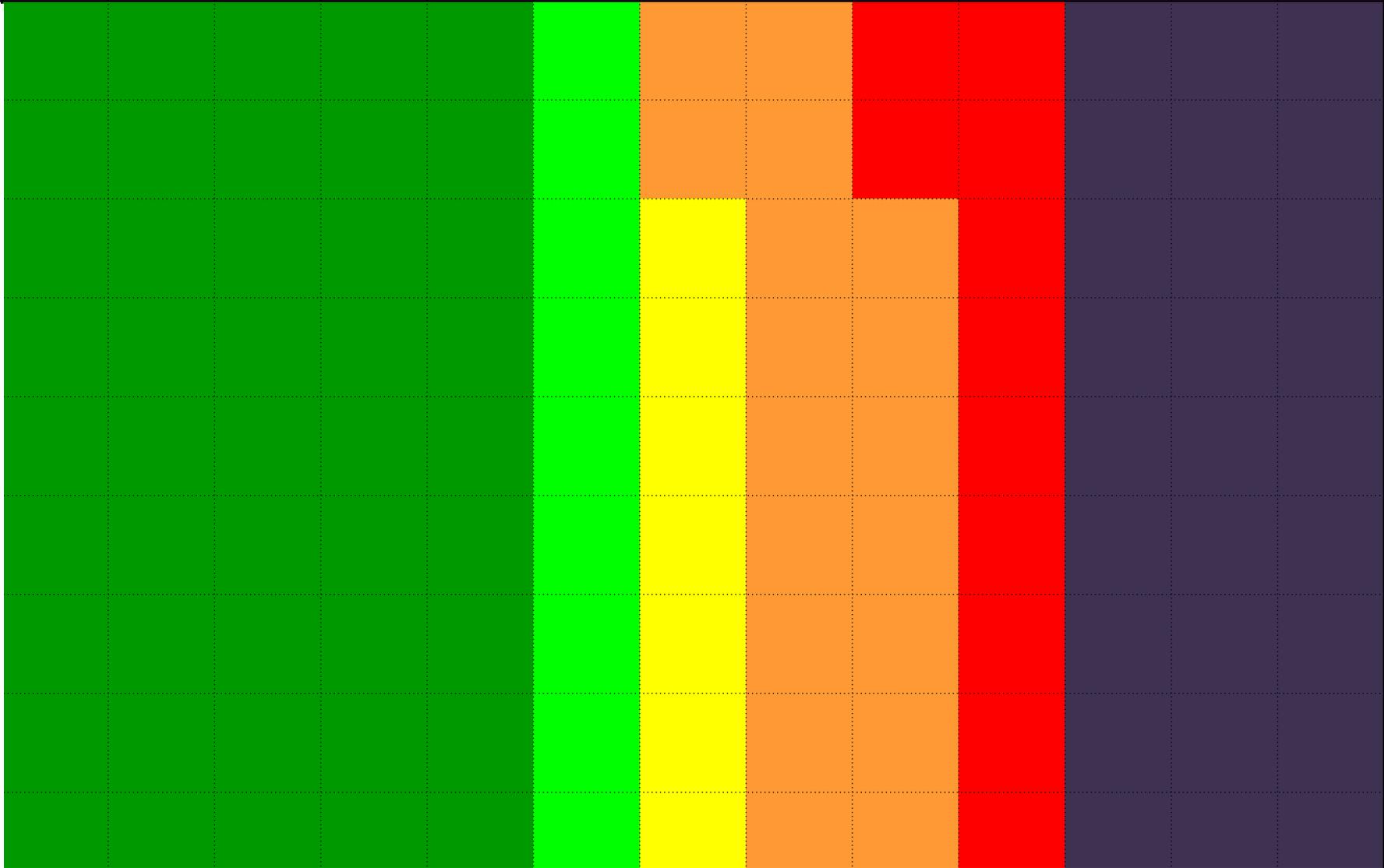
# Focus Areas

- Fire Mitigation
- Collision/Grounding Avoidance
- Loss of Power/Essential Guest Services

# Risk Considerations



Likelihood



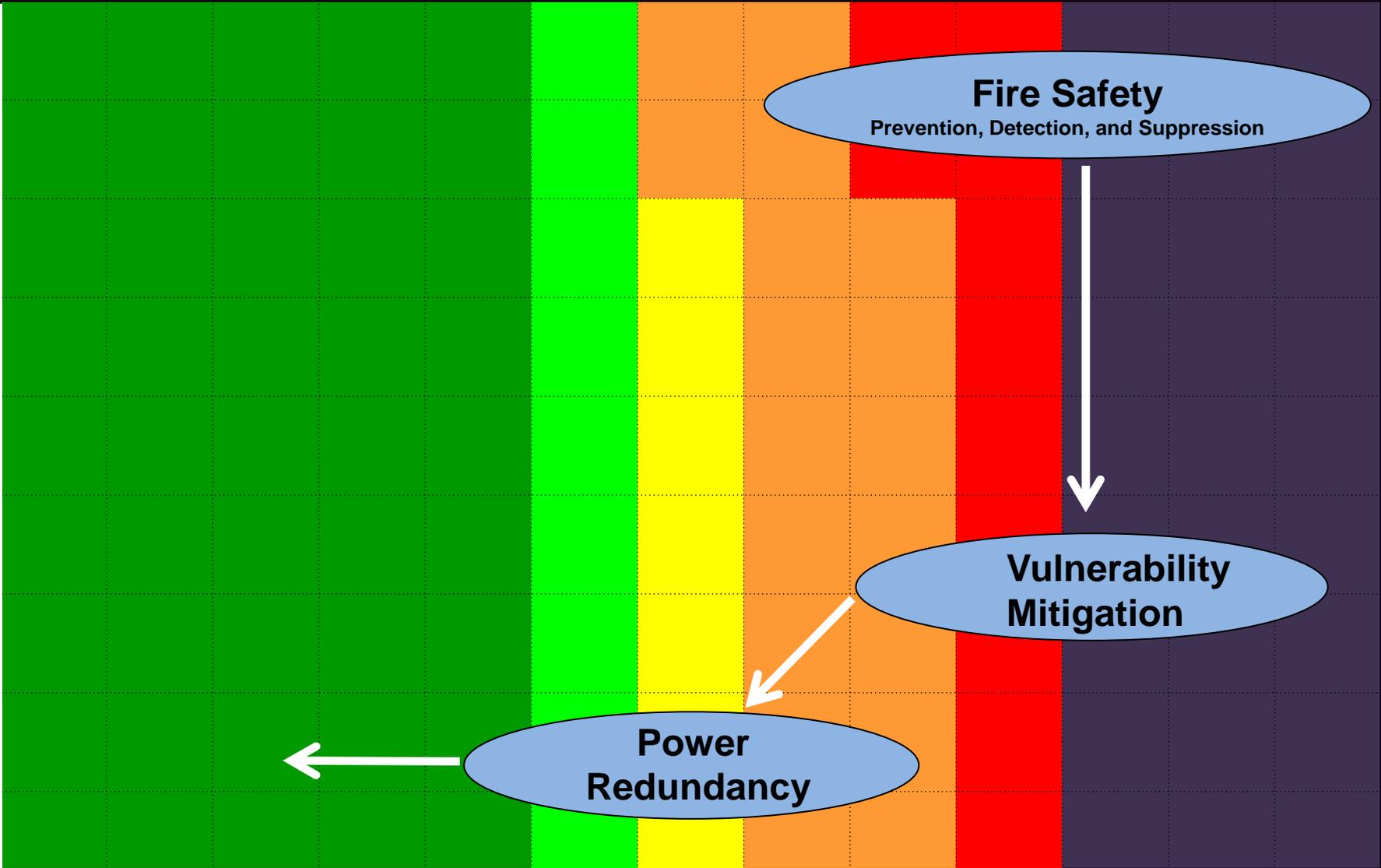
Severity/Consequence



# Risk Reduction



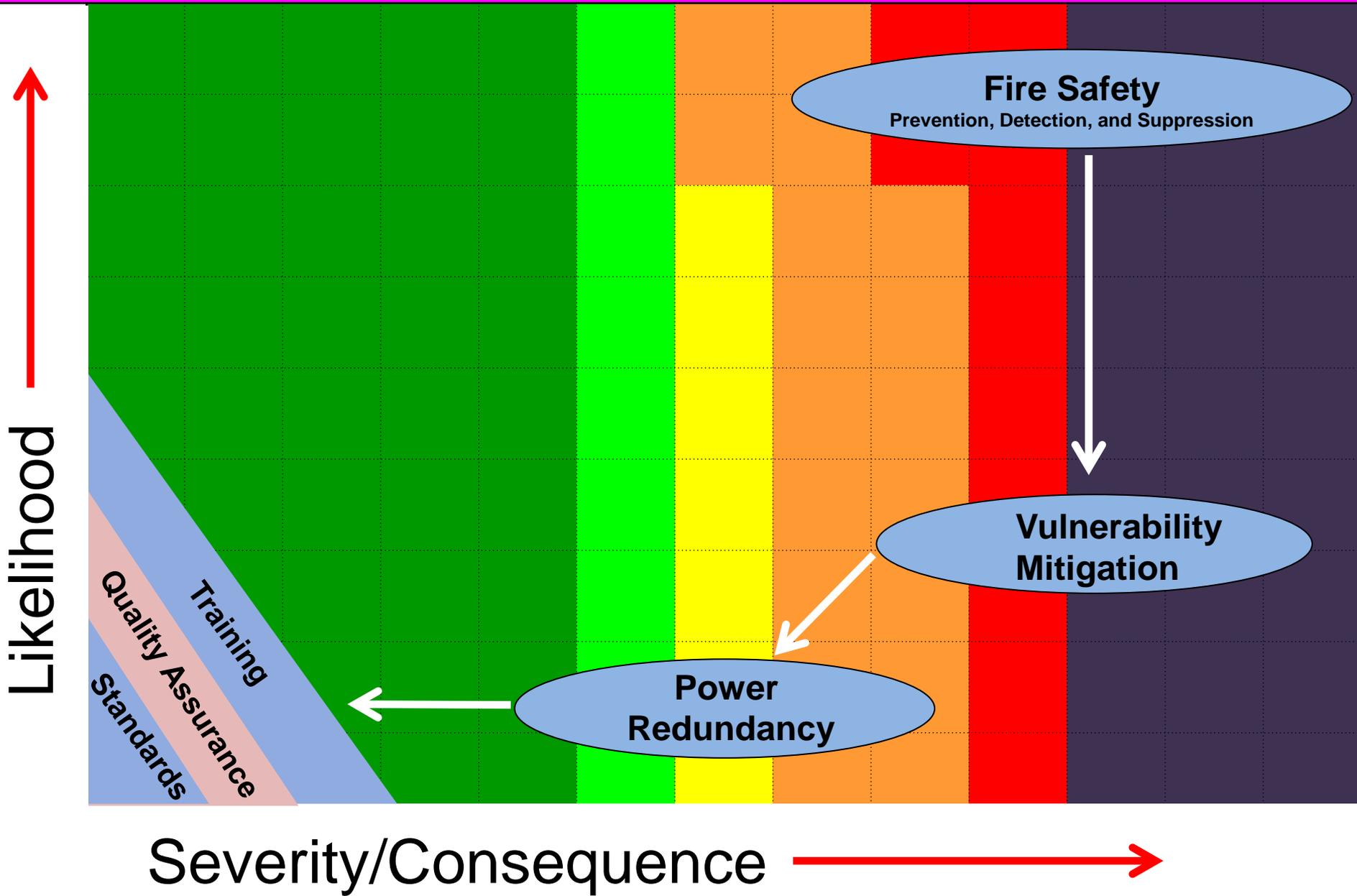
Likelihood



Severity/Consequence



# Risk Reduction



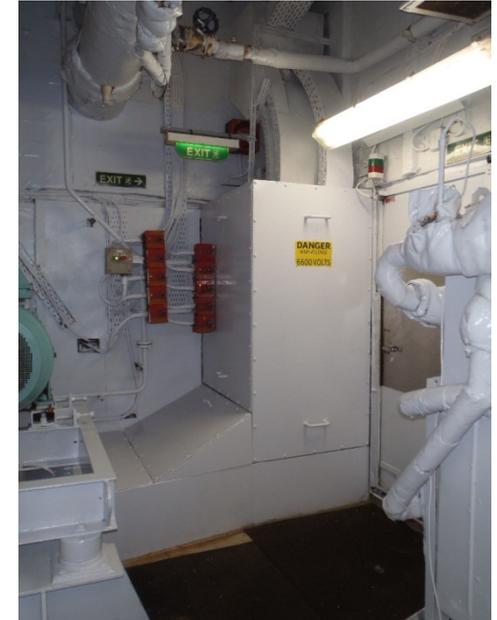
# Extended Water Mist



# Prevention, Detection, Suppression

- Engine fuel isolation valves
- DG modifications
- Fuel oil spray shield, hose replacement, hot spot management
- CCTV & auto activation
- Water mist – no time delay
- Extended water mist
- Interim Fire Watches
  
- Testing
  - Oil mist detection
  - Double wall flexible fuel hoses with telltale
  
- Training
  - Engine Room Resource Management
  - Fleet Engineers
  - Drills
  - Op tests

# Cable Re-Routing



# Vulnerability Mitigation

- Single DG room
  - Increase fire rating of existing bulkheads (insulation)
  - Add a bulkhead
- Critical Cables
  - Reroute
  - Water mist
- Main Switchboard
  - Upgrade fire insulation
  - Split switchboards
- Other
  - Add redundant equipment

# Additional Diesel Generator (ADG)



Containerized ADG, Phase I



Permanent ADG, Phase II



Legend  
Permanent  
ADG Room

# Power Redundancy

- May be most effective way to reduce consequence of loss of main power by enabling critical functions.
- Additional Diesel Generator (ADG)
- Additional Gas Turbine
- Additional Switchboard
- Interim – many ships have temporary ADG

# Changing the Culture

## Training

- Bridge Officers
  - Curriculum
  - Bridge Resource Management
  - Challenging Situations
  - Evaluation



## Quality Assurance

- Fleet Captains
  - Mentoring
  - Evaluating
  - Reporting

## HESS MS

- Corporate Standards
- Common Operating Procedures across Corporation
- Best Practices

# Summary

- Operational safety is our highest priority.
- Continued safe operation of the ships.
- Continuous improvement in the safety culture of our crews.