Fire Suppression in a Class E Cargo Compartment

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Objective

- Test and Evaluate a Variety of Fire Suppression Options
  - Aerosol based agents
  - Oxygen Starvation
  - Medium expansion Foams
  - Zone based water-mist systems
Old Test Article
Observations

• Effective initial knockdown.
• Container leaked most of the agent out from seams.
• Potential to obtain better results by sealing the container.
New Test Article
Test Configuration

- Baseline
  - Upper vents open
  - Lower vents closed
- Aerosol Agent / Oxygen Starvation
  - Upper vents closed
  - Lower vents open
Average Ceiling Temperature - Test Series 2

- Baseline
- Agent 1
- Agent 2
- Oxygen Stavation
Observations

• **Aerosol Agent**
  – Effective initial knockdown, observed via viewport.
  – Sealed container contained most of the aerosol agent throughout the 4 hour test.
  – Effectively kept temperatures low within the container for 4 hours.

• **Oxygen Starvation**
  – Effective when the container is strong enough to withstand the initial bursts of fire.
Nexgen Container
Observations

• Container is well sealed and employs oxygen starvation effectively.
• Container is able to withstand the initial burst of fire.
• More tests will be conducted with a more practical door.
DC-10 Cargo Hold
Future Work

• Conduct tests in a container with better fire withstanding capabilities.
• Conduct tests with medium expansion foam.
• Conduct tests with a zone based water mist system in the DC-10 cargo hold.