

Presented by

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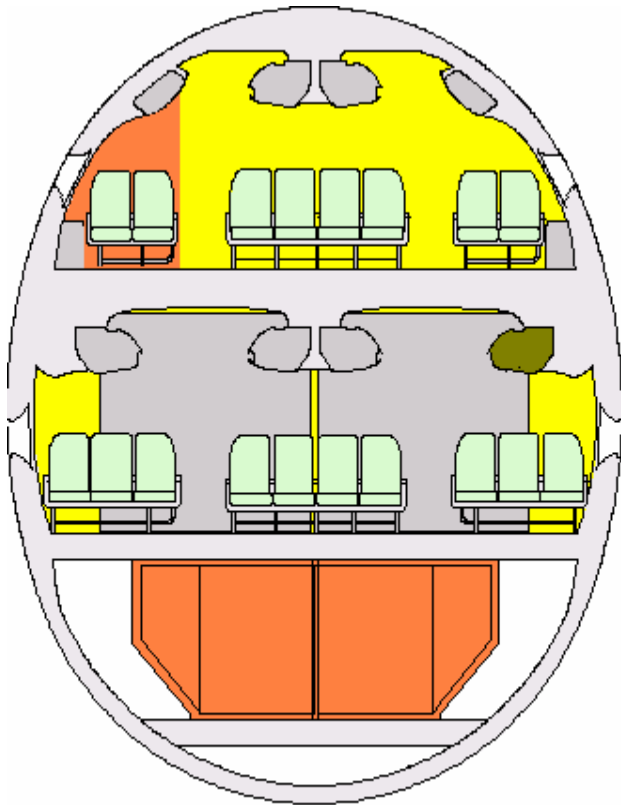
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Fire Protection in Hidden Areas

International Aircraft Systems Fire Protection Working Group
Meeting in Atlantic City on November 5-6th, 2003

- **Hidden Areas Fire Protection is addressed by**
 - ▶ International Aircraft **Materials** Fire Test Working Group
 - ▶ International Aircraft **Systems** Fire Protection Working Group
 - ▶ Other bodies (not leaded by an airworthiness authority)
- **Efficient Fire Protection is an overall approach and requires dedicated to type solutions**
 - ▶ **Passive** protection (materials & construction)
 - ▶ **Active** protection system (detection & extinguishing)

Fire Protection Pressurized Area



Be sensitive to potential fire hazards

- Envisage the areas
- Design areas correspondingly
- Optimize passive fire protection
- Combine passive & active protection

Demonstrate that a fire hazard is not hidden

⇒ **Avoid additional detection systems where not absolutely needed**

- **Hidden areas maybe**

- ▶ on main deck

- Above ceilings, behind side panels, below cabin floor, stowage compartments, overhead bins

- ▶ on lower deck

- Above ceilings, behind side panels, below cargo hold floor, dedicated compartments, equipment bays

- ▶ between decks

- **Hidden areas require dedicated attention**

- ▶ Fire loads need to be minimized within inaccessible areas
- ▶ Materials and construction must provide sufficient level of fire proofness
- ▶ Systems & Installations must not produce a fire hazard (failure conditions to be envisaged)
- ▶

Demonstrate

- that you have considered the critical scenario
- that the fire hazard is not hidden

Fire Protection Pressurized Area – Overhead Bin



The overhead bin has to include features

- to allow early detection of a fire by cabin crew
- to avoid installation of fire detectors

Fire Protection Pressurized Area – Equipment Bay

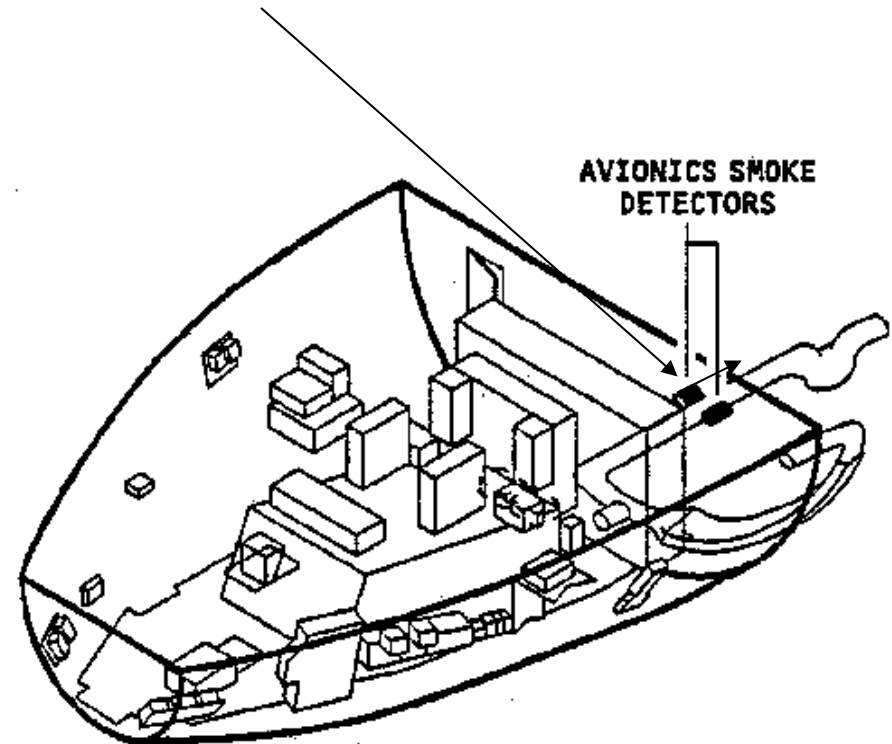
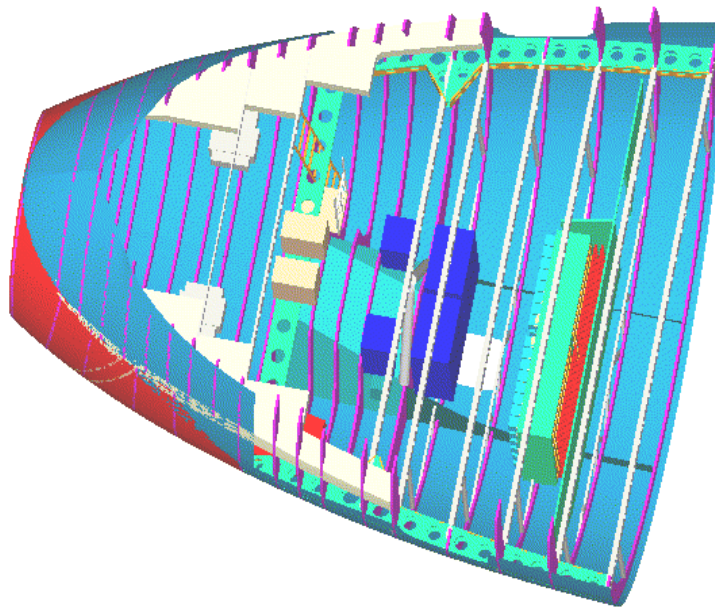


The equipment bay has to include features to

- allow detection of a fire
- get access to the fire source if required by procedure

Fire Protection Pressurized Area - Active Protection – Avionics Bay

Extracted air is monitored by smoke detectors



Fire Protection Pressurized Area

- Passive Protection – behind cabin linings



Segregation between systems

Fire Protection Pressurized Area

- Active Protection – Lower Deck Facilities



Staircase to lower deck facilities (Toilets & Stowage)

Fire Protection Pressurized Area - Active Protection – Crew Rest Area



Introduce efficient solutions
combine passive & active means

Fire Protection Pressurized Area

- Active Protection – In Flight Entertainment Rack in Cargo Bay



Smoke detectors are monitoring
the extracted air

Fire Protection Pressurized Area

- Active Protection – Lower Deck Movable Crew Rest



- **Efficient Fire Protection is an overall approach**
 - ▶ Fire prevention (design & operations)
 - ▶ **Passive** protection (materials & construction)
 - ▶ **Active** protection system (detection & extinguishing)
- **Design directives**
 - ▶ Provide guidelines for **material** selection & construction
 - ▶ Provide requirements for **system** installations (segregation)
 - ▶ Need to be considered if updates have to be installed
 - ▶

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