OBIGGS Utilization In Inaccessible Areas

Steve Summer
Project Engineer
Federal Aviation Administration
Fire Safety Branch

Federal Aviation Administration

International Aircraft Systems Fire Protection Working Group
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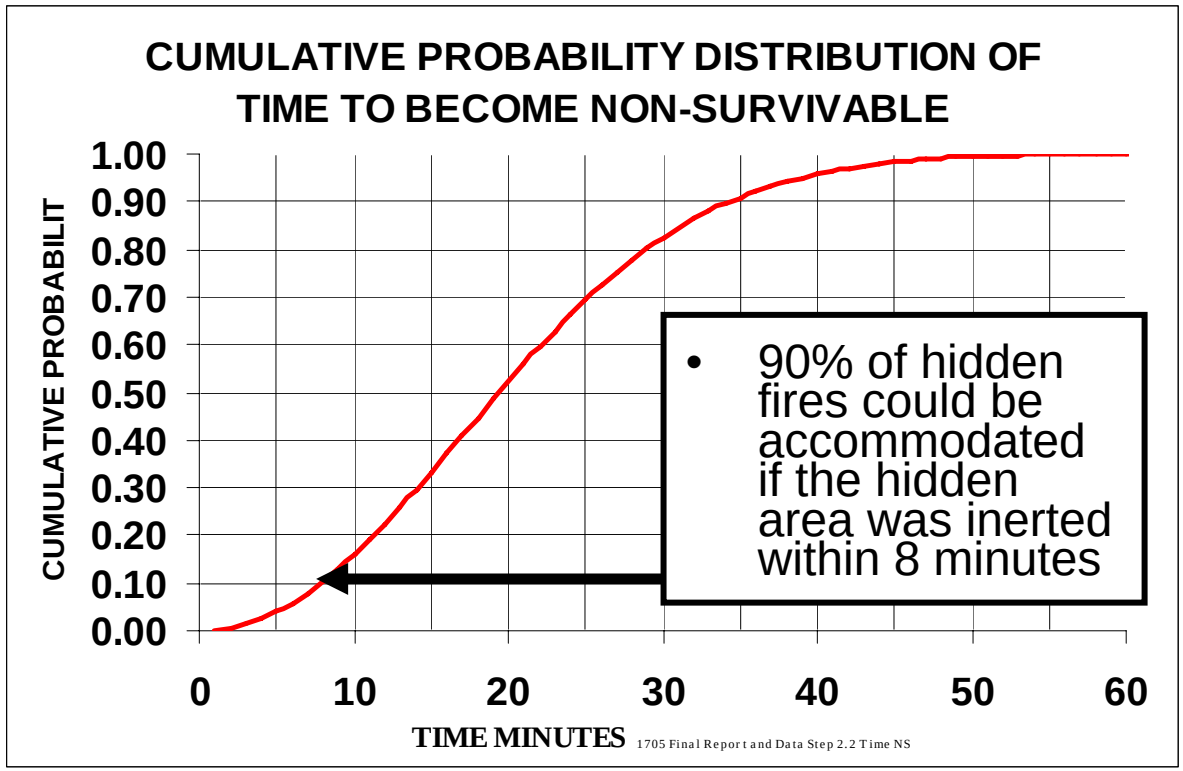
Background

- The FAA recently has released an NPRM requiring the reduction of flammability within heated fuel tanks (affecting over 3,200 in service aircraft)
- The most likely method of conformance is the utilization of an On Board Inert Gas Generating System (OBIGGS)

Background

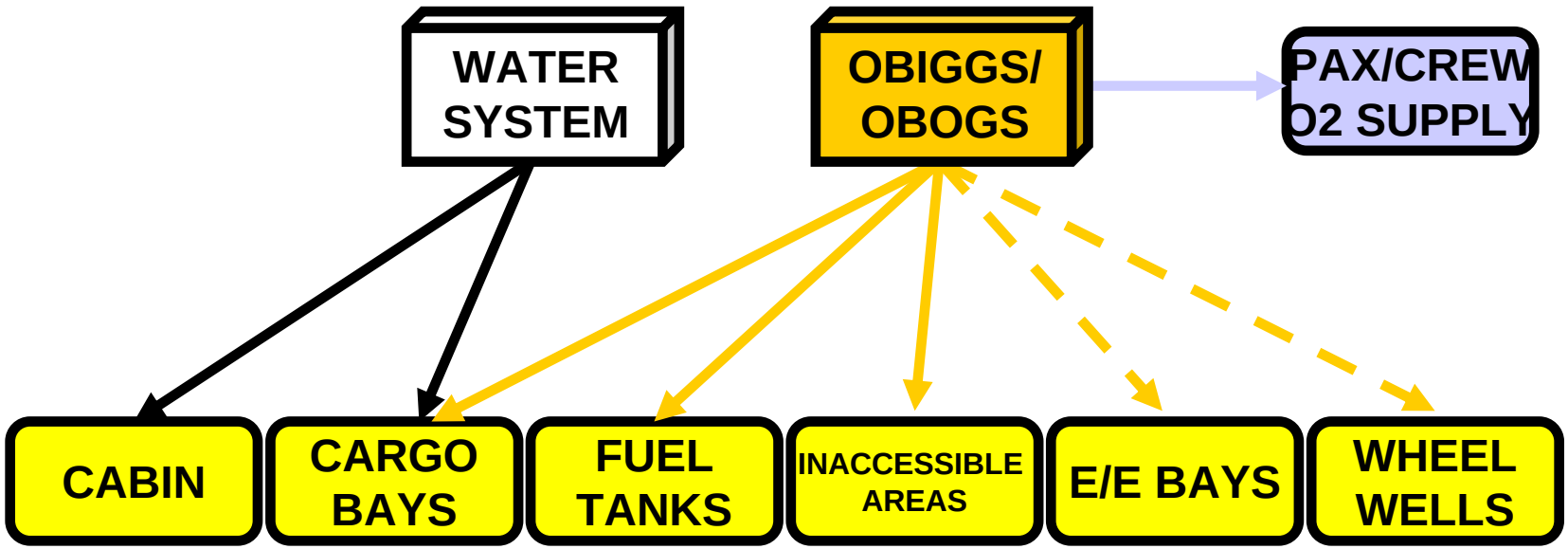
- CAA Paper 2002/01 (FAA Reference DOT/FAA/AR-02/50) determined that 90% of non-survivable hidden area fires could be prevented if extinguished within 8 minutes



Background

- With inerting systems now/soon to be on board, an integrated fire protection system to provide protection for these hidden areas may be feasible

- Such a system would provide enhanced fire protection while utilizing a system already installed, thus saving on cost, weight and space on board the aircraft



OBJECTIVES

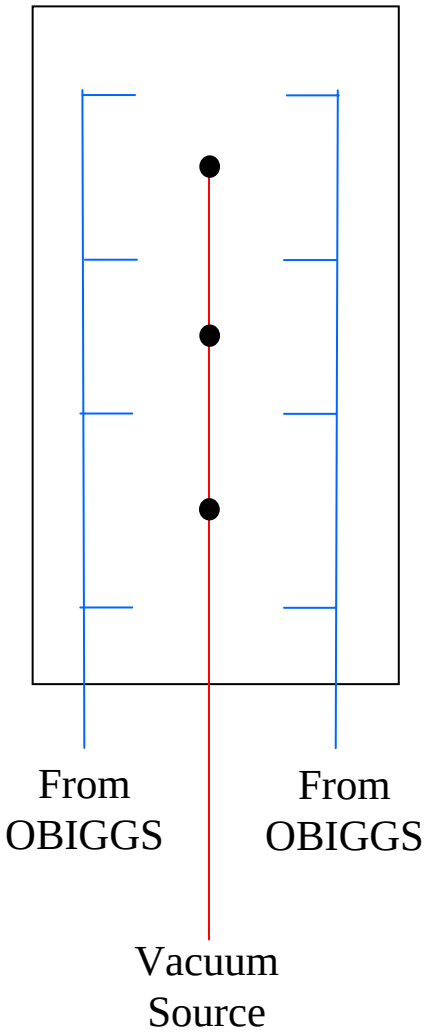
- Design and install an NEA distribution system for fire protection of the overhead area of the FAAs 747SP and 737 test articles
- Examine the effect of various conditions on the ability of the OBIGGS to successfully protect the overhead area:
    - Bleed air pressure
    - OBIGGS feed pressure
    - OBIGGS back pressure
    - Permeate pressure (altitude)
    - Ventilation
    - Etc.
- Future work may include expanding the OBIGGS system to other hidden areas aboard the aircraft (E/E bays, wheel wells, etc.)

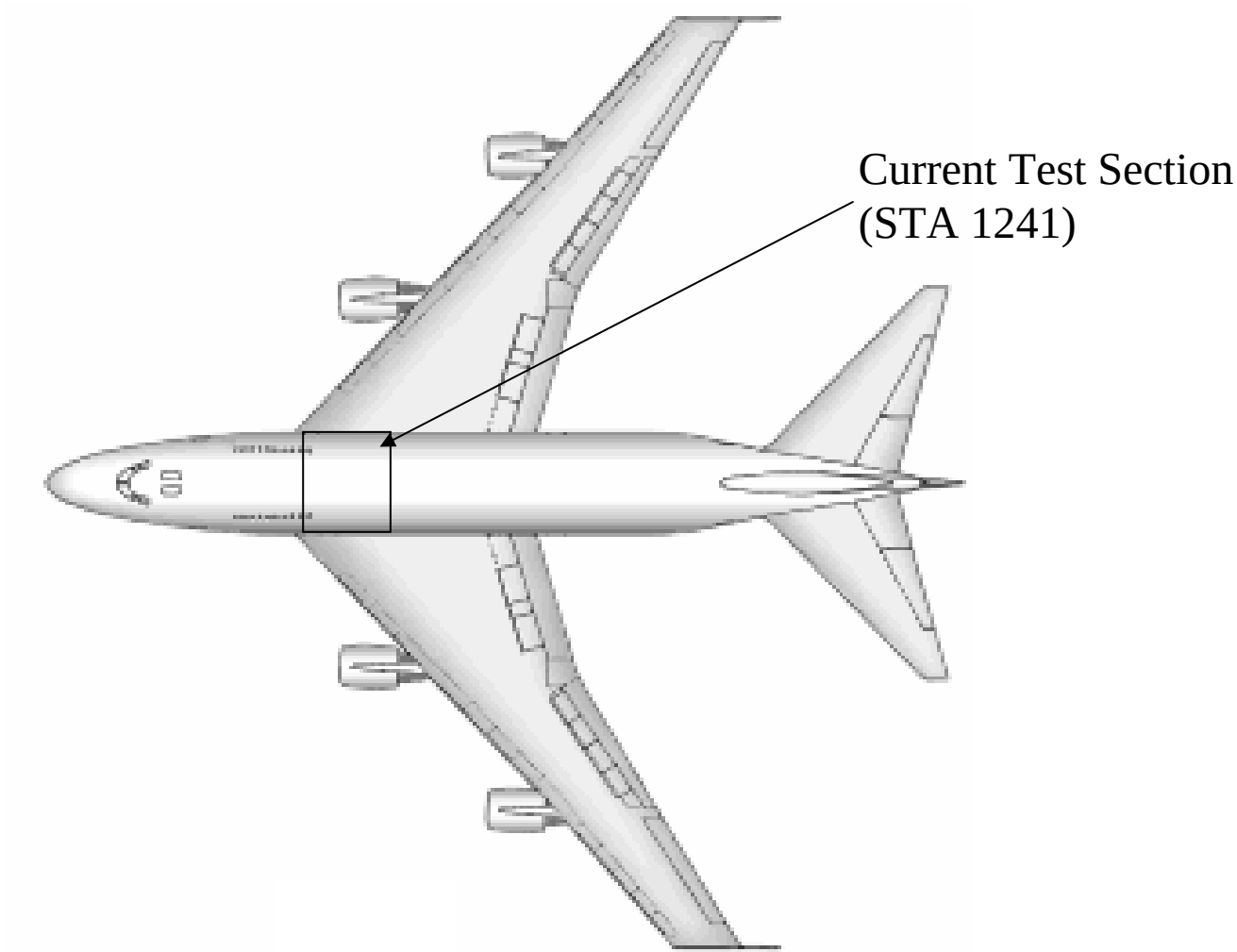
TEST ARTICLES

- 747SP equipped with OBIGGS installed in the empty pack bay utilizing up to 6 ASMs
- 737 aircraft in process of being equipped with a single ASM OBIGGS

- Instrumentation allowing for monitoring of oxygen at 12 locations in overhead area of each aircraft
- NEA flow and purity also measured as well as various system pressures

TEST CONFIGURATION – 747SP

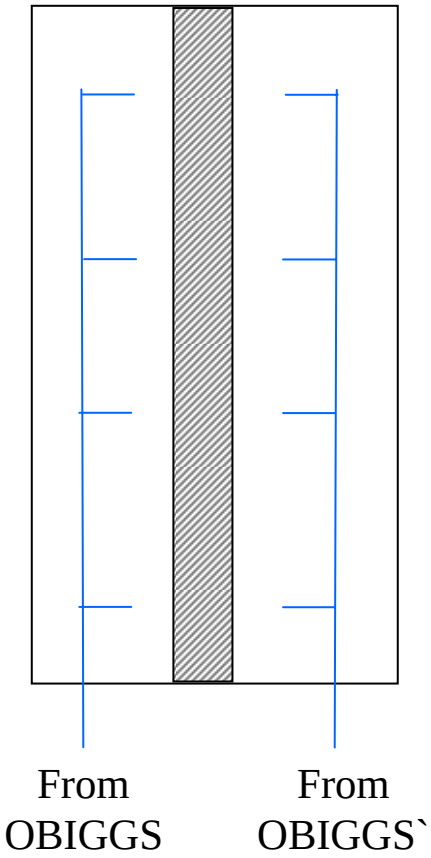


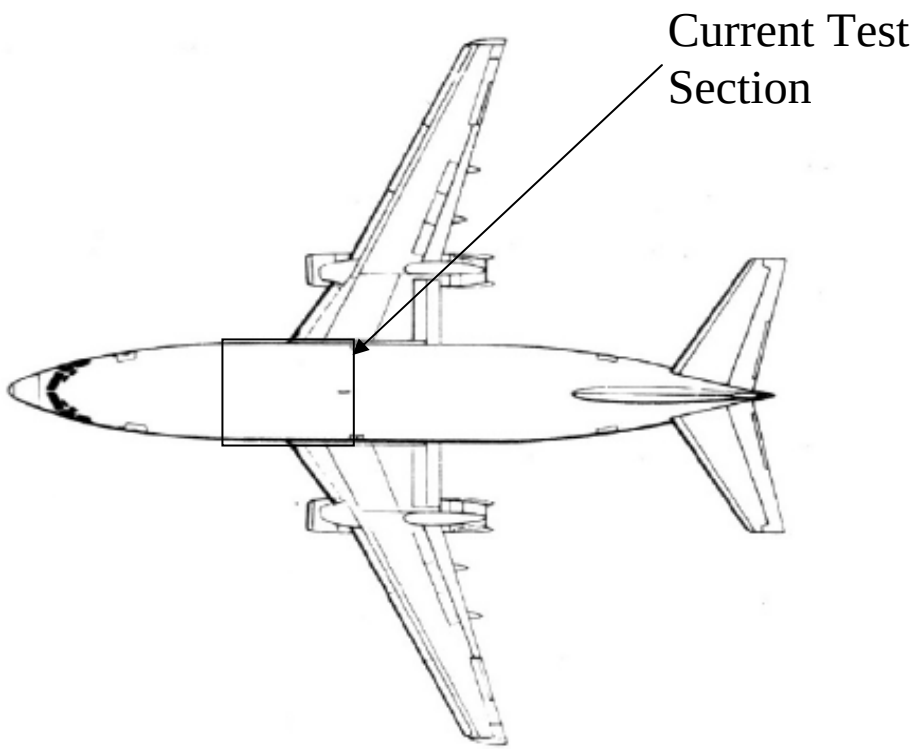


TEST SECTION – 747SP

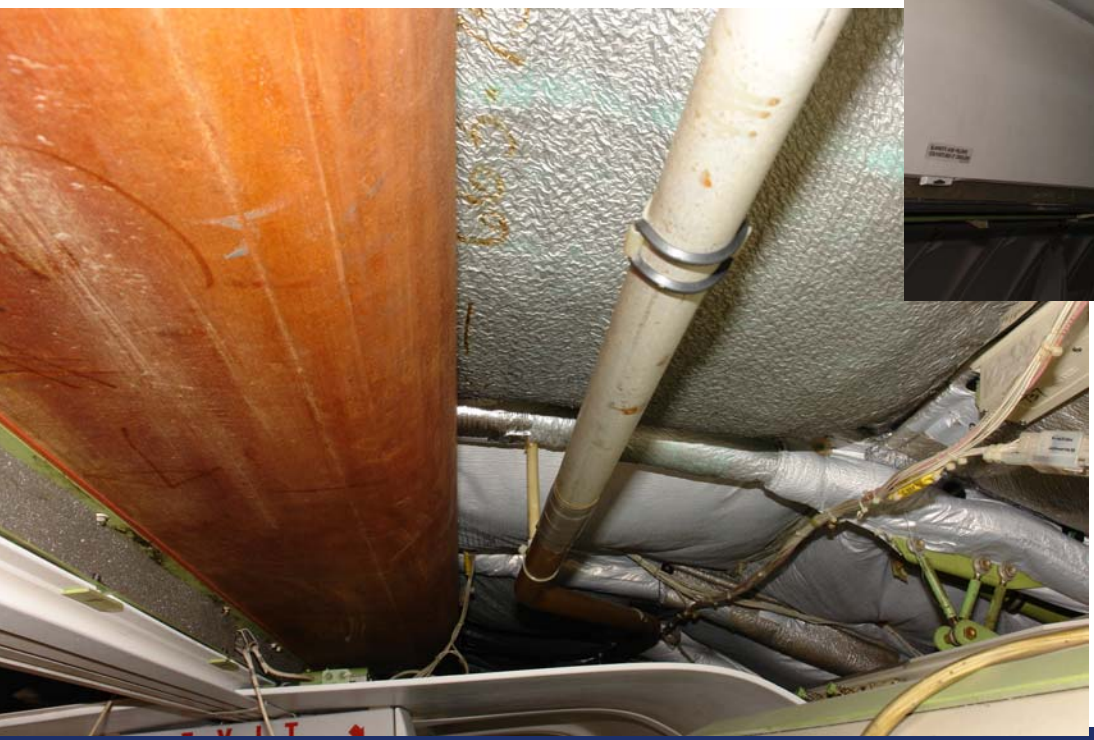
- Located at approximately STA 1241
- Approximately 20 ft. wide, 5 ft. tall at center
- Cross-sectional area of approximately 42 ft^2

TEST CONFIGURATION – 737





TEST SECTION – 737



- Approximately 9 ft. wide, 10 in. tall at center
- Cross-sectional area of approximately 3 ft^2

CURRENT STATUS

- Preliminary testing on 747SP with a single NEA deposit location has confirmed the need for a vacuum source (or other method) to control the spread of NEA
- Vacuum pump has been installed in forward cargo bay of 747SP and is plumbed to test section
- OBIGGS and test instrumentation build up on 737 is underway