

# RESEARCH INTO FIRE, SMOKE OR FUMES OCCURRENCES ON TRANSPORT AIRPLANES

# Introduction

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- **The study has been commissioned by the FAA and UK CAA**
- **It involves the collection and analysis of data related to Smoke, Fire and Fume events on US registered airplanes:**
  - **Type certificated to FAR 25 and operating in accord with FAR 121.**
  - **Both cargo and passenger airplanes**
  - **Data period 2002 to 2014 inclusive**

# Objectives

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- 1. Collect data relating to occurrences involving fire, smoke, fumes or odors and false fire/smoke warnings**
- 2. Compile the data into an Occurrence Database**
- 3. Compare Genuine and False occurrences by source of fire, smoke, fumes or odors and consequences (Diversion, Overweight Landings, etc.)**
- 4. Analyze the data to derive any likely trends in the rates of occurrence (per flight/hour) by airplane category (regional, narrow body, wide body)**
- 5. Analyze the data to determine the likely monetary impact of the occurrences and any trends in these impacts**

# Data Sources

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- **The occurrence data to be analysed has been collected from the following sources:**
- **FAA Aviation Safety Information Analysis And Sharing System (ASIAS)**
  - **The NTSB Aviation Accident Database**
  - **FAA Service Difficulty Reports SDRs**

# Progress



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- **The Occurrence Database has been constructed**
- **Over 800,000 records have been synthesized to approximately 16,000 as being relevant**
- **Data entry for 2002 to 2009 is now complete – 2011 to be completed by September 2015**
- **Initial Analysis has started**

# Deliverables

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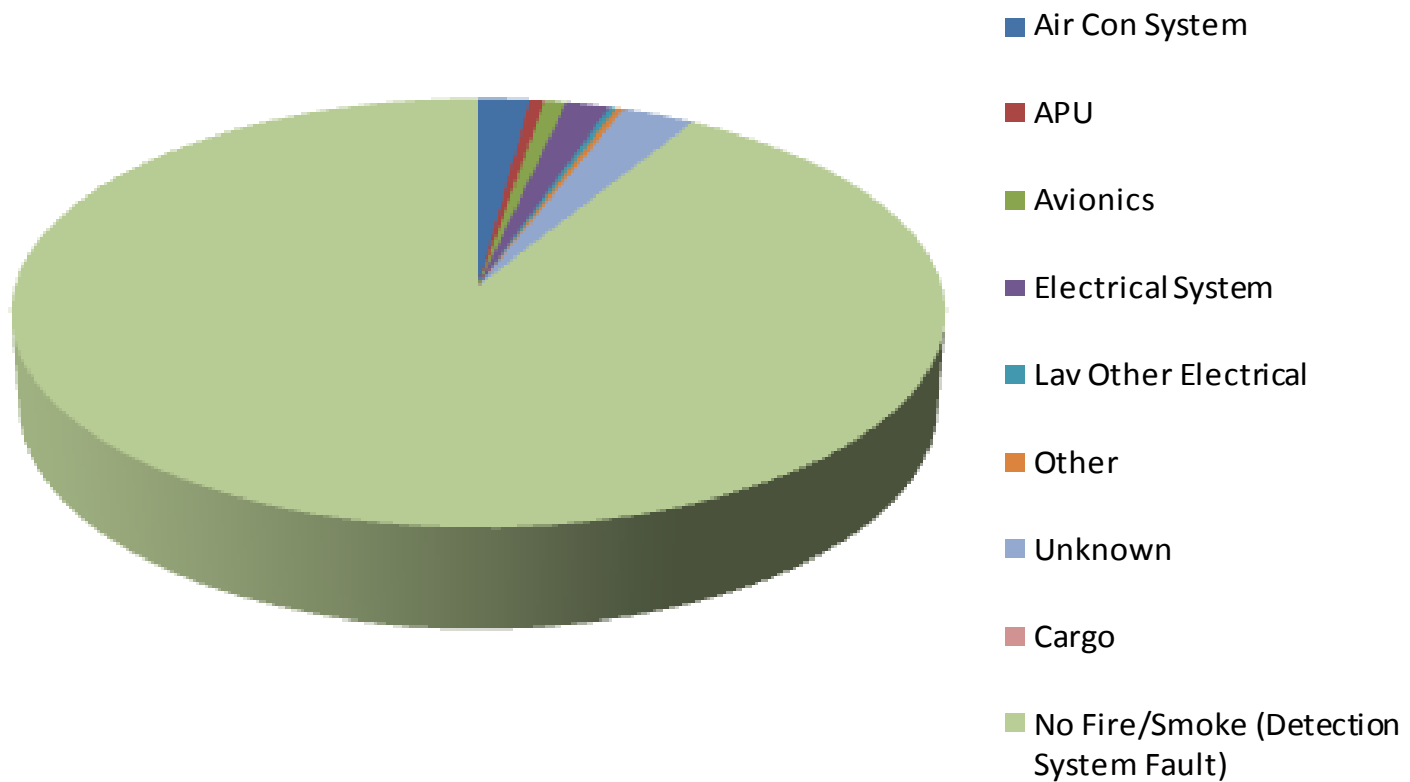
**The deliverables of the project are:**

- **A Database containing all Fire, Smoke and fume Events analyzed**
- **A Report containing the data sources, analysis methods, results and conclusions**

## Example of Results (2002-2007):

INACCESSIBLE CARGO BAYS - DETECTOR EVENTS - PASSENGER AIRPLANES		
Component/Object/System Producing Fire/Smoke	NUMBER	% OF TOTAL
Air Con System	7	2%
APU	2	1%
Avionics	3	1%
Electrical System	6	2%
Lav Other Electrical	1	0%
Other	1	0%
Unknown	10	3%
Cargo	0	0%
No Fire/Smoke (Detection System Fault)	320	91%
Total	350	

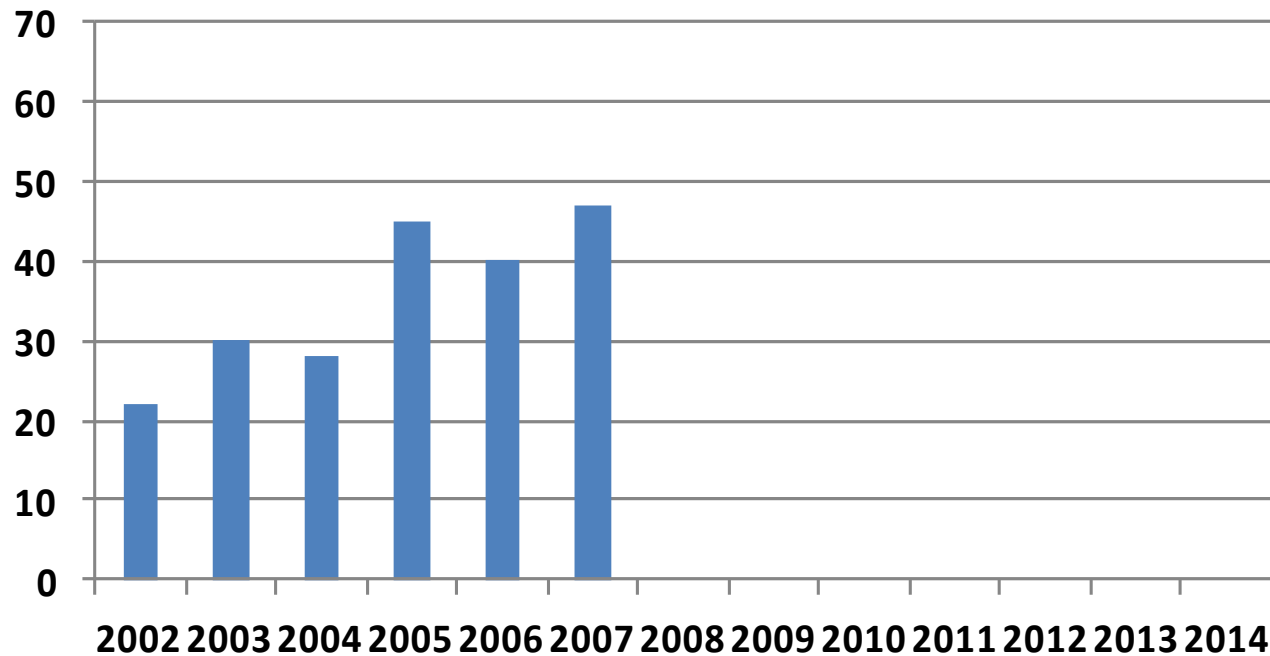
Note that approx 90% of events are due to detection system failure.



## Example of Results 2002-2007 for Diversion, Air-Turnback or Rejected Take Off:

INACCESSIBLE CARGO BAYS - DETECTOR EVENTS WITH SIGNIFICANT CONSEQUENCE - PASSENGER AIRPLANES		
Component/System/Object Producing Fire/Smoke	NUMBER	% OF TOTAL
Air Con System	4	3%
APU	1	1%
Avionics	3	2%
Electrical System	2	1%
Lav Other Electrical	0	0%
Other	1	1%
Unknown	4	3%
Cargo	0	0%
No Fire/Smoke (Detection System Fault)	139	90%
Total	154	

### 'No-Fire' Detections - Inaccessible Cargo Bays - All Passenger Airplanes



## 'No-Fire' Detections with Significant Consequence - Inaccessible Cargo Bays - All Passenger Airplanes

