

Cargo compartment smoke detector

AS8036 standard revision

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Introduction

The Society of Automotive Engineers, after a request from the FAA, has undertaken to update AS8036 to include standard testing for false alarm resistance for smoke detectors.

The SAE working group was formed in May 2011 to develop the minimum performance standard for inclusion in AS8036.

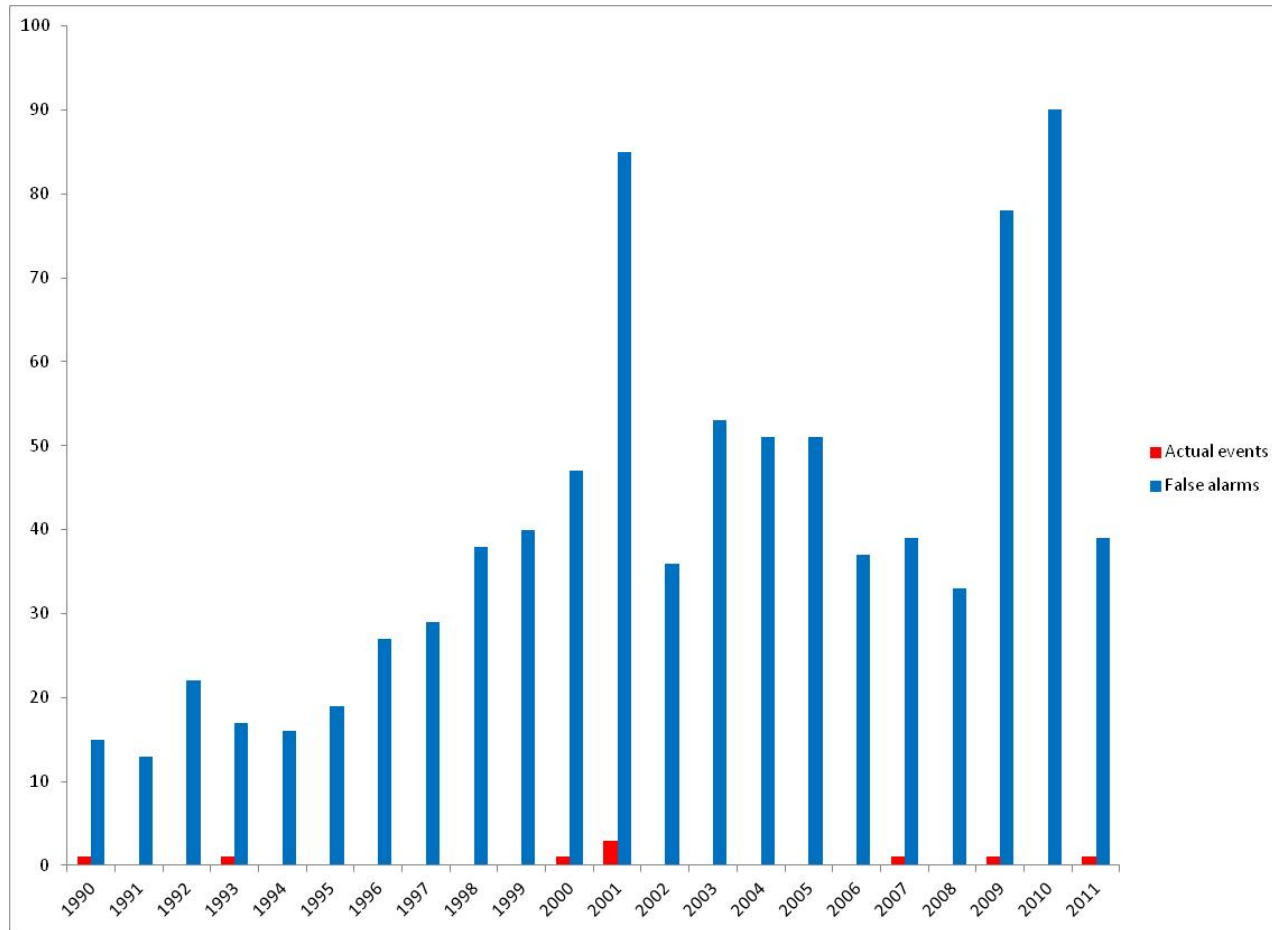
This presentation will update the System group on the progress of the project.

FAA request to update AS8036

- December 10, 2003 FAA requested that SAE review AS8036 modify it to address the effects of sudden cabin pressure increase on smoke detectors
- TSO C1d was updated in August 2004 to address the effects of sudden cabin pressure increase but AS8036 has not been updated since 1985
- March 31, 2011 FAA requested that SAE task a committee to develop an improved test standard for AS8036, which addresses the effects of dust, dirt and moisture on false alarms from smoke detectors
- After AS8036 is updated, the FAA intend to update TSO C1 to use the updated AS8036 as a reference

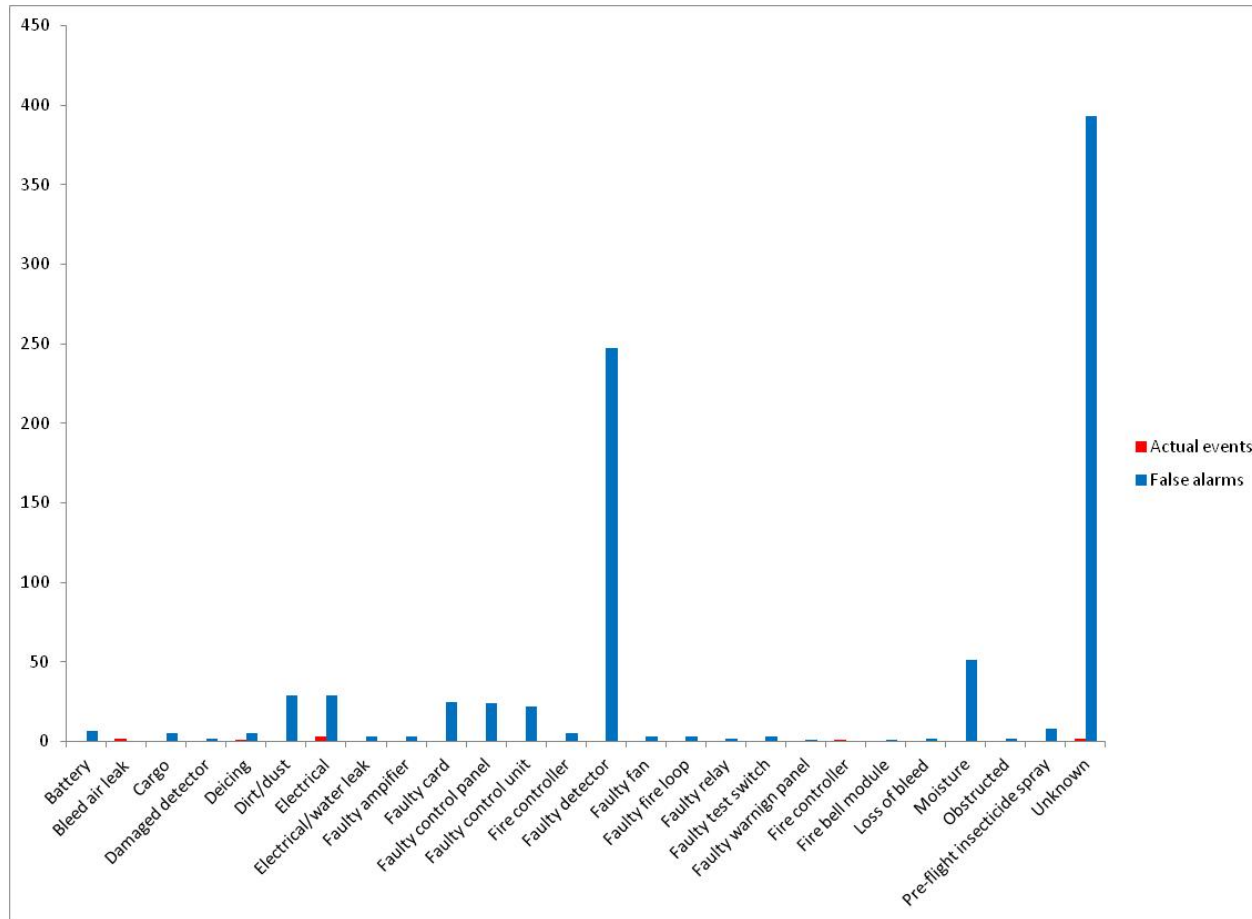


False alarms by year



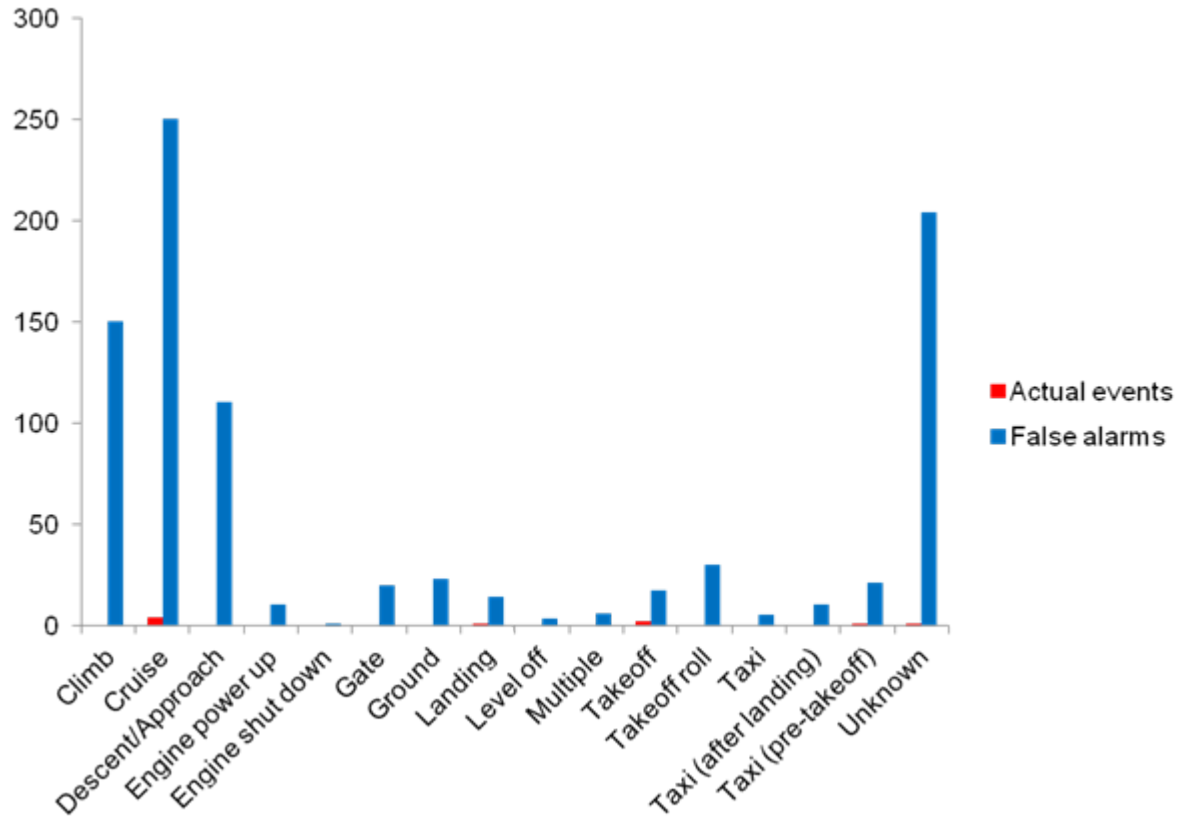
Data from Boeing databases, NASA ASRS and FAA SDR

False alarms by suspected cause



Data from Boeing databases, NASA ASRS and FAA SDR

False alarms by phase



Data from Boeing databases, NASA ASRS and FAA SDR

AS8036 team

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- Andre Freiling, Airbus
- Stephen Happenny, FAA
- Joan Hughson, FAA
- Larry Lamberth, Honeywell
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- Bruce Miller, Boeing
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Current and future state of AS8036 and TSO-C1

Current revision of AS8036 and TSO C1

- Hasn't been updated since 1985
- Calls out DO-160B
- Does not specify any testing for false alarm resistance
- TSO C1d references AS8036 DO-160D
- TSO C1d asks for extra testing to address effect of sudden cabin pressure increase

Future revision of AS8036 and TSO C1

- 2012 revision
- Will call out latest revision of DO-160 (currently Rev G)
- Will specify testing for false alarm resistance
- Will specify testing for sudden cabin pressure increase
- TSO C1e will reference AS8036, which will specify all required minimum performance standard testing

Where we are in the AS8036 update project

- Shortlist of testing

Test Name	Test procedure	Comments
Fog Test	Condensed water mist presented to the detector	Reproducibility can be difficult
ISO12103-1 Ultra Fine	Detector exposed to dust suspended in air	
Insecticide	Detector exposed to sprayed insecticide aerosol	Alternate to Callington preferred (hazardous material)
Ambient Light Exposure	Bright light shone at detector	Method similar to EN54

Next steps

We have determined the tests that will enable an effective update of AS8036 to test false alarm resistance of smoke detectors.

- We now need to determine the test methods with respect to concentration and presentation of false alarm sources
- We also need to define the success criteria for the tests. Possibilities include a rejection ratio or pass/fail criteria when exposed in a certain way
- There is a AS8036 working group immediately after this meeting to resolve these questions

AS8036 and updated TSO should result in better detectors and more safety

Schedule to complete

- Completion of test identification and definition - November 30, 2011
- Update AS8036 to include new testing and latest DO-160 references - January 31, 2012
- Complete review of updated document and submission to SAE for publication - March 16, 2012