



Designation: F3230 – 17

Standard Practice for Safety Assessment of Systems and Equipment in Small Aircraft¹

This standard is issued under the fixed designation F3230; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers internationally accepted methods for conducting safety assessments of systems and equipment for “small” aircraft.

1.2 The applicant for a design approval must seek the individual guidance of their respective CAA body concerning the use of this practice as part of a certification plan. For information on which CAA regulatory bodies have accepted this practice (in whole or in part) as a means of compliance to their Small Aircraft Airworthiness regulations (hereinafter referred to as “the Rules”), refer to ASTM F44 webpage (www.ASTM.org/COMMITTEE/F44.htm) which includes CAA website links.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 Following is a list of external standards referenced throughout this practice; the earliest revision acceptable for use is indicated. In all cases later document revisions are acceptable if shown to be equivalent to the listed revision, or if otherwise formally accepted by the governing civil aviation authority; earlier revisions are not acceptable.

2.2 ASTM Standards:²

F3060 Terminology for Aircraft

F3061/F3061M Specification for Systems and Equipment in Small Aircraft

2.3 SAE Standards:³

SAE ARP4761 Guidelines and Methods for Conducting the Safety Assessment Process on Civil Airborne Systems and Equipment

3. Terminology

3.1 Terminology specific to this practice is provided below. For general terminology, refer to Terminology **F3060**.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *aircraft type code, n*—an Aircraft Type Code (ATC) is defined by considering both the technical considerations regarding the design of the aircraft and the airworthiness level established based upon risk-based criteria; the method of defining an ATC applicable to this practice is defined in Specification **F3061/F3061M**.

3.2.2 *Catastrophic Failure Condition, n*—a Catastrophic Failure Condition is one that would result in multiple fatalities of the occupants, or incapacitation or fatal injury to a flight crew member, normally with the loss of the aircraft.

3.2.3 *complex system, n*—a complex system is a system whose operation, failure modes, or failure effects are difficult to comprehend without the aid of analytical methods or structured assessment methods, such as Failure Modes and Effects Analysis (FMEA) or Fault Tree Analysis (FTA); increased system complexity is often caused by such items as sophisticated components and multiple interrelationships.

3.2.4 *conventional system, n*—a conventional system is a system whose function, the technological means to implement its function, and its intended usage are all the same as, or closely similar to, that of previously approved systems that are commonly used.

3.2.5 *design appraisal, n*—a design appraisal is a qualitative appraisal of the integrity and safety of the system design; an effective appraisal requires experienced judgment.

3.2.6 *extremely improbable, n*—extremely improbable means that an event is considered so unlikely that it is not anticipated to occur during the entire operational life of all aircraft of one type.

¹ This practice is under the jurisdiction of ASTM Committee **F44** on General Aviation Aircraft and is the direct responsibility of Subcommittee **F44.50** on Systems and Equipment.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from SAE International (SAE), 400 Commonwealth Dr., Warrendale, PA 15096, <http://www.sae.org>.