This report provides an overview of the continued operational safety of special category light-sport aircraft since the Sport Pilot/Light-Sport Aircraft rule was established in July 2004 with specific focus on accidents and incidents. Report data has been coordinated with AVP-210.
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## Total Aircraft by Manufacturer

## Total Accident/Incident Events by Manufacturer

## Total Fatal Accidents by Manufacturer

## Total Fatal Accidents by Manufacturer to Total Aircraft by Manufacturer
Introduction

The Small Airplane Directorate, Programs and Procedures office, ACE-114 has established a process to monitor and track special category light-sport aircraft (SLSA) accident and incident data to identify and consider accident/incident causes and trends. This report presents information on all known accidents and incidents involving SLSA. Review and analysis of the accident/incident data may result in recommendations to improve the SLSA industry consensus standards and/or may be used in determination of risk factors relating to conducting oversight of SLSA manufacturers’ continued operational safety (COS) programs.

A major data source for this report is the Monitor Safety/Analyze Data (MSAD) database established by the FAA through Order 8110.107 Monitor Safety/Analyze Data. Other data sources include FAA Forms 8020-9 Aircraft Accident/Incident Preliminary Notice and the National Transportation Safety Board (NTSB) aviation accident database.

This report does not include accidents and incidents involving sport pilots in categories of aircraft other than SLSA that meet the light sport aircraft (LSA) definition in 14 CFR 1.1.

This report does not include data on aircraft that originally obtained an SLSA airworthiness certificate and then subsequently changed the airworthiness certification to experimental light-sport aircraft (ELSA).

This report does not provide any data analysis for accidents and incidents of aircraft certificated as ELSA. Due to the experimental nature of these aircraft and the lack of FAA design review there is limited FAA continued operational safety oversight and coordination with the owners/operators of these aircraft. The Aircraft Certification Service (AIR), Design, Manufacturing and Airworthiness Division, AIR-100 has responsibility for any oversight of these aircraft.

Non-fatal accidents and incidents involving ELSA have not been tracked and are not reported as part of this report.

Known fatal accidents involving ELSA during the reporting time period is as follows:

<table>
<thead>
<tr>
<th>ELSA</th>
<th>Fatal Accidents</th>
<th>Total Fatalities</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>79</td>
<td>99</td>
</tr>
</tbody>
</table>

ELSA includes—
- “fat ultralights” not meeting the provisions of Title 14 Code of Federal Regulations (14 CFR) 103.1, ELSA certificated under 14 CFR 21.191(i)(1);
- ELSA aircraft assembled from a “kit” certificated under 14 CFR 21.191(i)(2); and
- ELSA aircraft certificated under 14 CFR 21.191(i)(3), aircraft that had been previously issued an SLSA airworthiness certificate under 14 CFR 21.190.
**SLSA Airworthiness Certifications**

A special airworthiness certificate for an SLSA is issued to an aircraft that meets the definition of LSA, is manufactured to the applicable consensus standards, and is one of the following five classes of the LSA category:

- Airplanes
- Gliders
- Powered parachutes (PPC)
- Weight-shift-control (WSC) aircraft (commonly called trikes)
- Lighter-than-air (LTA) aircraft (balloons and airships)

When the aircraft meets all the eligibility requirements of 14 CFR 1.1 and § 21.190, it may be issued an SLSA airworthiness certificate.

**Population of SLSA by Class**

SLSA Cumulative Fleet Size by Fiscal Year (FY)

**NOTE:** Numbers are approximate based on data from FAA Aircraft Registry.
Population of SLSA Manufacturers

October 2015

Total 2015 Active SLSA Manufacturers – 79

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Airplane/Glider</td>
<td>42</td>
<td>54</td>
<td>63</td>
<td>64</td>
<td>66</td>
<td>65</td>
</tr>
<tr>
<td>PPC</td>
<td>5</td>
<td>8</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>WSC</td>
<td>5</td>
<td>12</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>TOTAL:</td>
<td>52</td>
<td>74</td>
<td>80</td>
<td>81</td>
<td>82</td>
<td>79</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>17</td>
<td>26</td>
<td>40</td>
<td>41</td>
<td>37</td>
<td>34</td>
</tr>
<tr>
<td>Outside U.S.</td>
<td>35</td>
<td>48</td>
<td>40</td>
<td>40</td>
<td>45</td>
<td>45</td>
</tr>
</tbody>
</table>

**Note 1:** Manufacturers NOT included in 2012 and on –
- Manufacturers not in compliance with 14 CFR 21.190(d) – bilateral airworthiness agreement (these companies are no longer in production).
  - Since 2012: 3
- Manufacturers that have gone out of business with the U.S. market, after at least one SLSA.
  - Since 2012: 26 (12 in U.S.)

**Note 2:** Potential known new SLSA manufacturers (i.e., intent is to enter the SLSA market with new make/model): 37.

**Note 3:** Data source for 2008 and 2010: www.bydanjohnson.com & Light Aircraft Manufacturers Association (LAMA).

**Note 4:** Data source for 2012 and on: AFS-750 Registry Database.
**SLSA Vision for the Future**

We are focused on increasing industry accountability and safety with a goal of creating a light-sport aircraft (LSA) system with an equivalent or lower fatal accident rate than other segments of “personal” aviation without requiring FAA type design certification or FAA production oversight by:

- Supporting a regulatory and policy structure for industry to achieve FAA safety goals through self-declared compliance with industry developed and maintained consensus standards.
- Enabling an industry-led system of self-audits and statements of compliance.
- Applying a scalable oversight approach to a manufacturer’s self-auditing and self-declarative certification process.
- Committing FAA resources to actively participate in the development and acceptance of industry consensus standards.

**Recording/Reporting of Data**

It is important to note that “phase of flight” (Ref. appendix 1) and “occurrence categories” (Ref. appendix 2) may have multiple data elements identified for an individual accident/incident event. This is intentional in order to allow for every pertinent element to be investigated, recorded, and analyzed.

This report is based on known data at the time the report is compiled. As new data becomes available, the recording of data elements will be adjusted and the reporting of these changes will be reflected in the next revision of this report.

**Definitions (Ref. NTSB Form 6120.1)**

"**Aircraft Accident**" means an occurrence associated with the operation of an aircraft that takes place between the time any person boards the aircraft with the intention of flight and all such persons have disembarked, and in which any person suffers death, or serious injury, or in which the aircraft receives substantial damage.

"**Substantial Damage**" means damage or failure which adversely affects the structural strength, performance or flight characteristics of the aircraft, and which would normally require major repair or replacement of the affected component.

"**Serious Injury**" means any injury that (1) requires hospitalization for more than 48 hours, commencing within 7 days from the date the injury was received; (2) results in a fracture of any bone (except simple fracture of fingers, toes, or nose); (3) causes severe hemorrhages, nerve, muscle, or tendon damage; (4) involves injury to any internal organ; or (5) involves second- or third-degree burns, or any burns affecting more than 5 percent of the body surface.

"**Fatal Injury**" means any injury that results in death within thirty (30) days of the accident.

"**Aircraft Incident**" is an occurrence other than an accident that affects or could affect the safety of operations.
Fatal Accidents vs. Non-Fatal Accidents/Incidents

The following tables and charts provide data for SLSA fatal accidents and non-fatal accidents/incidents that occurred during the reporting time period.

<table>
<thead>
<tr>
<th>Fatal Accidents</th>
<th>Non-Fatal Accidents/Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>45</td>
<td>501</td>
</tr>
</tbody>
</table>

Total Fatalities: 62

Fatal Accidents by FY

Non-Fatal Accidents/Incidents by FY
Fatal Accidents by Class of SLSA

Total: 45

Fatal Accidents by Month of Year

Non-Fatal Accidents/Incidents by Class of SLSA

Total: 501

Non-Fatal Accidents/Incidents by Class to Total Class Fleet

Fatal Accidents by Class to Total Class Fleet
### Fatal Accidents by Type of Pilot Certificate and Medical Certificate

#### SLSA / Pilot Fatal Accident Matrix

<table>
<thead>
<tr>
<th>Pilot Rating &amp; Medical</th>
<th>Recreation+ CL3+ (Rated Pilot)</th>
<th>Recreation+ DL (Operating Privileges of Sport Pilot)</th>
<th>Sport Pilot for Aircraft Being Operated (may hold other ratings)</th>
<th>Student / Solo Privileges</th>
<th>Pilot Not Rated by Certificate or for Aircraft Being Operated</th>
<th>Total Accidents: 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>9</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Non-Fatal Accidents/Incidents by Type of Pilot Certificate and Medical Certificate

[Data not collected for this metric.]

### Fatal Accidents by Pilot Age

![Fatal Accidents by Pilot Age](image)

### Fatal Accidents: Pilot vs Aircraft

![Fatal Accidents: Pilot vs Aircraft](image)

- **Wing Failures**
- **Pilot Cause**
- **Design/Production Contributing Factor**
- **Design/Production Cause**

**Legend:**
- 35
- 8
- 2
Fatal Accidents: Comparison of SLSA, Personal, and Experimental Aircraft

Data are currently available for only FY2009 through FY 2014.

Comparison Chart Showing Total Fatal Accidents per Fiscal Year

Comparison Chart Showing Fatal Accidents per 100K Hours of Operation

NOTE: Personal – not for the furtherance of a business, revenue producing or instructional.
Fatal Accident and Non-Fatal Accident/Incident Phase of Flight

**Total Events: 546**

The phase of operation or the phase of flight in which the event reported occurred. The taxonomy used in this report is consistent with that provided by the Commercial Aviation Safety Team/International Civil Aviation Organization (CAST/ICAO) Common Taxonomy Team (CICTT).

**NOTE:** An accident/incident event can have more than one phase of flight reported. Multiple coding supports the primary focus of CICTT – accident prevention – in which every pertinent element should be investigated, recorded, and analyzed.

Reference Appendix 1 for “Phase of Flight” definitions.
### Phase of Flight by Class of SLSA

<table>
<thead>
<tr>
<th>Phase of Flight</th>
<th>WSC</th>
<th>PPC</th>
<th>Glider</th>
<th>Airplane</th>
</tr>
</thead>
<tbody>
<tr>
<td>Landing</td>
<td>9</td>
<td></td>
<td>3</td>
<td>245</td>
</tr>
<tr>
<td>Emergency Descent</td>
<td>3</td>
<td></td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Takeoff</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>60</td>
</tr>
<tr>
<td>Uncontrolled Descent</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>49</td>
</tr>
<tr>
<td>En Route</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>51</td>
</tr>
<tr>
<td>Initial Climb</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>42</td>
</tr>
<tr>
<td>Maneuvering</td>
<td>1</td>
<td>11</td>
<td>0</td>
<td>30</td>
</tr>
<tr>
<td>Approach</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>37</td>
</tr>
<tr>
<td>Taxi</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>21</td>
</tr>
<tr>
<td>Phase Unknown</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Post-Impact</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Standing</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>6</td>
</tr>
<tr>
<td>Pushback/Towing</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Fatal Accident and Non-Fatal Accident/Incident Occurrence Category

**Total Events: 546**

Occurrence categories are used to classify occurrences (i.e., accidents and incidents) at a high level to permit analysis of the data in support of safety initiatives. The taxonomy used in this report is consistent with that provided by the CICTT.

**NOTE:** An accident/incident event can have more than one occurrence category reported. Multiple coding supports the primary focus of CICTT – accident prevention – in which every pertinent element should be investigated, recorded, and analyzed.

Reference Appendix 2 for “Occurrence Category” definitions.
Top Ten (10) Occurrence Categories by Class of SLSA

- Abnormal Runway Contact: 126
- LOC In-Flight: 103
- Collision w/Obstacles: 97
- Runway Excursion: 90
- LOC Ground: 78
- Unknown/Undetermined: 68
- Sys/Comp Failure Non-PP: 58
- Fuel Related: 41
- Sys/Comp Failure PP: 38
- Ground Handling: 35

Legend:
- WSC
- PPC
- Glider
- Airplane
### Grouping of Occurrence Categories

<table>
<thead>
<tr>
<th>Group</th>
<th>Subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AIRBORNE</strong></td>
<td>Abrupt Maneuver, Airprox/Midair Collision, CFIT, Fuel Related, Glider Towing, LOC In-Flight, Loss of Lifting Condition, Low Altitude Operations, Unintended Flight in IMC</td>
</tr>
<tr>
<td><strong>AIRCRAFT</strong></td>
<td>Fire/Smoke Non-Impact, Sys/Comp Failure Non-PP, Sys/Comp Failure PP</td>
</tr>
<tr>
<td><strong>GROUND OPS</strong></td>
<td>Fire/Smoke Post-Impact, Ground Collision, Ground Handling, LOC Ground, Runway Excursion, Runway Incursion Animal, Runway Incursion VAP</td>
</tr>
<tr>
<td><strong>MISC.</strong></td>
<td>Bird, Other, Security Related, Unknown/Undetermined</td>
</tr>
<tr>
<td><strong>Takeoff &amp; Landing</strong></td>
<td>Abnormal Runway Contact, Collision w/Obstacles, Undershoot/Overshoot</td>
</tr>
<tr>
<td><strong>WEATHER</strong></td>
<td>Icing, Turbulence Encounter, Wind Shear/Thunderstorm</td>
</tr>
</tbody>
</table>

![Bar chart showing non-fatal accidents/incidents and fatal accidents grouped by category.](chart.png)

- **AIRBORNE**:
  - Abrupt Maneuver: 51
  - Airprox/Midair Collision: 159
  - CFIT: 7
  - Fuel Related: 104
  - Glider Towing: 220
  - LOC In-Flight: 4
  - Loss of Lifting Condition: 242
  - Low Altitude Operations: 6
  - Unintended Flight in IMC: 6

- **AIRCRAFT**:
  - Fire/Smoke Non-Impact: 4
  - Sys/Comp Failure Non-PP: 12
  - Sys/Comp Failure PP: 51

- **GROUND OPS**:
  - Fire/Smoke Post-Impact: 7
  - Ground Collision: 220
  - Ground Handling: 6
  - LOC Ground: 76
  - Runway Excursion: 4
  - Runway Incursion Animal: 15
  - Runway Incursion VAP: 19

- **MISC.**:
  - Bird: 5
  - Other: 104
  - Security Related: 242
  - Unknown/Undetermined: 6

- **Takeoff & Landing**:
  - Abnormal Runway Contact: 6
  - Collision w/Obstacles: 104
  - Undershoot/Overshoot: 220

- **WEATHER**:
  - Icing: 4
  - Turbulence Encounter: 15
  - Wind Shear/Thunderstorm: 19

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Top Ten Occurrence Categories (Accidents & Incidents) – Fiscal Year Trends [10 Years]

1. Abnormal Runway Contact

2. LOC In-Flight

3. Collision w/Obstacles

4. Runway Excursion
### Design Related Occurrences
Accidents/incidents with identified design related impact. All identified occurrences have been reviewed by and appropriate corrective action obtained by the SLSA manufacturer in accordance with the applicable industry consensus standards and FAA regulations requirements.

<table>
<thead>
<tr>
<th>Design Feature</th>
<th>Number of Occurrences</th>
<th>Fatal Accidents</th>
<th>Non-Fatal Accidents/Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canopy / Door Latch</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Wing Structure*</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Rudder Pedals</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Fuel Tank Vent Line</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>MLG Strut Bracket</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Seat Restraint System</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Emergency Parachute Handle</td>
<td>1</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

*One fatal accident caused by intentional unapproved maneuver
Manufacturing Quality Related Occurrences
Accidents/incidents with identified manufacturing quality related impact. All identified occurrences have been reviewed by and appropriate corrective action obtained by the SLSA manufacturer in accordance with the applicable industry consensus standards and FAA regulations requirements.

<table>
<thead>
<tr>
<th>Manufacturing Quality Feature</th>
<th>Number of Occurrences</th>
<th>Fatal Accidents</th>
<th>Non-Fatal Accidents/Incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>POH Deficiencies [Incorrect / Insufficient Data]</td>
<td>11</td>
<td>4</td>
<td>7</td>
</tr>
<tr>
<td>MLG Bolt Failure</td>
<td>2</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Airspeed Indicator Marking Incorrect</td>
<td>3</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>MLG Attach Fitting Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Shoulder Harness Failure</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Main Fuse Block Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Airframe Emergency Parachute Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Engine Exhaust Spring Fatigue Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Improper Rivet Installation – Wing Skins</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Incorrect Engine Intake/Exhaust Rocker Arms</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Throttle Cable Failure</td>
<td>4</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Engine Mount Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>MLG Leg Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Canopy Latch Spring Failure</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>
Training Flights
Accidents/Incidents Identified as Training Flights.

Total Flights with Accidents/Incidents - 546
- Training (142): 26% (12 Fatal Incidents, 2 Fatal Accidents)
- Dual Instruction (73): 13%
- Student Pilot (69): 13%

Training Flights by Class of SLSA
- Airplane, 133
- PPC, 2
- WSC, 9
- Glider, 0

Training Flights (Accidents & Incidents) – Fiscal Year Trends [10 Years]
Accident/Incident Significant Cause/Effect Events
These events were either the causes or the effects of the accidents/incidents.

Significant Cause/Effect Events – Numbers

![Bar Chart showing non-fatal and fatal accidents/incidents](chart.png)

**NOTE:** Loss of Engine includes engine failures and malfunctions and any fuel related cause.

Significant Cause/Effect Events - Factors

- **LANDING GEAR DAMAGE:** No Fatal
  46 involved training; 16 dual instruction and 30 student pilot.

- **DIRECTIONAL CONTROL:** No Fatal
  46 involved training; 16 dual instruction and 30 student pilot.

- **HARD/BOUNCED LANDING:** One (1) Fatal
  47 involved training; 15 dual instruction and 32 student pilot.

- **LOSS OF ENGINE:** Six (6) Fatal
  Includes engine failures, malfunctions and any fuel related events
  13 involved training; 13 dual instruction and 0 student pilot.

- **WIND:** No Fatal
  Includes tailwind, crosswind, and gusty wind
  10 involved training; 2 dual instruction and 8 student pilot
GROUND LOOP/NOSE OVER: No Fatal
18 involved training; 11 dual instruction and 7 student pilot.

STALL/SPIN/SPRAL: Nineteen (19) Fatal
24 involved training; 19 dual instruction and 5 student pilot.

IMPROPER FLARE: No Fatal
21 involved training; 7 dual instruction and 14 student pilot.

IMPROPER AIRSPEED: Eight (8) Fatal
16 involved training; 10 dual instruction and 6 student pilot.

CANOPY/DOOR OPENED: Two (2) Fatal
Involved eight (8) different make/model airplanes
4 involved training; 2 dual instruction and 2 student pilot.
System/Component Failures

System/Component Failure or Malfunction Powerplant
[Does not include fuel related events]

System/Component Failure or Malfunction Non-Powerplant

- Fatal Accidents
- Non-Fatal Accidents/Incidents
Top Ten Significant Cause/Effect Events – Fiscal Year Trends [10 Years]

1. Landing Gear Damage

2. Directional Control

3. Hard/Bounced Landing

4. Loss of Engine Power
   [Includes failures and malfunctions and any fuel related cause]
9. Improper Airspeed

10. Canopy/Door
Total Aircraft by Manufacturer

Manufacturers with greater than 25 aircraft registered and had aircraft involved in accidents/incidents. Based on FAA Aircraft Registry, AFS-750 data from October 2015 for registration certificates issued.
Manufacturers with less than 25 aircraft registered and had aircraft involved in accidents/incidents. Based on FAA Aircraft Registry, AFS-750 data from October 2015 for registration certificates issued.
Total Accident/Incident Events by Manufacturer

Manufacturers with greater than 5 events.

- Flight Design: 80 Non-Fatal, 3 Fatal
- Ever Jordan: 48 Non-Fatal, 3 Fatal
- Remos: 42 Non-Fatal, 4 Fatal
- Cessna: 43 Non-Fatal, 4 Fatal
- Tecnam: 37 Non-Fatal, 1 Fatal
- Czech Aircraft Works (CZAW): 22 Non-Fatal, 5 Fatal
- Czech Sport Aircraft (CSA): 22 Non-Fatal, 2 Fatal
- Jabiru USA: 22 Non-Fatal, 1 Fatal
- American Legend: 16 Non-Fatal, 3 Fatal
- CubCrafters: 14 Non-Fatal, 1 Fatal
- Aero AT: 10 Non-Fatal, 1 Fatal
- Fantasy Air: 9 Non-Fatal, 3 Fatal
- Evolution Aircraft: 8 Non-Fatal, 3 Fatal
- Aeropro CZ: 6 Non-Fatal, 1 Fatal
- TL Ultralight: 6 Non-Fatal, 2 Fatal
- Airborne Windsports: 4 Non-Fatal, 3 Fatal
- AMD: 4 Non-Fatal, 2 Fatal
- Rans: 6 Non-Fatal
- IndUS Aviation: 6 Non-Fatal
- Urban Air: 5 Non-Fatal, 1 Fatal
- P&M Aviation: 4 Non-Fatal, 2 Fatal
- Jihlavan: 4 Non-Fatal
- Skykits USA: 4 Non-Fatal, 2 Fatal
Manufacturers with less than 5 events.

- Pipistrel
- North Wing UUM
- Powrachute
- Iniziative Industriali Italiani (3I)
- Arion Aircraft
- Dova
- Progressive Aerodyne
- Apollo Aircraft
- Zlin Aviation
- FPNA
- Paradise USA
- FoxAir
- Aeropratk America
- The AirplaneFactory
- B&F Technik/FK Lightplanes
- Higher Class Aviation
- Aerosport LTD
- Zaklady
- Czech Sportplanes
- Vans Aircraft
- Phoenix Air
- Air Creation USA
- World Aircraft
- Sea & Sky
- BRM Aero
- SC Aerostar
- LSA America
- Storm Aircraft
- Breezer
- M-Squared
- Aerospool
- Eagle Aircraft
- Aveko
- Flyitalia
- Direct Fly
- Luscombe Silvaire
- Colyaer
- CGS Aviation
- Aviadesign/Falcon
- Bush Caddy USA
- TecT spol
- Just Aircraft
Total Fatal Accidents by Manufacturer

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Fatal Accidents</th>
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</thead>
<tbody>
<tr>
<td>Aero AT</td>
<td>1</td>
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<tr>
<td>Airborne Windsports</td>
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<td>AMD</td>
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<tr>
<td>American Legend</td>
<td>1</td>
</tr>
<tr>
<td>CGS Aviation</td>
<td>1</td>
</tr>
<tr>
<td>Cessna</td>
<td>1</td>
</tr>
<tr>
<td>Colyaer</td>
<td>1</td>
</tr>
<tr>
<td>CubCrafters</td>
<td>1</td>
</tr>
<tr>
<td>Czech Aircraft Works (CZA)</td>
<td>5</td>
</tr>
<tr>
<td>Czech Sport Aircraft (CSA)</td>
<td>2</td>
</tr>
<tr>
<td>Evektor</td>
<td>3</td>
</tr>
<tr>
<td>Evolution Aircraft</td>
<td>3</td>
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<tr>
<td>Fantasy Air</td>
<td>1</td>
</tr>
<tr>
<td>Flight Design</td>
<td>2</td>
</tr>
<tr>
<td>Iniziative Industriali Italian (3I)</td>
<td>1</td>
</tr>
<tr>
<td>Jabiru</td>
<td>1</td>
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<tr>
<td>North Wing UUM</td>
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</tr>
<tr>
<td>P&amp;M Aviation</td>
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</tr>
<tr>
<td>Pipistrel</td>
<td>2</td>
</tr>
<tr>
<td>Remos</td>
<td>4</td>
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<tr>
<td>Skykits USA</td>
<td>2</td>
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<tr>
<td>Tecnam</td>
<td>1</td>
</tr>
<tr>
<td>TL Ultralight</td>
<td>2</td>
</tr>
<tr>
<td>Urban Air</td>
<td>1</td>
</tr>
<tr>
<td>Zlin Aviation</td>
<td>1</td>
</tr>
</tbody>
</table>
Total Fatal Accidents by Manufacturer to Total Aircraft by Manufacturer

- Aero AT: 4.8%
- Airborne Windsports: 6.3%
- AMD: 3.3%
- American Legend: 0.5%
- CGS Aviation: 50.0%
- Cessna: 0.4%
- Colyaer: 33.3%
- CubCrafters: 0.3%
- Czech Aircraft Works (CZAW): 5.7%
- Czech Sport Aircraft (CSA): 1.4%
- Evektor: 3.1%
- Evolution Aircraft: 8.1%
- Fantasy Air: 2.3%
- Flight Design: 0.5%
- Iniziative Industriali Italian (3I): 5.6%
- Jabiru: 0.9%
- North Wing UUM: 5.4%
- P&M Aviation: 12.5%
- Pipistrel: 2.4%
- Remos: 3.4%
- Skykits USA: 14.3%
- Tecnam: 0.6%
- TL Ultralight: 2.7%
- Urban Air: 5.9%
- Zlin Aviation: 4.3%
# Fatal Accidents – Probable Cause(s)

The National Transportation Safety Board determines the probable cause(s) of the fatal accidents as follows:

<table>
<thead>
<tr>
<th>Reg. Number</th>
<th>Make &amp; Model</th>
<th>S/N</th>
<th>Date of Accident</th>
<th>NTSB No</th>
<th>NTSB Cause</th>
</tr>
</thead>
<tbody>
<tr>
<td>N9164M</td>
<td>Fantasy Air Allegro 2000</td>
<td>05-208</td>
<td>8/7/2005</td>
<td>ATL05LA140</td>
<td>The instructor pilot's failure to maintain airspeed for unknown reasons, resulting in an aerodynamic stall and subsequent collision with the ground.</td>
</tr>
<tr>
<td>N848LC</td>
<td>American Legend AL11</td>
<td>AL-1047</td>
<td>7/30/2006</td>
<td>CHI06FA224</td>
<td>The failure of both pilots to assure that the fuel cap was securely in place prior to takeoff which resulted in fuel siphoning and ultimately fuel exhaustion. An additional cause was the decision to fly over the lake outside of gliding distance to shore along with the delay in diverting to refuel the airplane.</td>
</tr>
<tr>
<td>N158MD</td>
<td>AMD CH601XL</td>
<td>601-0165</td>
<td>11/4/2006</td>
<td>LAX07FA026</td>
<td>In-flight structural failure of the horizontal stabilizer and wings for undetermined reasons.</td>
</tr>
<tr>
<td>N601VA</td>
<td>Czech Aircraft Works (CZAW) CH601XL</td>
<td>6-9734</td>
<td>11/11/2006</td>
<td>NYC07FA025</td>
<td>The pilot's inadequate preflight inspection, which resulted in a total loss of engine power due to fuel exhaustion.</td>
</tr>
<tr>
<td>N222TB</td>
<td>CubCrafters CC11-100</td>
<td>CC11-00030</td>
<td>7/7/2007</td>
<td>LAX07FAMS1</td>
<td>The airplane is missing.</td>
</tr>
<tr>
<td>N808GS</td>
<td>Zlin Aviation Savage</td>
<td>0073</td>
<td>8/15/2007</td>
<td>DEN07FA136</td>
<td>The flight instructor's failure to maintain sufficient airspeed during takeoff-initial climb to avoid a stall/spin. Contributing to the accident was the conflicting airspeed information provided by the manufacturer, the incorrect airspeed indicator markings, and the high density altitude.</td>
</tr>
<tr>
<td>N616EV</td>
<td>Evektor SportStar</td>
<td>20060709</td>
<td>9/15/2007</td>
<td>DEN07FA158</td>
<td>The pilot's failure to maintain airspeed while maneuvering, resulting in an aerodynamic stall. Contributing to the accident was the conflict between the airspeed indicator markings provided by the manufacturer, the incorrect airspeed indicator markings, and the high density altitude.</td>
</tr>
<tr>
<td>N357DT</td>
<td>Czech Aircraft Works (CZAW) CH601XL</td>
<td>6-9733</td>
<td>4/8/2008</td>
<td>NYC08FA158</td>
<td>The in-flight failure of the left wing for undetermined reasons.</td>
</tr>
<tr>
<td>N4450E</td>
<td>Colyaer Freedom S-100 (Amphibian)</td>
<td>130-001-028</td>
<td>7/9/2008</td>
<td>MIA08LA138</td>
<td>The pilot's loss of aircraft control for undetermined reasons while making a water landing.</td>
</tr>
<tr>
<td>N602CF</td>
<td>Czech Aircraft Works (CZAW) SportCruiser</td>
<td>0BSC129</td>
<td>7/21/2008</td>
<td>CHI08FA196</td>
<td>The pilot's failure to maintain control of the airplane in the landing pattern. Contributing to the severity of injuries was the failure of the pilot's shoulder harness.</td>
</tr>
<tr>
<td>Reg. Number</td>
<td>Make &amp; Model</td>
<td>S/N</td>
<td>Date of Accident</td>
<td>NTSB No</td>
<td>NTSB Cause</td>
</tr>
<tr>
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</tr>
<tr>
<td>N454SA</td>
<td>Iniziative Industriali Italian  (3I) Sky Arrow 600 Sport</td>
<td>LSA012</td>
<td>10/7/2008</td>
<td>WPR09FA005</td>
<td>The pilot's failure to maintain aircraft control during a low-altitude maneuver. Contributing to the accident was the pilot's decision to perform a maneuver at a low altitude that was insufficient to allow him to recover from the loss of control. Contributing to the occupants' injuries was the inadequacy of the restraint system design by the manufacturer.</td>
</tr>
<tr>
<td>N9GX</td>
<td>Remos GX</td>
<td>299</td>
<td>1/25/2009</td>
<td>ERA09FA141</td>
<td>The pilot's inadequate preflight assembly and inspection which resulted in the pushrod connection to the left aileron not being connected, which led to a subsequent inflight loss of control and impact with terrain.</td>
</tr>
<tr>
<td>N930LA</td>
<td>Evektor SportStar Plus</td>
<td>20070930</td>
<td>3/5/2010</td>
<td>CEN10FA141</td>
<td>The pilot's improper decision to initiate and continue a flight into instrument meteorological conditions that led to spatial disorientation and a loss of control during cruise flight.</td>
</tr>
<tr>
<td>N853CZ</td>
<td>Czech Aircraft Works (CZAW) Mermaid (Amphibian)</td>
<td>06MM008</td>
<td>4/1/2010</td>
<td>CEN10FA182</td>
<td>The pilot's loss of control resulting from an aerodynamic stall/spin while maneuvering at low altitude.</td>
</tr>
<tr>
<td>N34TH</td>
<td>Airborne Windsports Edge XT-912</td>
<td>XT-912-0335</td>
<td>4/21/2010</td>
<td>WPR10FA211</td>
<td>The pilot's intentional in-flight maneuvers that exceeded the structural limits of the aircraft, which resulted in structural failure of the wings.</td>
</tr>
<tr>
<td>N121EV</td>
<td>Evektor SportStar Plus</td>
<td>2008101</td>
<td>5/29/2010</td>
<td>CEN10FA278</td>
<td>The opening of the cockpit canopy in-flight due to improper latching, which resulted in a LOC and impact with terrain.</td>
</tr>
<tr>
<td>N85495</td>
<td>Aero ATAT-4</td>
<td>AT4-004</td>
<td>7/28/2010</td>
<td>CEN10LA470</td>
<td>The pilot's failure to maintain adequate airspeed which resulted in a stall and subsequent loss of control of the airplane.</td>
</tr>
<tr>
<td>N417JN</td>
<td>North Wing UUM Scout XC</td>
<td>LS9007</td>
<td>8/21/2010</td>
<td>ERA10FA435</td>
<td>The pilot's loss of aircraft control for an undetermined reason.</td>
</tr>
<tr>
<td>N268RA</td>
<td>Remos G-3/600</td>
<td>231</td>
<td>8/28/2010</td>
<td>WPR10FA435</td>
<td>The pilot's failure to maintain airplane control while maneuvering at a low altitude.</td>
</tr>
<tr>
<td>N29EP</td>
<td>Airborne Windsports Edge XT-912</td>
<td>XT-912-0131</td>
<td>2/15/2011</td>
<td>WPR11FA138</td>
<td>The flight instructor did not maintain aircraft control while maneuvering at low altitude. Contributing to the accident was the inadvertent application of the choke, which resulted in a momentary interruption of engine power.</td>
</tr>
<tr>
<td>N420PS</td>
<td>Czech Sport Aircraft (CSA) SportCruiser</td>
<td>P1001009</td>
<td>5/6/2011</td>
<td>ERA11FA287</td>
<td>The pilot's inadvertent application of control inputs that resulted in rapid, right-rolling, negative g-forces during night cruise flight and his subsequent ejection from the airplane. Contributing to the accident was the pilot's decision to fly at night in an airplane not approved for night flight, his unbuckling of the seat belt portion of the restraint harness, and the inadvertent opening of the airplane's canopy.</td>
</tr>
<tr>
<td>N282SC</td>
<td>Czech Aircraft Works (CZAW) SportCruiser</td>
<td>06SC006</td>
<td>5/14/2011</td>
<td>WPR11LA223</td>
<td>The pilot's failure to maintain control during the takeoff climb, which resulted in a stall at low altitude and collision with terrain. Contributing to the accident was the pilot’s impaired performance from over-the-counter medications.</td>
</tr>
<tr>
<td>Reg. Number</td>
<td>Make &amp; Model</td>
<td>S/N</td>
<td>Date of Accident</td>
<td>NTSB No</td>
<td>NTSB Cause</td>
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</tr>
<tr>
<td>N705PM</td>
<td>P&amp;M Aviation Quik</td>
<td>8245</td>
<td>5/17/2011</td>
<td>WPR11FA225</td>
<td>The pilot's continued operation of the aircraft with deteriorated wing fabric and his aggressive maneuvering at low altitude, which resulted in the right wing fabric's failure during flight. Contributing to the accident was the pilot's loading of the aircraft in excess of the MTOW limit.</td>
</tr>
<tr>
<td>N2442</td>
<td>TL Ultralight Sting S3</td>
<td>TLUSA1 74</td>
<td>7/29/2011</td>
<td>ERA11LA427</td>
<td>The inability of the PIC to recover from an inadvertent spin following a stall demonstration for reasons that could not be determined because aircraft and engine examinations did not reveal any anomalies that would have precluded recovery from the spin. Contributing to the severity of the accident were the PIC's failure to remove the airframe parachute system safety pin before takeoff, the exceedance of the left-seat weight limitation, and the location of the parachute system activation handle behind the PIC's seat, which prevented easy access during the uncontrolled descent.</td>
</tr>
<tr>
<td>N107GX</td>
<td>Remos GX</td>
<td>293</td>
<td>9/15/2011</td>
<td>CEN11FA645</td>
<td>The pilot's failure to maintain adequate airspeed while maneuvering at a low altitude. Contributing was the pilot's decision to maneuver at an altitude below that required for congested areas, which did not afford an adequate margin for stall recovery.</td>
</tr>
<tr>
<td>N61XT</td>
<td>Skykits USA Savannah VGW</td>
<td>10-03-51-905</td>
<td>11/20/2011</td>
<td>CEN12FA073</td>
<td>The non-certificated pilot's decision to fly the airplane without receiving any flight instruction in the airplane, which resulted in his failure to maintain sufficient airspeed during takeoff and the subsequent aerodynamic stall.</td>
</tr>
<tr>
<td>N206GX</td>
<td>Remos GX</td>
<td>335</td>
<td>6/15/2012</td>
<td>ERA12FA395</td>
<td>The pilot's inadequate preflight inspection, which failed to ensure that the elevator quick-fastener was properly secured, resulting in an inflight elevator control disconnect and subsequent loss of control during the ensuing emergency landing. Contributing to the accident was the pilot's failure to remove the padlock from the airplane's ballistic recovery system parachute activation handle.</td>
</tr>
<tr>
<td>N177N</td>
<td>TL Ultralight Sting Sport</td>
<td>TLUSA1 53</td>
<td>7/5/2012</td>
<td>WPR12FA295</td>
<td>The pilot's failure to recover from a stall, which resulted in a spin. Contributing to the accident was the instructor's inadequate remedial action.</td>
</tr>
<tr>
<td>N9764J</td>
<td>Skykits USA Savannah ADV</td>
<td>07-07-51-621</td>
<td>9/3/2012</td>
<td>WPR12FA395</td>
<td>The pilot's failure to maintain adequate airspeed while maneuvering at or above the airplane's maximum ceiling, which resulted in a stall and a subsequent loss of airplane control. Contributing to the accident was the pilot's decision to operate the airplane in the high density altitude conditions, which placed the airplane near or above its maximum ceiling.</td>
</tr>
<tr>
<td>N635J</td>
<td>Jabiru USA Sport Aircraft J250-SP</td>
<td>500</td>
<td>11/18/2012</td>
<td>CEN13LA062</td>
<td>The pilot's failure to maintain adequate airspeed during initial climb following an aborted landing, which resulted in an aerodynamic stall and spin at a low altitude.</td>
</tr>
<tr>
<td>N477PA</td>
<td>PipistrelAlpha Trainer</td>
<td>453AT9 12LSA</td>
<td>6/11/2013</td>
<td>CEN13FA338</td>
<td>The loss of engine power due to fuel exhaustion as a result of the manufacturer providing the incorrect Pilot's Operating Handbook to the owner, which prevented the pilot from accurately calculating the fuel requirements before the flight. Contributing to the accident were the pilot's inadequate preflight planning and poor decision-making.</td>
</tr>
<tr>
<td>N467YN</td>
<td>North Wing UUM Sport X2</td>
<td>LS7022</td>
<td>7/7/2013</td>
<td>WPR13LA313</td>
<td>The student pilot's abrupt maneuver to avoid transmission wires, which resulted in his loss of airplane control. Contributing to the accident was the pilot's decision to perform a low-altitude flight, his distracted attention, and his failure to monitor the environment for objects.</td>
</tr>
<tr>
<td>Reg. Number</td>
<td>Make &amp; Model</td>
<td>S/N</td>
<td>Date of Accident</td>
<td>NTSB No</td>
<td>NTSB Cause</td>
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<tr>
<td>N424CT</td>
<td>Flight Design CTSW</td>
<td>05-06-02</td>
<td>7/10/2013</td>
<td>CEN13LA409</td>
<td>The airplane’s unexpected encounter with a dust devil, which resulted in the loss of airplane control.</td>
</tr>
<tr>
<td>N123FJ</td>
<td>Airborne Windsports Edge XT-912-L</td>
<td>XT-912-0294</td>
<td>7/29/2013</td>
<td>WPR13LA347</td>
<td>The pilot’s failure to properly secure himself in the cockpit with the seat belt, which resulted in his inability to control the airplane after takeoff.</td>
</tr>
<tr>
<td>N19UA</td>
<td>Urban Air Samba XXL</td>
<td>SA XL 79</td>
<td>8/16/2013</td>
<td>WPR13FA376</td>
<td>The pilot’s failure to maintain adequate airspeed while maneuvering, which led to the airplane exceeding its critical angle of attack and experiencing an aerodynamic stall/spin. Contributing to the accident was the improper location of the parachute activation handle and the pilot’s failure to remove the handle’s locking pin before flight.</td>
</tr>
<tr>
<td>N98EV</td>
<td>Evolution Aircraft Revo</td>
<td>000551</td>
<td>3/11/2014</td>
<td>WPR14FA135</td>
<td>The pilot’s reconfiguration of the fuel venting system, which resulted in a loss of engine power and subsequent loss of aircraft control.</td>
</tr>
<tr>
<td>N50BCT</td>
<td>Flight Design CTSW</td>
<td>06-10-06</td>
<td>7/5/2014</td>
<td>ERA14LA329</td>
<td>Still under investigation at the time of this report.</td>
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<tr>
<td>N214EV (N779ST)</td>
<td>Evolution Aircraft Revo</td>
<td>000604</td>
<td>8/11/2014</td>
<td>CEN14LA419</td>
<td>Still under investigation at the time of this report.</td>
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<tr>
<td>N3037H</td>
<td>Cessna 162</td>
<td>16200115</td>
<td>9/19/2014</td>
<td>WPR14FA381</td>
<td>Still under investigation at the time of this report.</td>
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<tr>
<td>N916H</td>
<td>CGS Aviation Hawk Arrow II</td>
<td>HAII-316-700E-TRI</td>
<td>10/20/2014</td>
<td>CEN15LA022</td>
<td>Still under investigation at the time of this report.</td>
</tr>
<tr>
<td>N623HS</td>
<td>AMD CH601XLi</td>
<td>601-0265</td>
<td>3/31/2015</td>
<td>CEN15FA187</td>
<td>Still under investigation at the time of this report.</td>
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<tr>
<td>N35EP</td>
<td>Czech Sport Aircraft (CSA) SportCruiser</td>
<td>P1001059</td>
<td>6/21/2015</td>
<td>ERA15FA245</td>
<td>Still under investigation at the time of this report.</td>
</tr>
<tr>
<td>N2264X</td>
<td>Evolution Aircraft Revo</td>
<td>000594</td>
<td>9/5/2015</td>
<td>ERA15LA339</td>
<td>Still under investigation at the time of this report.</td>
</tr>
</tbody>
</table>
Appendix 1
Phase of Flight Definitions (from CICTT)

Abbreviated definitions are provided; further explanation is available from the CICTT definition and usage notes document.

STANDING (STD)
Prior to pushback or taxi, or after arrival, at the gate, ramp, or parking area, while the aircraft is stationary.

PUSHBACK/TOWING (PBT)
Aircraft is moving in the gate, ramp, or parking area, assisted by a tow vehicle (tug).

TAXI (TXI)
The aircraft is moving on the aerodrome surface under its own power prior to takeoff or after landing.

TAKEOFF (TOF)
From the application of takeoff power, through rotation, and to an altitude of 35 feet above runway elevation. Includes rejected takeoff.

INITIAL CLimb (ICL)
From the end of the Takeoff sub-phase to the first prescribed power reduction, or until reaching 1,000 feet above runway elevation or the VFR pattern, whichever comes first.

EN ROUTE (ENR)
Visual Flight Rules (VFR): From completion of Initial Climb through cruise and controlled descent to the VFR pattern altitude or 1,000 feet above runway elevation, whichever comes first.

MANEUVERING (MNv)
Low altitude/aerobatic flight operations.

APPROACH (APR)
Visual Flight Rules (VFR): From the point of VFR pattern entry, or 1,000 feet above the runway elevation, to the beginning of the landing flare. Includes missed approach/go-around.

LANDING (LDG)
From the beginning of the landing flare until aircraft exits the landing runway, comes to a stop on the runway, or when power is applied for takeoff in the case of a touch-and-go landing. Includes aborted landing after touchdown.
EMERGENCY DESCENT (EMG)
A controlled descent during any airborne phase in response to a perceived emergency situation.

UNCONTROLLED DESCENT (UND)
A descent during any airborne phase in which the aircraft does not sustain controlled flight.

POST-IMPACT (PIM)
Any of that portion of the flight which occurs after impact with a person, object, obstacle or terrain. While not a Phase of Flight per se, this phase is added to permit accurate sequence of event reconstruction for occurrences. For example, to capture post-impact fire.

UNKNOWN (UNK)
Phase of flight is not discernible from the information available.
Appendix 2
Occurrence Categories Definitions (from CICTT)

Abbreviated definitions/notes are provided; further explanation is available from the CICTT definition and usage notes document.

ABNORMAL RUNWAY CONTACT (ARC)
Any landing or takeoff involving abnormal runway or landing surface contact.

- Hard/heavy landings, long/fast landings, off center landings, crabbed landings; nose wheel first touchdown, tail strikes, and wingtip/nacelle strikes; gear-up landings. Includes waterways.

ABRUPT MANEUVER (AMAN)
The intentional abrupt maneuvering of the aircraft by the flightcrew.

- Hard braking or rapid change in direction to avoid collision, etc.

AIRPROX/MIDAIR COLLISIONS (MAC)
Air proximity issues, TCAS/ACAS alerts, loss of separation as well as near collisions or collisions between aircraft in flight.

BIRD (BIRD)
Occurrences involving collisions/near collisions with bird(s)/wildlife.

- May occur in any phase of flight.

COLLISION WITH OBSTACLES(S) DURING TAKEOFF AND LANDING (CTOL)
Collision with obstacle(s) during takeoff or landing while airborne.

- Contact with obstacles, such as vegetation, trees and walls, snowdrifts, power cables, wires, land structures and buildings, and water obstacles.

CONTROLLED FLIGHT INTO OR TOWARD TERRAIN (CFIT)
In-flight collision or near collision with terrain, water, or obstacle without indication of loss of control.

- Only for airborne phases of flight. Includes objects extending above the surface (e.g., towers, trees, power lines, wires). Includes instances when the flightcrew is affected by visual illusions or degraded visual environment.

FIRE/SMOKE (NON-IMPACT) (F-NI)
Fire or smoke in or on the aircraft, in flight, or on the ground, which is not the result of impact.

FIRE/SMOKE (POST-IMPACT) (F-POST)
Fire/Smoke resulting from impact.

- Only used for occurrences in which post impact fire was a factor in the outcome. This category is only used in conjunction with another category.
FUEL RELATED (FUEL)
One or more powerplants experienced reduced or no power output due to fuel exhaustion, fuel starvation/mismanagement, fuel contamination/wrong fuel, or carburetor and/or induction icing.

For problems that are not the result of mechanical failures which are coded elsewhere.

GLIDER TOWING RELATED EVENTS (GTOW)
Premature release, inadvertent release or non-release during towing, entangling with towing, cable, loss of control, or impact into towing aircraft/winch.

Applicable both to aircraft under tow by winch or by another aircraft, or to aircraft executing towing.

GROUND COLLISION (GCOL)
Collision while taxiing to or from a runway in use.

Includes collisions with an aircraft, person, animal, ground vehicle, obstacle, building, structure, etc., while on a surface other than the runway.

GROUND HANDLING (RAMP)
Occurrences during (or as a result of) ground handling operations.

Includes collisions that occur while servicing, boarding, loading, and deplaning; includes injuries to people from prop strikes; includes towing events; includes jet blast and prop/rotor downwash; includes aircraft external preflight configuration errors (e.g., improper loading and improperly secured doors and latches.

ICING (ICE)
Accumulation of snow, ice, freezing rain, or frost on aircraft surfaces that adversely affects aircraft control or performance.

Includes accumulations that occur in flight or on the ground; includes windscreen icing and ice on sensors, antennae, and other external surfaces; does not include carb or induction icing events that are coded in the FUEL category.

LOSS OF CONTROL—GROUND (LOC-G)
Loss of aircraft control while the aircraft is on the ground.

Used only for non-airborne phases of flight; may result from a contaminated runway or taxiway (e.g., rain, snow, ice, slush); may occur as the result of other occurrence categories; do not use when a mechanical failure rendered the aircraft uncontrollable.

LOSS OF CONTROL—INFLIGHT (LOC-I)
Loss of aircraft control while, or deviation from intended flight path, in flight.

Used only for airborne phases of flight; may occur as a result of a deliberate maneuver (e.g., stall/spin practice); includes stalls; includes pilot-induced or assisted oscillations; includes occurrences involving configuring the aircraft (e.g., flaps, slats, onboard systems, etc.)
LOSS OF LIFTING CONDITIONS EN ROUTE (LOLI)
Landing en route due to loss of lifting conditions. Applicable only to aircraft that rely on static lift to maintain or increase flight altitude, namely sailplanes, gliders, hang gliders and paragliders, balloons and airships.

Applicable to gliders, motorgliders, balloons, and airships.

LOW ALTITUDE OPERATIONS (LALT)
Collision or near collision with obstacles/objects/terrain while intentionally operating near the surface (excludes takeoff or landing phases).

“Terrain” includes water, vegetation, rocks, and other natural elements lying on, or growing out of, the earth; includes aerobatics, sightseeing, demo flights, aerial inspection, ostentatious display, maneuvering in close proximity to cliffs, mountains, into box canyons, and similar flights.

OTHER (OTHR)
Any occurrence not covered under another category.

RUNWAY EXCURSION (RE)
A veer off or overrun off the runway surface.

Only applicable during either the takeoff or landing phase; may be intentional or unintentional (e.g., to avoid a collision).

RUNWAY INCURSION-ANIMAL (RI-A)
Collision with, risk of collision with, or evasive action taken by an aircraft to avoid an animal on a runway or on a helipad/helideck in use.

RUNWAY INCURSION-VEHICLE, AIRCRAFT OR PERSON (RI-VAP)
Any occurrence at an aerodrome involving the incorrect presence of an aircraft, vehicle, or person on the protected area of a surface designated for the landing and takeoff of aircraft.

SECURITY RELATED (SEC)
Criminal/Security acts which result in accidents or incidents (per Annex 13 to the Convention on International Civil Aviation).

Examples include hijacking and/or aircraft theft, unruly passenger, flight control interference, sabotage, suicide, and acts of war.

SYSTEM COMPONENT FAILURE OR MALFUNCTION (NON-POWERPLANT) (SCF-NP)
Failure or malfunction of an aircraft system or component other than the powerplant.

Includes errors or failures in software and database systems; includes non-powerplant parts or pieces separating from an aircraft; includes all failures/malfunctions, including those related to or caused by maintenance issues.
SYSTEM/COMPONENT FAILURE OR MALFUNCTION (POWERPLANT) (SCF-PP)
Failure or malfunction of an aircraft system or component related to the powerplant.

Includes props, prop system, and engine gearbox and powerplant controls; includes powerplant parts or pieces separating from a powerplant; includes all failures/malfunctions, including those related to or caused by maintenance issues.

TURBULENCE ENCOUNTER (TURB)
In-flight turbulence encounter.

Includes encounters with turbulence in clean air, mountain wave, mechanical, and/or cloud-associated turbulence; includes wake vortex encounters; includes turbulence when operating around or at buildings, structures, and objects.

UNDERSHOOT/OVERSHOOT (USOS)
A touchdown off the runway/helipad/helideck surface.

For occurrences during the landing phase; includes offside touchdowns.

UNINTENDED FLIGHT IN IMC (UIMC)
Unintended flight in Instrument Meteorological Conditions (IMC).

Only to be used when loss of visual reference is encountered and if pilot not qualified to fly in IMC and/or aircraft not equipped to fly in IMC.

UNKNOWN OR UNDETERMINED (UNK)
Insufficient information exists to categorize the occurrence.

Includes cases in which the aircraft is missing or in which there is not enough information at hand to classify the occurrence.

WINDSHEAR OR THUNDERSTORM (WSTRW)
Flight into wind shear or thunderstorm.

Includes in-flight events related to hail; includes events related to lightning strikes; includes events related to heavy rain.