General Aviation and the NTSB Most Wanted List

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The NTSB is an independent US federal agency charged with determining the probable cause(s) of transportation accidents, making recommendations to prevent their recurrence, conducting special studies and investigations, and coordinating resources to assist victims and their families after an accident.
Topics

• General Aviation Accident Trends
• Most Wanted List – 2015
  – Distractions
  – Substance Impairment
  – Fitness for Duty
  – Procedural Compliance
  – Loss of Control
All GA Accidents

Number of accidents

Non-Fatal | Fatal Accidents

2000: 1492 | 345
2001: 1402 | 325
2002: 1371 | 345
2003: 1389 | 352
2004: 1305 | 314
2005: 1350 | 321
2006: 1215 | 308
2007: 1366 | 288
2008: 1292 | 277
2009: 1205 | 275
2010: 1169 | 271
2011: 1202 | 268
2012: 1198 | 273
2013: 1001 | 221
2014: 968 | 253

NTSB
GA Accident-involved Fatalities

![Line graph showing the number of total fatalities from 2000 to 2014. The number of fatalities fluctuates over the years, with a peak in 2006 and a sustained decrease from 2007 onwards.](image-url)
*The 2011 GA Survey is currently not available. FAA is actively engaged in re-calibration efforts and expect to have validated 2011 data published at a later date.
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Fatal Accident Rates per 100k Flight Hours

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Defining Fatal Accident Events
All Part 91 GA 2008-2014

• Maneuvering
• Initial Climb
• Maneuvering-Low-alt Flying
• Takeoff
• Enroute-Cruise
Why GA on the Most Wanted List?

- NTSB investigates approximately 1500 GA accidents per year over the last decade.
- Overall GA accident rate flat
  - Has improved little over the last decade
  - Airline accident rate decreased more than 80%
- Personal flying accident rate
  - Increased 20% over last 10 years
  - Fatal rate increased 25% over that period

- **GA safety needs attention**
NTSB 2015 Most Wanted List

- Disconnect from Deadly Distractions
- End Substance Impairment in Transportation
- Enhance Public Helicopter Safety
- Implement Positive Train Control in 2015
- Improve Rail Tank Car Safety
- Make Mass Transit Safer
- Prevent Loss of Control in Flight in General Aviation
- Require Medical Fitness for Duty
- Strengthen Commercial Trucking Safety
- Strengthen Procedural Compliance
Gray Summit, MO – bus/vehicle/truck crash
Distraction
Distraction
Distraction
2015 MWL - Distractions

- Disconnect from Deadly Distractions
  - A factor in all modes of transportation
- Aviation emphasis
  - Sterile Cockpit
  - Appropriate use of PEDs
  - Manage distractions
2015 MWL - Impairment

• End Substance Impairment in Transportation
  – A factor in all modes
• Fatally injured pilots - potentially impairing drugs
  – 11% average 1990 - 1997
  – 23% average 2008 - 2012
Toxicology Findings by Category, 1990-2012

Percent of Study Pilots with Positive Findings

- Potentially Impairing Drugs
- Potentially Impairing Condition
- Controlled Substances
- Illicit Drugs

Most Common Drugs

- Sedating antihistamines
  - Most common category
- Diphenhydramine
  - Most common individual drug
  - Most common potentially impairing drug
  - Use INCREASING
## Drug Facts

**Active ingredient (in each capsule)**
- Diphenhydramine HCl 25 mg

**Purpose**
- Antihistamine

### Uses
- temporarily relieves these symptoms due to hay fever or other upper respiratory allergies:
  - runny nose
  - sneezing
  - itchy, watery eyes
  - itching of the nose or throat
- temporarily relieves these symptoms due to the common cold:
  - runny nose
  - sneezing

### Warnings
- **Do not use** with any other product containing diphenhydramine, even one used on skin
- **Ask a doctor before use if you have**
  - a breathing problem such as emphysema or chronic bronchitis
  - glaucoma
  - trouble urinating due to an enlarged prostate gland

**Ask a doctor or pharmacist before use if you are taking sedatives or tranquilizers**

### When using this product
- marked drowsiness may occur
- avoid alcoholic drinks
- alcohol, sedatives, and tranquilizers may increase drowsiness
- be careful when driving a motor vehicle or operating machinery
- excitability may occur, especially in children

**If pregnant or breast-feeding** ask a health professional before use.

**Keep out of reach of children.** In case of overdose, get medical help or contact a Poison Control Center right away. (1-800-222-1222)

### Directions
- take every 4 to 6 hours
- do not take more than 6 doses in 24 hours

<table>
<thead>
<tr>
<th>Adults and children 12 years and over</th>
<th>1 to 2 capsules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Children 6 to under 12 years</td>
<td>1 capsule</td>
</tr>
<tr>
<td>Children under 6 years</td>
<td>do not use this product in children under 6 years of age</td>
</tr>
</tbody>
</table>

### Other information
- store at 59° to 77°F in a dry place. Protect from heat, humidity, and light.
- do not use if carton is open or blister unit is broken
- see side panel for lot number and expiration date
Toxicology Findings by Certificate, 2005-2012

Percent of Study Pilots with Positive Findings by Category

- ATP: (n = 272)
- Commercial: (n = 610)
- Private: (n = 955)
- Sport: (n = 30)

Highest Airman Certificate Held

- Potentially Impairing Drugs
- Potentially Impairing Condition
- Controlled Substances
- Illicit
Toxicology Findings by Medical, 2005-2012

<table>
<thead>
<tr>
<th>Category</th>
<th>FAA Medical Within Duration of Third Class</th>
<th>Expired / No Medical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potentially Impairing Drugs</td>
<td>(n = 1,676)</td>
<td>(n = 260)</td>
</tr>
<tr>
<td>Potentially Impairing Condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlled Substances</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illicit</td>
<td></td>
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</tr>
</tbody>
</table>

- Percent of Study Pilots with Positive Findings by Category

- (n = 1,676)
- (n = 260)
Medical Resources for Pilots

• FAA Publications
  – *Medications and Flying*
  – *Guide for Aviation Medical Examiners*

• Aircraft Owners and Pilots Association (AOPA)
  – Member resources
Medical Resources for Pilots

• General Aviation Joint Steering Committee (GAJSC)
  – 2013 Letter to pilots
  – 2014 Initiatives
    • Drug database
    • Training course
Fitness for Duty
• **Require Medical Fitness for Duty**
  – A factor in all modes
• Airman Medical – fitness at exam time
• Pilots must self-assess fitness
  – Need for appropriate flight preparations
• Focus on medical conditions
  – Example – Obstructive Sleep Apnea
• Enhance medical knowledge
Lubbock, TX – ATR 42-320 Cargo Aircraft
Procedural Compliance
2015 MWL – Procedural Compliance

• **Strengthen Procedural Compliance**
  – More than a dozen related commercial aircraft accidents in last ten years
  – Equally applicable to corporate and business operations
  • Implement well developed procedures
  • Train to the procedures
  • Emphasize and reinforce operations to the procedures
Loss of Control
Loss of Control
2015 MWL – Loss of Control

• *Prevent Loss of Control in Flight in General Aviation*
  
• More than 40% GA accidents were LOC during 2004 – 2014
  
• Most deadly flight phases
  – Approach to landing
  – Maneuvering
  – Climb
Business Flying, 2008-2014

Number of Fatal Accidents

- Loss of Control In-Flight: 18
- Controlled Flight Into Terrain: 11
- Fuel Related: 5
- System/Component Failure - Non-powerplant: 4
- System/Component Failure - Powerplant: 4
- Unknown: 2
- Ground Handling: 1
- Turbulence Encounter: 1
- Windshear/Thunderstorm: 1
Instructional Flying, 2008-2014

Number of Fatal Accidents

- Loss of Control In-Flight: 10
- System/Component Failure-Powerplant: 8
- Controlled Flight Into Terrain: 7
- Other: 5
- Abrupt Maneuver: 4
- Low Altitude Operation: 4
- Collision on Takeoff or Landing: 3
- Unknown: 3
- Abnormal Runway Contact: 2
- Ground Handling: 2
- Loss of control on Ground: 2
- Fuel Related: 1
- Simulated/training event: 1
- Unintended Flight Into IMC: 1
Personal Flying, 2008-2014

Number of Fatal Accidents

- Loss of Control In-Flight: 601
- System/Component Failure - Powerplant: 149
- Controlled Flight Into Terrain: 116
- Other: 66
- System/Component Failure - Non-Powerplant: 62
- Unintended Flight Into IMC: 60
- Unknown: 47
- Fuel Related: 39
- Low Altitude Operation: 33
- Midair: 27
- Abrupt Maneuver: 19
- Collision on Takeoff or Landing: 19
- Abnormal Runway Contact: 15
- Loss of Control on Ground: 11

Number of Fatal Accidents
Loss of Control In-Flight, 2008-2014

Number of Fatal Accidents

- Personal Flying: 601
- Instructional Flying: 69
- Business Flying: 18
- Corporate Flying: 5
Fatalities by CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories

Note: Principal categories as assigned by CAST.
For a complete description of CICTT Aviation Occurrence Categories, go to: http://www.intlaviationstandards.org/

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Primary category of accidents

- Personal flying
- Instructional flying
- Business flying
- Corporate flying
- Airline flying
Fatal Airport LOC 2008-2014

Fixed-Wing Fatal Loss of Control Airport Accidents 2008-2014

- Takeoff - 41
- Initial Climb - 127
- Crosswind - 4
- Missed Approach / Go Around - 44
- VFR/IFR Approach 55
- Final - 30
- Base - 23
- Downwind - 15
Loss-of-control Working Group

Safety Enhancements Identified

- AOA – New, Current, Retrofit
- Aeronautical Decision Making
- Stabilized Approach
- Single Pilot CRM
- Medication effects
- Weather Technologies
- Etc…

28 Safety Enhancements
Lower Cost AOA Displays

• Stall occurs at a specific Angle-of-Attack
  – But not necessarily at the same airspeed

First of AOA indicators built to ASTM stds and installed as a minor mod

FAA installation policy changed
Stall Recovery

• Reduce the angle-of-attack below stall AOA (Max CL)
  – Push over to eliminate stall warning
• Level wings
• Adjust thrust
  – Avoid overspeed and high G levels
• Pitch back to level flight
• Don’t try to “Power out of a stall”
NTSB Safety Alerts

- Preventing Aerodynamic Stalls
- Reduced Visual References
- Is Your Aircraft Talking to You
- Risk Management for Pilots
- Risk Management for Mechanics

Available on www.NTSB.gov
“Learn all you can from the mistakes of others. You won’t have time to make them all yourself”
Accident Investigations

- NTSB accident files are on-line
- Many recent accident Dockets are on-line
  - Factual reports,
  - Interviews
  - Photographs
- www.ntsb.gov

“Human beings, who are almost unique in having ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so.”
Accident Statistics - 2013

- 1,298 Total Accidents (Down from 1,537 in 2012)
  - 236 Fatal Accidents
    - 429 Fatalities
- 1,224 General Aviation Accidents
  - 222 Fatal Accident
    - 390 Fatalities
- 51 Part 135 Accidents
  - 12 Fatal Accidents
    - 30 Fatalities
1,264 Total accidents (down from 1298)
  - 258 Fatal accidents (up from 236)
1,202 General Aviation Accidents (down from 1224)
  - 250 Fatal Accidents (up from 222)
    • 405 Fatalities (up from 380)
38 Part 135 Accidents (down from 51)
  • 8 Fatal Accidents (down from 12)
    • 20 Fatalities (down from 30)
33 Accidents Business/Corporate