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Orlando, April 19, 2016

General Aviation and the NTSB
Most Wanted List

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Member, NTSB
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 – 2016
  - Distraction
  - Substance Impairment
  - Medical Fitness for Duty
  - Fatigue
  - Occupant Protection
  - Recorders
  - Loss of Control
All GA Accidents

*2015 Preliminary numbers
GA Accident-involved Fatalities

Total Fatalities

*2015 Preliminary numbers
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.
Accident Rates per 100k Flight Hours

- All GA
- Corporate
- Business
- Instructional
- Personal
Fatal Accident Rates per 100k Flight Hours

*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.
### Defining Events – Part 91 Ops

<table>
<thead>
<tr>
<th>Business</th>
<th>Instruction</th>
<th>Personal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Loss of Control</td>
<td>1. Loss of Control</td>
<td>1. Loss of Control</td>
</tr>
<tr>
<td>2. CFIT</td>
<td>2. Midair</td>
<td>2. Powerplant Fail</td>
</tr>
<tr>
<td>4. Component Fail</td>
<td>4. CFIT</td>
<td>4. Other</td>
</tr>
<tr>
<td>5. Powerplant Fail</td>
<td>5. Other</td>
<td>5. Component Fail</td>
</tr>
</tbody>
</table>
Why GA on the Most Wanted List?

• NTSB investigates approximately 1500 GA accidents per year

• Overall GA accident rate flat
  – Has improved little over the last decade
  – Airline accident rate decreased more than 80%

• Personal flying accident rate
  – Increased 13% over last 10 years
  – Greater than 15% increase in fatals over that period

• **GA safety needs attention**
NTSB 2016 Most Wanted List

- Disconnect from Deadly Distractions
- End Substance Impairment in Transportation
- Expand Use of Recorders to Enhance Transportation Safety
- Improve Rail Transit Safety Oversight
- Prevent Loss of Control in Flight in General Aviation
- Promote Availability of Collision Avoidance Technologies in Highway Vehicles
- Promote the Completion of Rail Safety Initiatives
- Reduce Fatigue-Related Accidents
- Require Medical Fitness for Duty
- Strengthen Occupant Protection
Gray Summit, MO – bus/vehicle/truck crash
Distraction
Distraction
Distraction
2016 MWL - Distractions

• *Disconnect from Deadly Distractions*
  – A factor in all modes of transportation

• Aviation emphasis
  • Sterile Cockpit
  • Appropriate use of PEDs
  • Manage distractions
• **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

- 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

<table>
<thead>
<tr>
<th>Purpose</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Antihistamine</td>
<td></td>
</tr>
</tbody>
</table>

## 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 breastfeeding, talk to your doctor 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>Age Group</th>
<th>Capsule(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>adults and children 12 years and over</td>
<td>1 to 2 capsules</td>
</tr>
<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
Medical Resources for Pilots

• General Aviation Joint Steering Committee (GAJSC)
  – 2013 Letter to pilots
  – 2014 Initiatives
    • Drug database
    • Training course
Medical Resources for Pilots

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

• Aircraft Owners and Pilots Association (AOPA)
  – Member resources
Medical Fitness for Duty
Fitness for Duty
2016 MWL – 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**
2016 MWL - Fatigue

• Reduce Fatigue - Related Accidents
  – A factor in all modes
    • 20% involved fatigue
  – Need
    • Research, education, training
    • Technologies
    • Hours of service, on/off duty policies
    • Medical treatment of sleep disorders
BE A36 – 2 fatalities/2 survivors
2016 MWL – Occupant Protection

• **Strengthen Occupant Protection**
  – A factor in all modes
  – Numerous investigations showed potential for reduced injuries & fatalities
  – Need
    • Increased use of existing restraint systems
    • Designs that enhance survival space
    • Enhance ease of evacuation
    • Shoulder harnesses for GA aircraft
Recorders
Recorders

- Expand use of recorders to enhance transportation safety
  - A factor in all modes
  - Critical in accident investigation
  - Install crash resistant image recorders in smaller turbine powered aircraft
  - Install flight recorders in transport category and HEMS aircraft
Loss of Control
Loss of Control
2016 MWL – Loss of Control

• Prevent Loss of Control in Flight in General Aviation
• More than 40% fatal 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

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of Fatal Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of Control In-Flight</td>
<td>69</td>
</tr>
<tr>
<td>Midair</td>
<td>10</td>
</tr>
<tr>
<td>System/Component Failure-Powerplant</td>
<td>8</td>
</tr>
<tr>
<td>Controlled Flight Into Terrain</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
<tr>
<td>Abrupt Maneuver</td>
<td>4</td>
</tr>
<tr>
<td>Low Altitude Operation</td>
<td>4</td>
</tr>
<tr>
<td>Collision on Takeoff or Landing</td>
<td>3</td>
</tr>
<tr>
<td>Unknown</td>
<td>3</td>
</tr>
<tr>
<td>Abnormal Runway Contact</td>
<td>2</td>
</tr>
<tr>
<td>Ground Handling</td>
<td>2</td>
</tr>
<tr>
<td>Loss of control on Ground</td>
<td>2</td>
</tr>
</tbody>
</table>

**Total Number of Fatal Accidents:** 69
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
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.internationalstandards.org/
Primary category of accidents

- Personal flying
- Instructional flying
- Business flying
- Corporate flying
- Airline flying

– LOC
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”
Humans and Hardware: Preventing General Aviation Inflight Loss of Control

- Search “NTSB Loss of Control Forum” and look for Capitol Connection web site.
- Also on YouTube.
- Forum Docket contains 38 documents
“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.”