NTSB Overview & GA Loss-of-Control

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Member, NTSB

World Aviation Training Summit
Orlando, Florida
April 17, 2018
The National Transportation Safety Board (NTSB) is an independent Federal agency created by the U.S. Congress to investigate every civil aviation accident in the United States and significant accidents in the other modes of transportation, namely – marine, highway, railroad and pipeline.
What We Do

• Investigate the accident.
• Determine the probable cause of the accident.
• Propose corrective action to reduce the likelihood of a recurrence of the accident - through formal “recommendations”.

[Images of NTSB investigators examining accident sites]
Investigative Process for Major Investigations

- Decision to launch a “Go-Team”
- IIC and other staff designated
- Arrival On-Scene
- Organizational Meeting
- Briefings and on-scene activities (i.e. fact gathering)
- Post on-scene fact gathering
- Analysis
- Report preparation – findings, PC, recommendation development
- Board Approval
- Advocacy
“Sully” Depiction of NTSB?

• Facts regarding accident accurately portrayed
• Depiction of investigation process not accurate
  • Movie needed a villain – but not the birds
  • NTSB’s objective is to determine cause, not blame
  • Investigations rely heavily upon cooperation by all of the “parties,” hence NTSB is not confrontational
  • Movie’s negative portrayal of investigation process may chill cooperation
NTSB Investigative Hearing

- Three-day public hearing June 9 - 11, 2009
  - Board of Inquiry Chaired by Member Robert Sumwalt
- Investigative Hearing
  - Fact-finding only
  - No conclusions
  - No assignment of fault or blame
  - No enforcement responsibilities
- Video of Hearing available on YouTube
NTSB’s Multi-Modal Mandate

• Maintain congressionally mandated independence
• Conduct objective accident investigations and safety studies
• Perform fair & objective airman/mariner certification appeals
• Advocate safety – NTSB Most Wanted List, recommendations
NTSB 2017/2018 Most Wanted List

- Eliminate Distractions
- End Alcohol and Other Drug Impairment in Transportation
- Ensure the Safe Shipment of Hazardous Materials
- Expand Recorder Use to Enhance Safety
- Improve Rail Transit Safety Oversight
- Increase Implementation of Collision Avoidance Technologies
- Prevent Loss of Control in Flight in General Aviation
- Reduce Fatigue-Related Accidents
- Require Medical Fitness
- Strengthen Occupant Protection

Backed by recommendations!
2017/2018 MWL – Prevent Loss of Control in GA Flight
Loss of Control
On average, more than 40% fatal GA accidents were LOC during 2004 – 2016

Most deadly flight phases
- Approach to landing
- Maneuvering
- Climb
GA Accident Rates

- 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.
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.
Corporate Flying, 2008-2016

Number of Fatal Accidents

- Loss of Control In-Flight: 6
- Controlled Flight Into Terrain: 2
- Other: 1
- Runway Excursion: 1
- Undershoot/Overshoot: 1
- Unintended Flight Into IMC: 1
- Unknown: 1

LOC: 46% of Fatal Accidents
Business Flying, 2008-2016

Number of Fatal Accidents

- Loss of Control In-Flight: 24
- Controlled Flight Into Terrain: 13
- System/Component Failure - Powerplant: 7
- Fuel Related: 5
- System/Component Failure - Non-powerplant: 3
- Unknown: 3
- Other: 2
- Fire - Non-Impact: 1
- Windshear/Thunderstorm: 1
- Low Altitude operation: 1
- Midair: 1
- Turbulence Encounter: 1

LOC: 39% of Fatal Accidents
### Instructional Flying, 2008-2016

#### Number of Fatal Accidents

<table>
<thead>
<tr>
<th>Category</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of Control In-Flight</td>
<td>81</td>
</tr>
<tr>
<td>System/Component Failure-Powerplant</td>
<td>14</td>
</tr>
<tr>
<td>Midair</td>
<td>12</td>
</tr>
<tr>
<td>Controlled Flight Into Terrain</td>
<td>7</td>
</tr>
<tr>
<td>Other</td>
<td>6</td>
</tr>
<tr>
<td>Abrupt Maneuver</td>
<td>6</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>Fuel Related</td>
<td>3</td>
</tr>
<tr>
<td>Ground Handling</td>
<td>3</td>
</tr>
<tr>
<td>System/Component Failure - Non-power</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>Loss of control on Ground</td>
<td>2</td>
</tr>
<tr>
<td>Unintended Flight Into IMC</td>
<td>2</td>
</tr>
<tr>
<td>Security Related</td>
<td>1</td>
</tr>
</tbody>
</table>

**LOC: 53% of Fatal Accidents**
Number of Fatal Accidents

- Loss of Control In-Flight: 736
- System/Component Failure - Powerplant: 184
- Controlled Flight Into Terrain: 141
- Other: 120
- Unintended Flight Into IMC: 80
- System/Component Failure - Non-powerplant: 75
- Unknown: 69
- Fuel Related: 47
- Low Altitude Operation: 41
- Midair: 34
- Collision on Takeoff or Landing: 28
- Abrupt Maneuver: 24
- Abnormal Runway Contact: 17
- Loss of Control on Ground: 13
- Windshear/Thunderstorm: 13

LOC: 45% of Fatal Accidents
Loss of Control In-Flight, 2008-2016

Number of Fatal Accidents

- Personal Flying: 736
- Instructional Flying: 81
- Business Flying: 24
- Corporate Flying: 6

[Graph showing the number of fatal accidents in different types of flying from 2008 to 2016.]
Worldwide Commercial Jets

Fatalities by CICTT Aviation Occurrence Categories

LOC: 23% of Fatal Accidents

Note: Principal categories as assigned by CAST.
For a complete description of CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories, go to www.inflightstandards.org.

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Joint Steering Committee
Co-chairs – Steven Gottlieb (FAA/AVP) Sean Elliott (EAA)

Government – FAA (AFS, AIR, ATO, AAM & ARP)
- NASA (Research),
- NTSB (Observer)

Industry – GAMA, EAA, NBAA, NATA, SAFE, LAMA & Insurance

Safety Analysis Team
Co-chairs: Corey Stephens (FAA) Jens Hennig (GAMA)

Members: FAA, AOPA, EAA, GAMA, UAA, MFGs, FAAST, NAFI, Insurance, Academia, SAFE

Working Groups
(To include SMEs from various general aviation segments, depending on study)
PREVENT LOSS OF CONTROL IN FLIGHT IN GENERAL AVIATION THROUGH TRAINING AND TECHNOLOGY

TUESDAY, APRIL 24, 2018 // 0830–1500 // WASHINGTON, DC // NTSB BOARDROOM & CONFERENCE CENTER
Tuesday, April 24, 2018

0830-0845 .... WELCOME/OPENING • Robert L. Sumwalt, NTSB Chairman

0845-0900 .... INTRODUCTION: Data & Accidents
• John DeLisi, Director, NTSB Office of Aviation Safety

0900-1100 .... TOPIC 1: Pilot Training/Education

1100-1200 .... LUNCH • On your own (Promenade Level)

1200-1215 .... SPECIAL PRESENTATION: Remora Systems,
EAA Founder’s Innovation Prize Winner

1215-1400 .... TOPIC 2: Cockpit Technology

1400-1415 .... BREAK

1415-1450 .... TOPIC 3: Challenges & Next Steps

1450-1500 .... CLOSING • Robert L. Sumwalt, NTSB Chairman
Industry & Government Roundtable Participants

Aircraft Owners & Pilots Association | Justin Barkowski, Director of Gov’t/Regulatory Affairs
AOPA Air Safety Institute | Paul Deres, Director of Education
Experimental Aircraft Association | Sean Elliott, Vice President of Advocacy & Safety
Embry-Riddle Aeronautical University | Carolina Anderson, Associate Professor of Aeronautics
Federal Aviation Administration | Mel Johnson, Policy & Innovation Division; Brad Palmer, General Aviation & Commercial Division; Dave Sizoo, Small Airplane Standards Staff; Corey Stephens, Accident Investigation & Prevention
ForeFlight | Tyson Weihs, Co-Founder and CEO
General Aviation Manufacturers Association | Jens Hennig, VP of Operations
Liberty University School of Aeronautics | Andrew Walton, Director of Safety
Mindstar Aviation | Stasi Poulos, President and CEO
NTSB | The Honorable Earl Weener, Board Member; Timothy LeBaron, Deputy Director for Regional Operations; Mike Folkerts, Air Safety Investigator
Orbital ATK Flight Systems | Charlie Precourt, VP & General Manager
Patty Wagstaff Aviation Safety | Patty Wagstaff, General Manager
Society of Aviation & Flight Educators | Doug Stewart, Founding & Charter Member
“Human beings, who are almost unique in having the ability to learn from the experience of others, are also remarkable for their apparent disinclination to do so.”
GA LOC Accidents

Fatal Accidents: 42%

* 2016 Preliminary numbers
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 plus
8 more with second study
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 standards and installed as a minor mod

FAA policy changed on Non-Required Safety Equipment
N6529R - B36TC Bonanza