



# National Transportation Safety Board

## NTSB Most Wanted List



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EAA AirVenture,  
July 26, 2017  
KOSH

# N6529R - B36TC Bonanza



# NTSB Mission



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”.

# Question:

Do the Board and staff really operate as depicted in the movie “Miracle on the Hudson?”

# NTSB Held 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

## Question:

Can you provide a general overview of how the NTSB works and how the Board interacts with the staff on a daily basis?

# ROLES & RESPONSIBILITIES

## MODAL STAFF

- Investigate accidents and produce reports that indicate probable cause and suggest safety recommendations
- When needed, conduct investigative hearing
- Conduct safety studies, produce reports with safety recommendations

## BOARD

- Review drafts of major accident reports, suggest changes, vote on content, probable cause, recommendations
- Serve as Hearing Chairman
- Vote on potential study topics, meet with staff on findings in report, vote on reports

# ROLES & RESPONSIBILITIES

## Administrative Law Judges

- Appeals from Orders affecting certificates (based on violations of FARs/ lack of qualification)
- Petitions for review of FAA denial of certificates
- Appeals from FAA Penalties (less than \$50,000)

## GENERAL COUNSEL

- Review proceedings from FAA and NTSB in response to petitions and appeals
- Produces orders in accordance with existing law
- Advise Board

## BOARD

- Review recommended actions from General Counsel and related record
- Vote Board decisions relating to pending matters

# ROLES & RESPONSIBILITIES

## COMMUNICATIONS STAFF

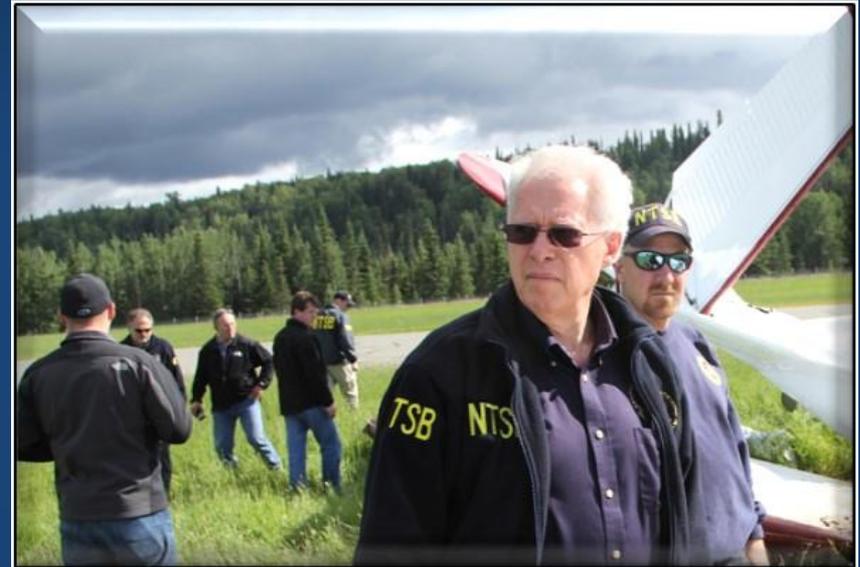
- Address media inquiries and issue press releases
- Coordinate with government contacts
- Initiate and support outreach in support of MWL issue areas

## BOARD

- Provide interviews
- Write blogs and articles
- Meet with stakeholders
- Give presentations and remarks in support of MWL issue areas

# 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



## Question:

Can you provide an inside view of an NTSB activation for an accident and how the NTSB runs an investigation from the time it arrives on scene?

# 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

# Question:

Can you describe the “Party Process” and Party Submissions?



# Party Submissions

- Can be helpful when they are fact focused and responsive
- Less helpful when they seem intent on defense rather than corrective action
- Facts are useful, arguments less so

# Question:

Would you describe your involvement in accident investigations outside the United States?

# NTSB & ICAO ANNEX 13

- NTSB is lead agency charged w/ fulfilling US obligations under Convention on International Civil Aviation and Annex 13
- NTSB attempts to comply w/ Standards and Recommended Practices (SARPs) for international aircraft accident investigation in Annex 13
- US has filed “differences” with ICAO specifying limited number of Annex 13 SARPs to which cannot adhere

# RECENT ANNEX 13 INVESTIGATIONS

Date	Location	Aircraft	Severity
3/14/2017	Backsod Bay, Ireland	SIKORSKY S92	Fatal (4)
2/20/2017	Melbourne, Australia	BEECH B200	Fatal (5)
1/16/2017	Bishkek, Kyrgyzstan	BOEING 747	Fatal (39)
11/28/2016	Medellin, Colombia	BAE AVRO146J	Fatal (71)
8/3/2016	Dubai, United Arab Emirates	BOEING 777	Fatal (1)
7/20/2016	Shanghai, China	CESSNA 208	Fatal (5)
6/26/2016	Singapore, Singapore	BOEING 777	Nonfatal
6/6/2016	Incheon, Korea	MD11	Nonfatal
5/27/2016	Tokyo, Japan	BOEING 777	Incident
5/19/2016	Cairo, Egypt	AIRBUS A320	Fatal (66)
3/29/2016	Illes-de-la-Madeleine, Canada	MITSUBISHI MU 2B	Fatal (7)
3/19/2016	Rostov-on-Don, Russia	BOEING 737	Fatal (62)
10/30/2015	Tronzano Vercellese, Italy	BELL 609	Fatal (2)
10/18/2015	Bogota, Columbia	BEECH 60	Fatal (10)
8/12/2015	Lagos, Nigeria	SIKORSKY S76-C	Fatal (6)

**EXEMPLAR ACCIDENT:  
ACT Airlines Boeing 747-400F  
Bishkek, Kyrgyzstan  
January 16, 2017**



## Initial Information

- Boeing 747-400 F cargo airplane
- Crashed off departure end of Runway 26
- Scheduled cargo flight from Hong Kong to Istanbul
- Stopping in Bishkek for crew change
- Airplane destroyed
- 4 flightcrew and 35 ground fatalities

# Investigation

- Investigation being performed by Russia Interstate Aviation Committee (MAK) with assistance from Kyrgyz Republic MOT
- Accredited Representatives from US, Turkey
- US Technical Advisors
  - FAA
  - Boeing
  - Honeywell
  - Rockwell Collins

# Question:

This year is the NTSB's 50th Anniversary. What changes do you see in the next 5 years?

# The Next 5 Years

- No major reorganization or change in SOP
- MWL will be 2 years (new in 2019)
- Anticipate new technological trends: UAS, autonomous vehicles, commercial space transportation, hyper-speed rail, solar-powered planes, and new recording technologies

# NTSB 2017 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

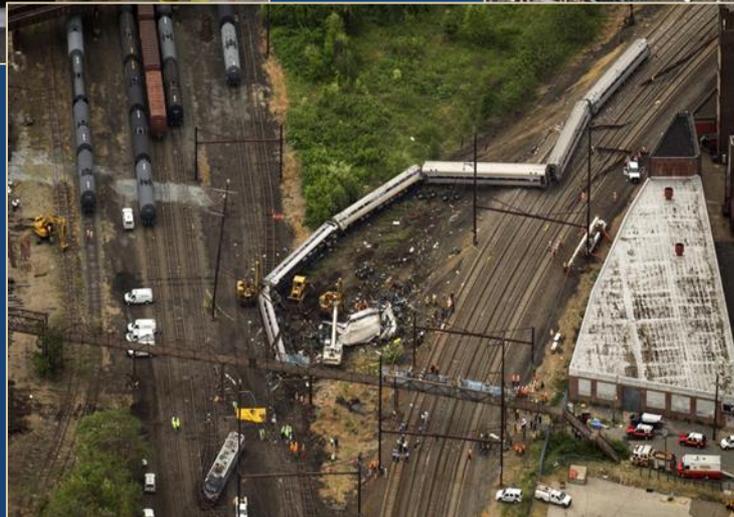
# 2017 MWL – Eliminate Distractions



Gray Summit, MO - August 2010



Chatsworth, CA Sep. 12, 2008



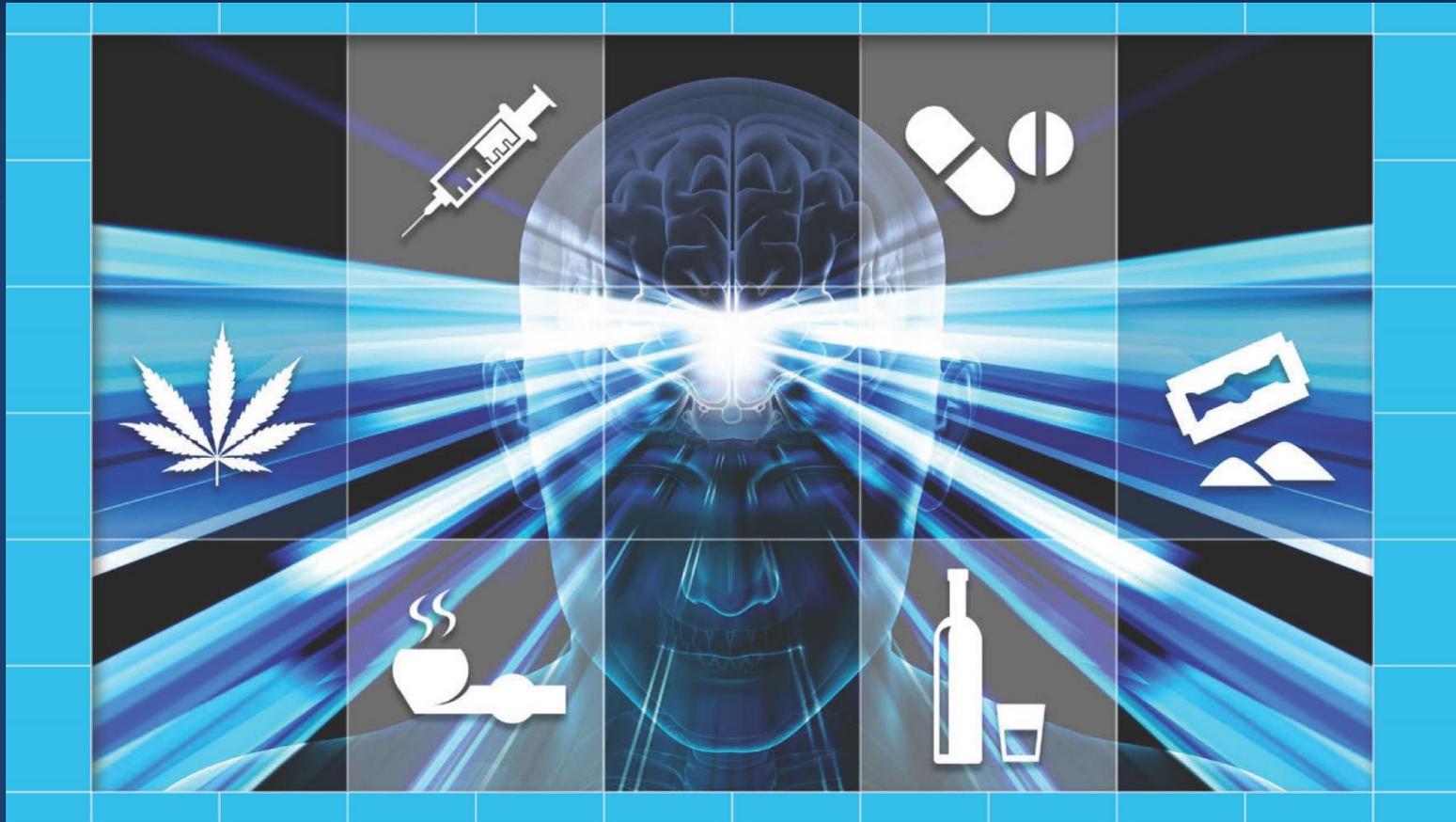
Amtrak 188, May 12, 2015 Philadelphia, PA

# 2017 MWL – Eliminate Distractions

A factor in all modes of transportation:

- Motor vehicle emphasis
  - Electronic devices within the vehicle
- Aviation emphasis
  - Sterile Cockpit
  - Appropriate use of PEDs
  - Manage distractions

# 2017 MWL – End Alcohol and Other Drug Impairment

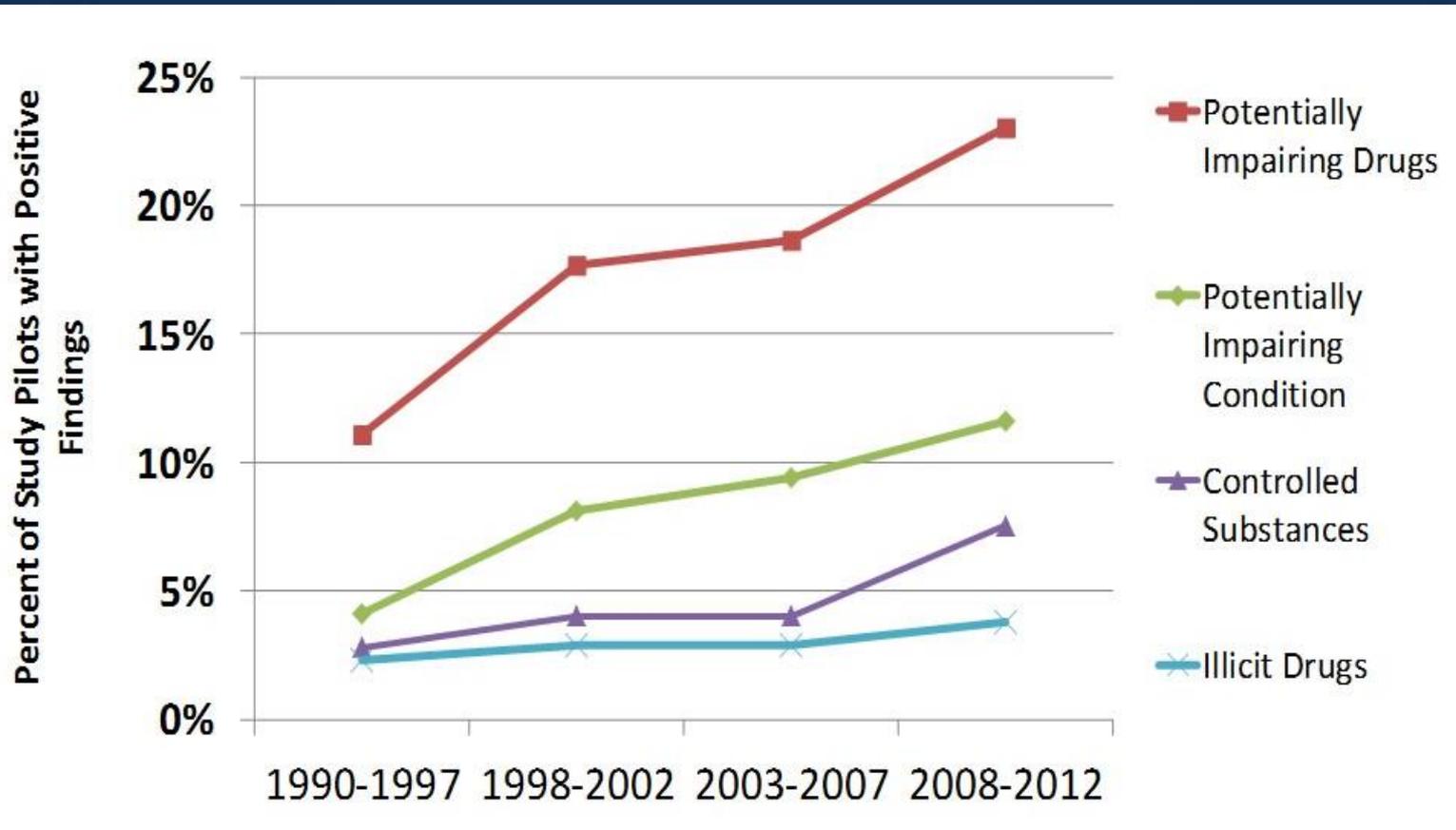


# 2017 MWL – End Alcohol and Other Drug Impairment

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





St. Lucie, FL

32

Diphenhydramine  
+  
Doxylamine

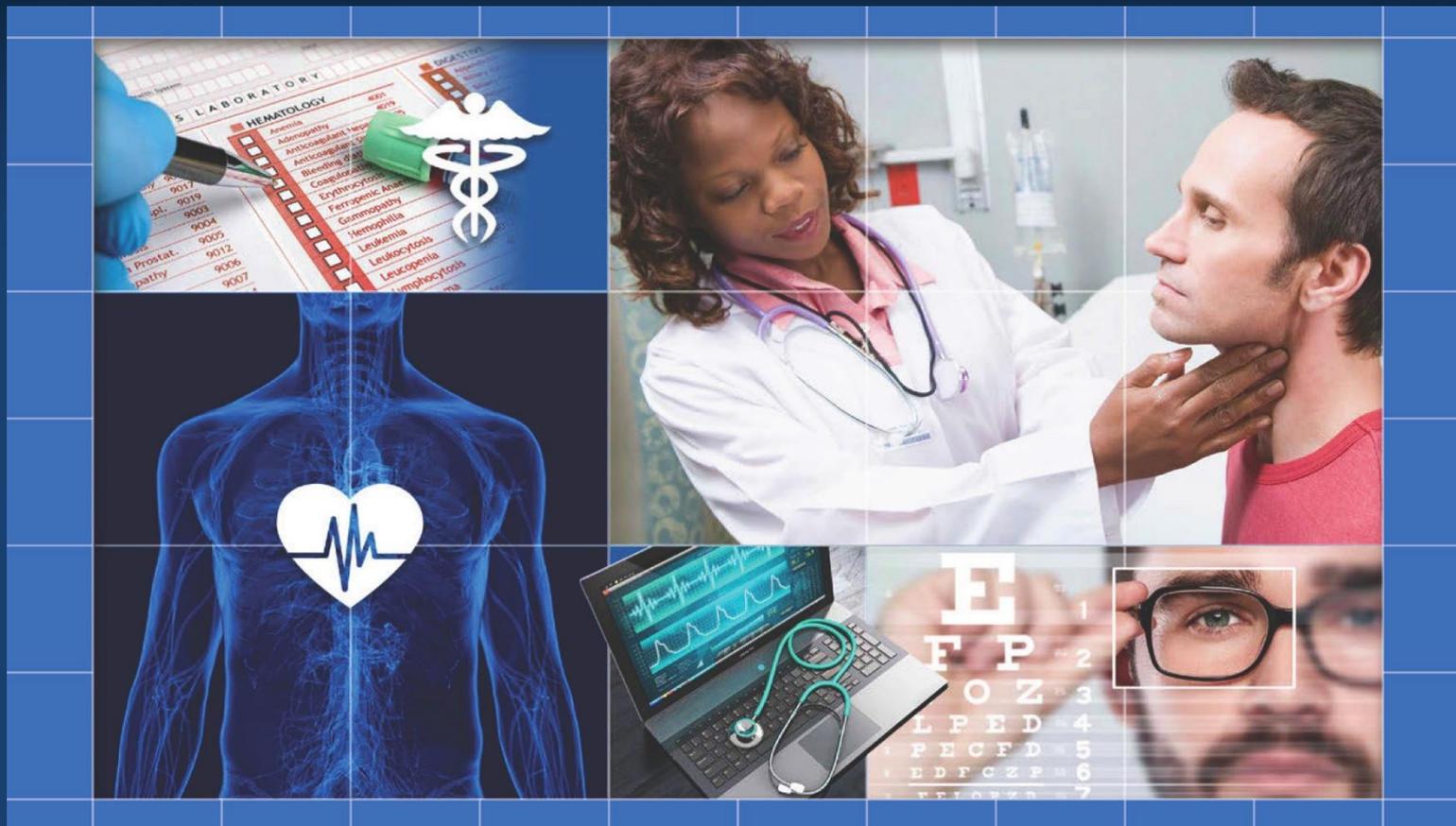
April 14, 2013

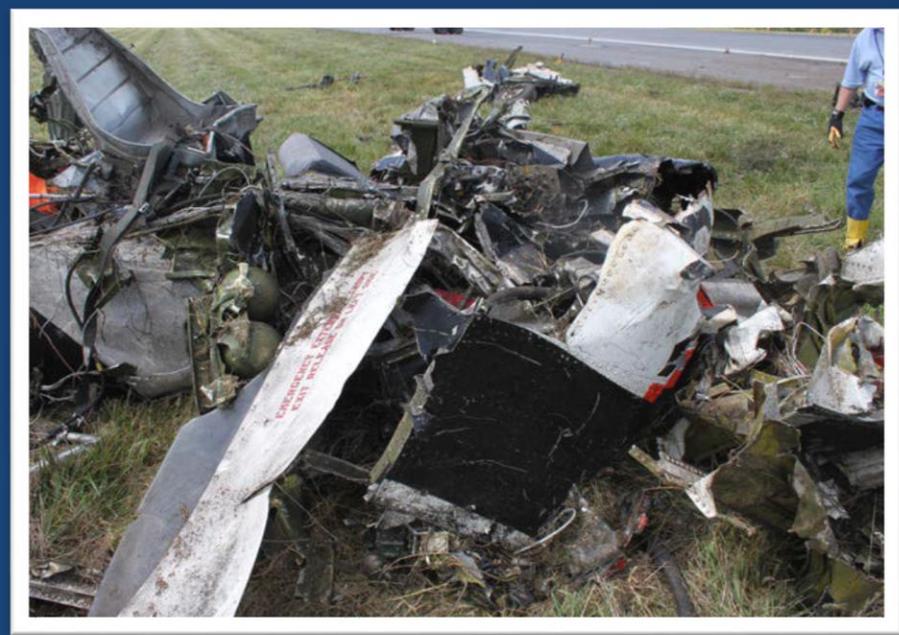
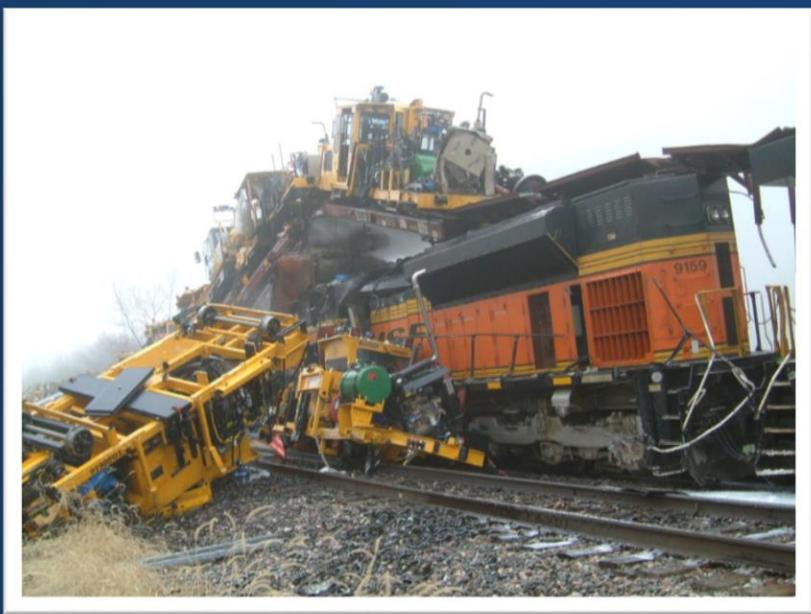
# Most Common Drugs

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



# 2017 MWL – Require Medical Fitness





Red Oak, IA/April 17, 2011



Chesterfield, NJ/ February 16, 2012

# 2017 MWL – Require Medical Fitness

A factor in all modes:

- Airman Medical – fitness at exam point
  - Pilots must self-assess fitness
- Undiagnosed or unreported medical conditions pose threats
  - Obstructive Sleep Apnea
  - Diabetes
  - High Blood Pressure

# 2017 MWL – Reduce Fatigue-Related Accidents





Birmingham, AL/ August 14, 2013



Cranbury, NJ/ June 7, 2014



Doswell, VA/ May 31, 2011

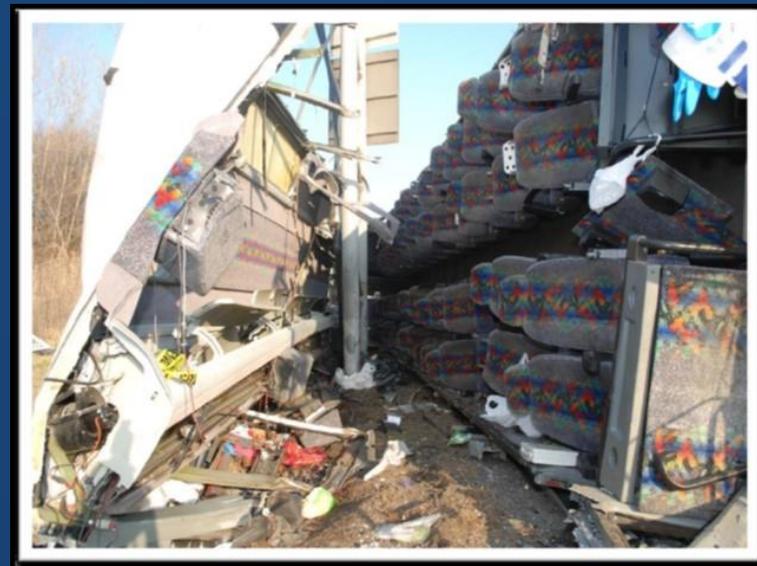
Port Arthur, TX/ January 23, 2010



# Bronx Bus Crash, March 12, 2011

15 KILLED

17 INJURED



# 2017 MWL – Reduce Fatigue-Related Accidents

**A factor in all modes:**

- **182 Major investigations (2001 – 2012)**
  - **20% involved fatigue**
- **Need**
  - **Research, education, training**
  - **Technology development**
  - **Hours of service, on/off duty policies**
  - **Fatigue risk management systems**
  - **Medical treatment of sleep disorders**

# 2017 MWL – Strengthen Occupant Protection





San Francisco, CA / July 6, 2013



42

Anaheim, CA / April 24, 2014



Philadelphia, PA / May 12, 2015

# 2017 MWL – Strengthen Occupant Protection

A factor in all modes:

- Numerous investigations showed potential for reduced injuries & fatalities
- Need
  - Enhance survival space & ease of evacuation
  - Increased use of existing restraint systems
  - Shoulder harnesses for GA aircraft

# 2017 MWL – Expand Use of Recorders





SpaceShipTwo  
Oct. 31, 2014



Embraer EMB-500, N100EQ  
Gaithersburg, Maryland /  
Dec. 8, 2014



FedEx Freight truck-  
tractor double  
trailers and  
Silverado  
motorcoach /  
Orland, CA / Apr. 10,  
2014



Commercial  
Vehicle  
Onboard  
Video  
Systems -  
2015

# 2017 MWL – Expand Use of Recorders

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
  - Install inward & outward video cameras in trucks, busses, & trains
  - Use PED memory when available

# 2017 MWL – Prevent Loss of Control in GA Flight



# Loss of Control



# Loss of Control



Execuflight Flight 1526  
British Aerospace HS /  
Akron, Ohio / Nov. 10, 2015



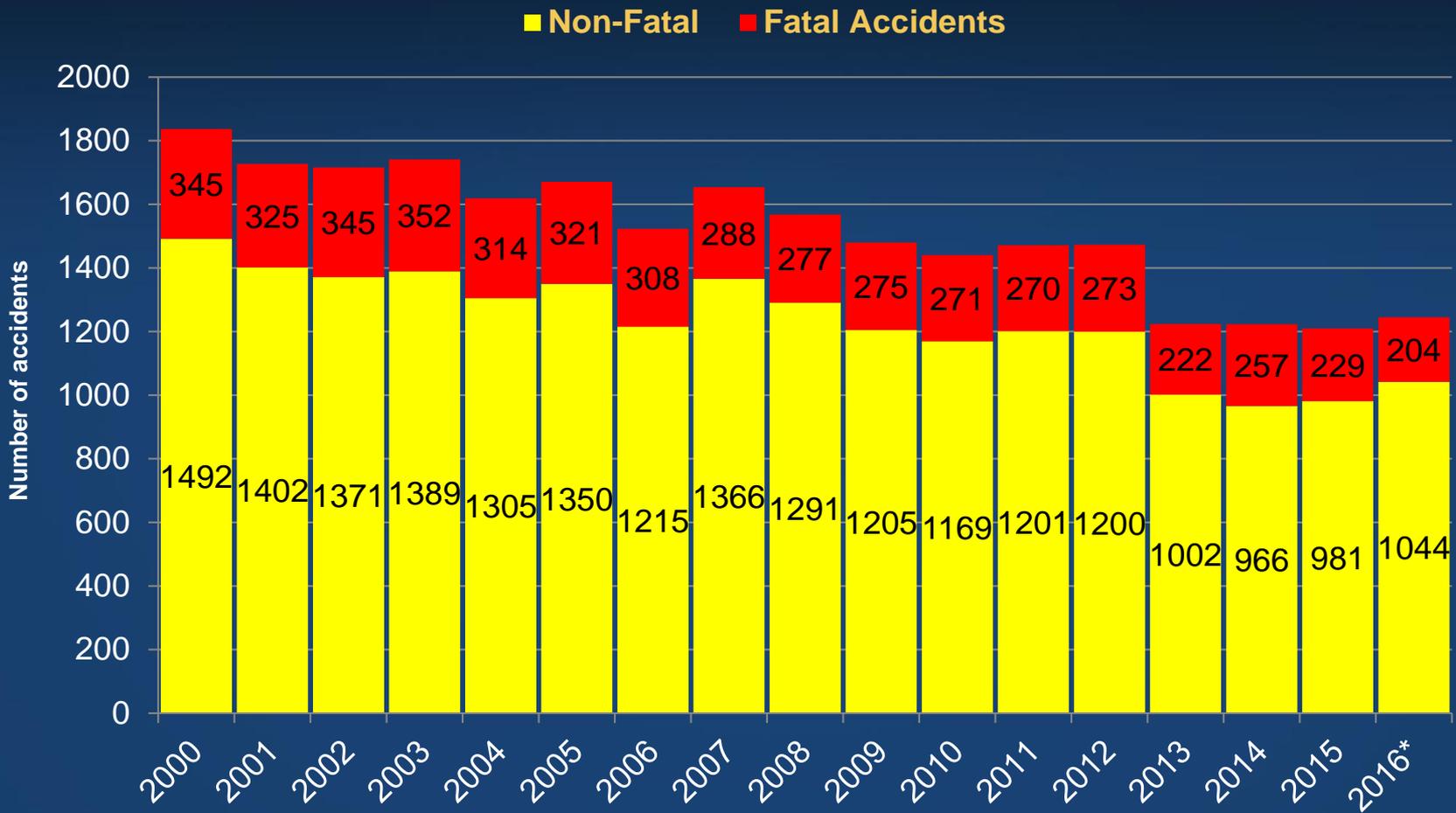
Beech A36 / Huggins, MO  
/ June 12, 2015



# 2017 MWL – Prevent Loss of Control in GA Flight

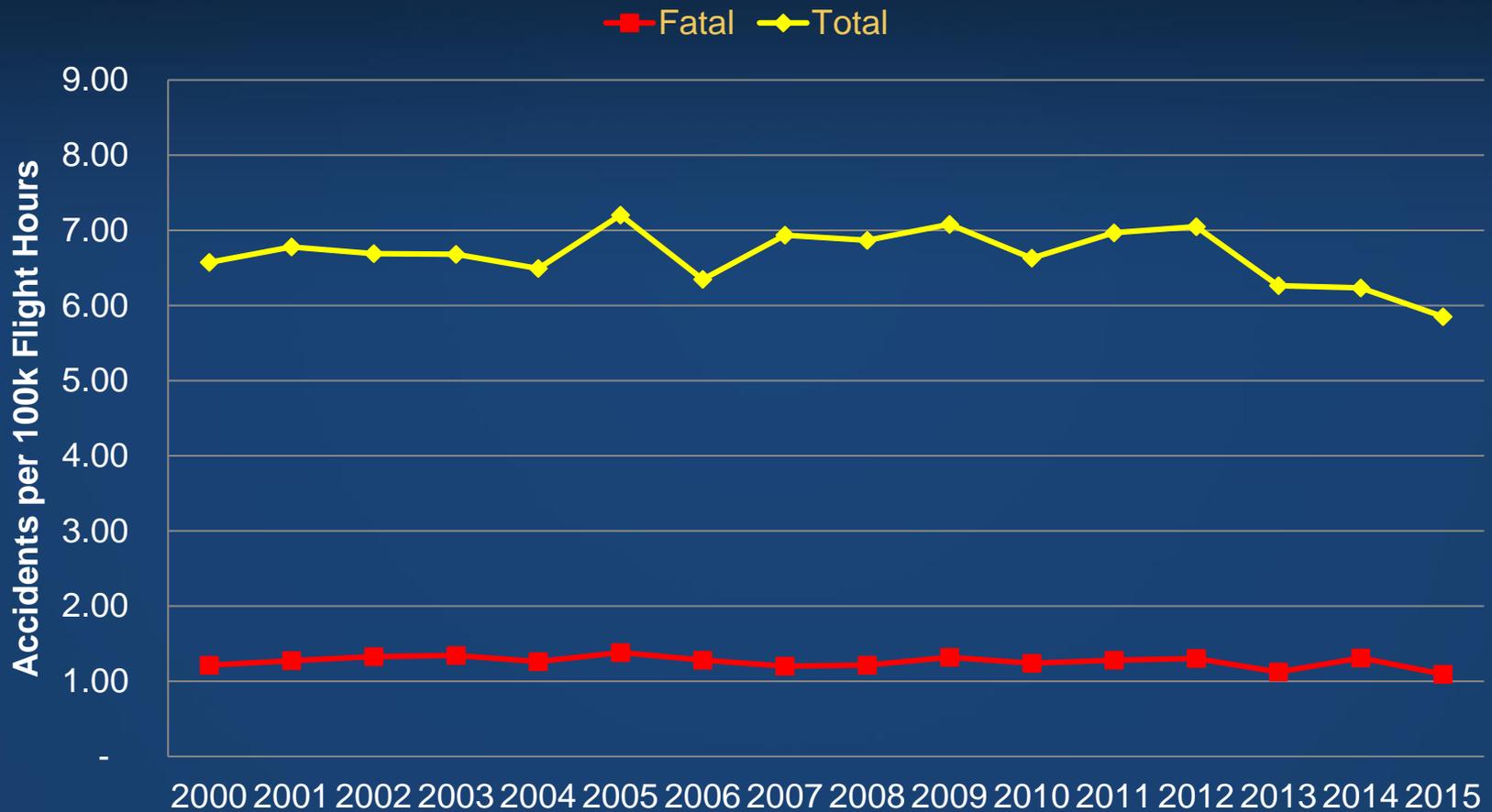
- On average, more than 40% fatal GA accidents were LOC during 2004 – 2016
- Most deadly flight phases
  - Approach to landing
  - Maneuvering
  - Climb

# All GA Accidents



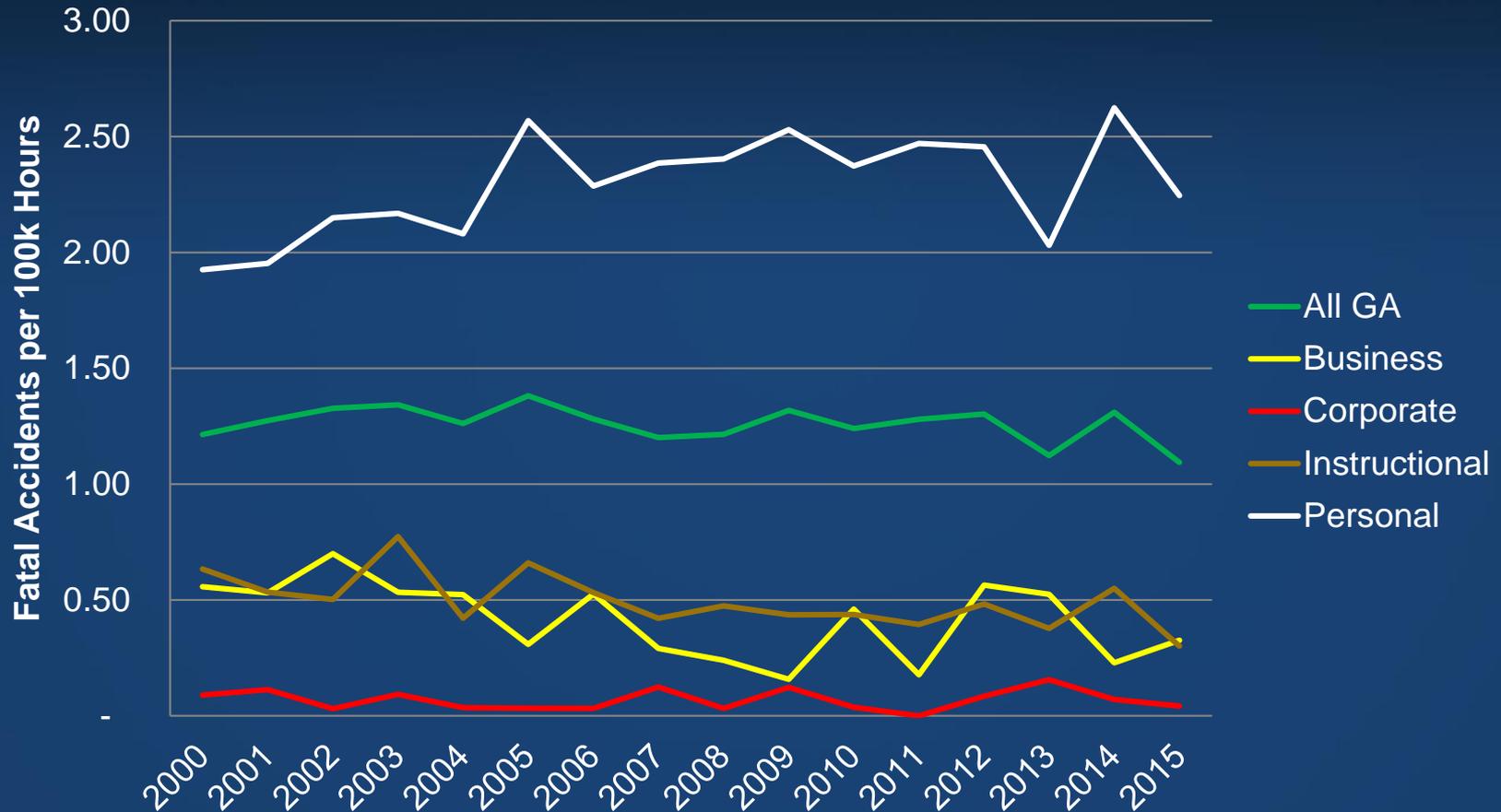
\* 2016 Preliminary numbers

# 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.

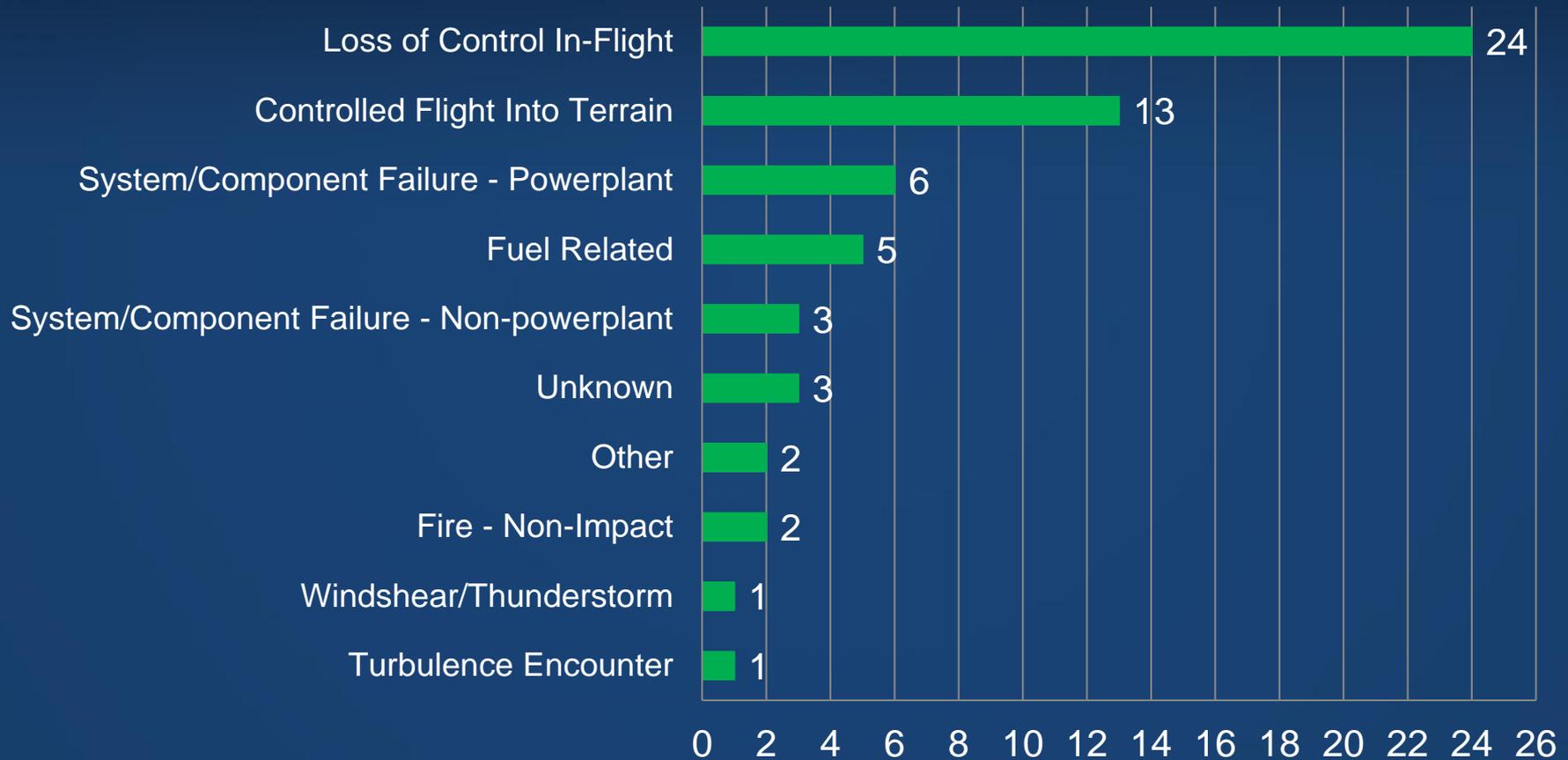
# Fatal Accident Rates per 100k Flight Hours



\*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.

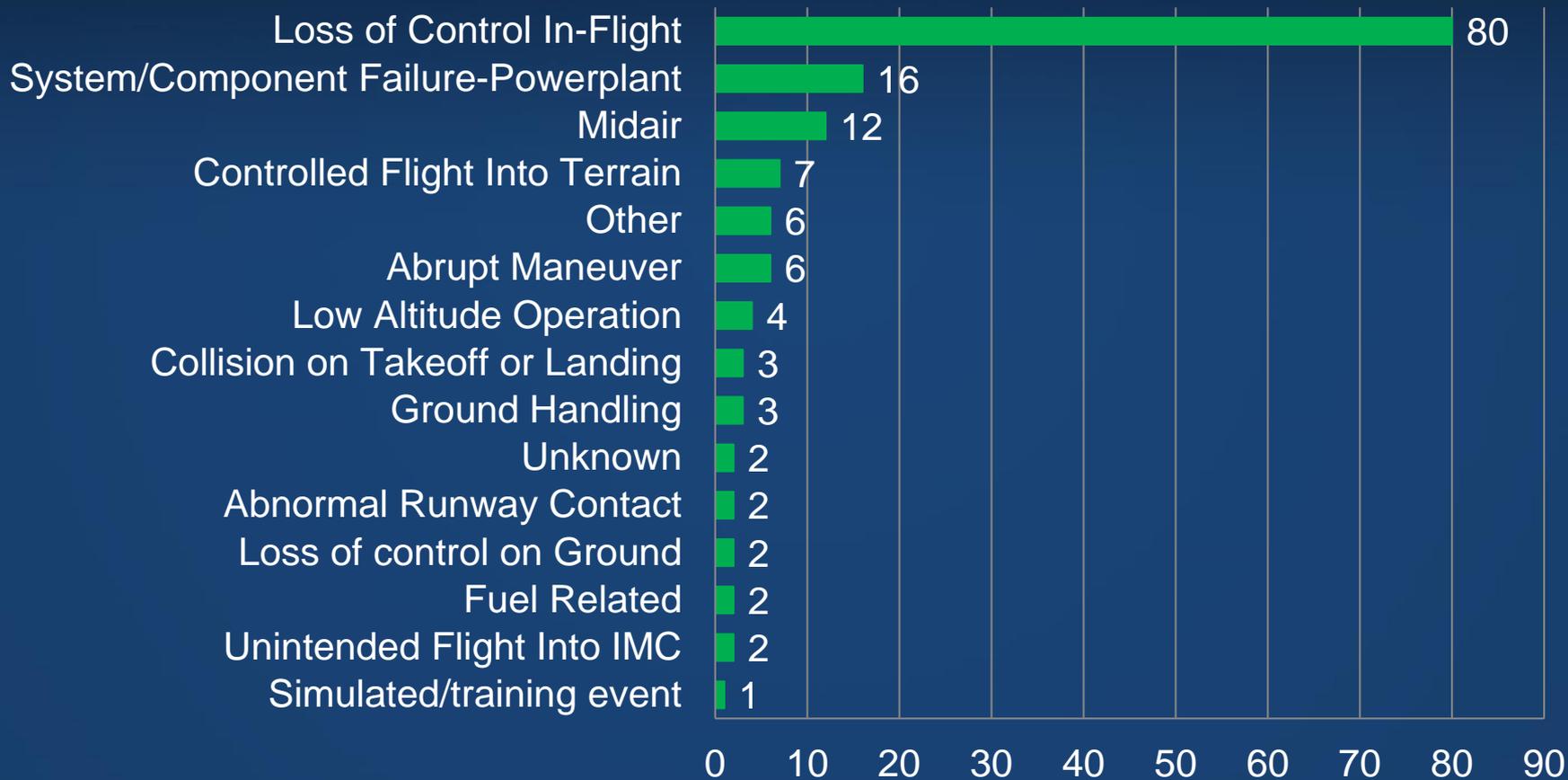
# Business Flying, 2008-2016

## Number of Fatal Accidents



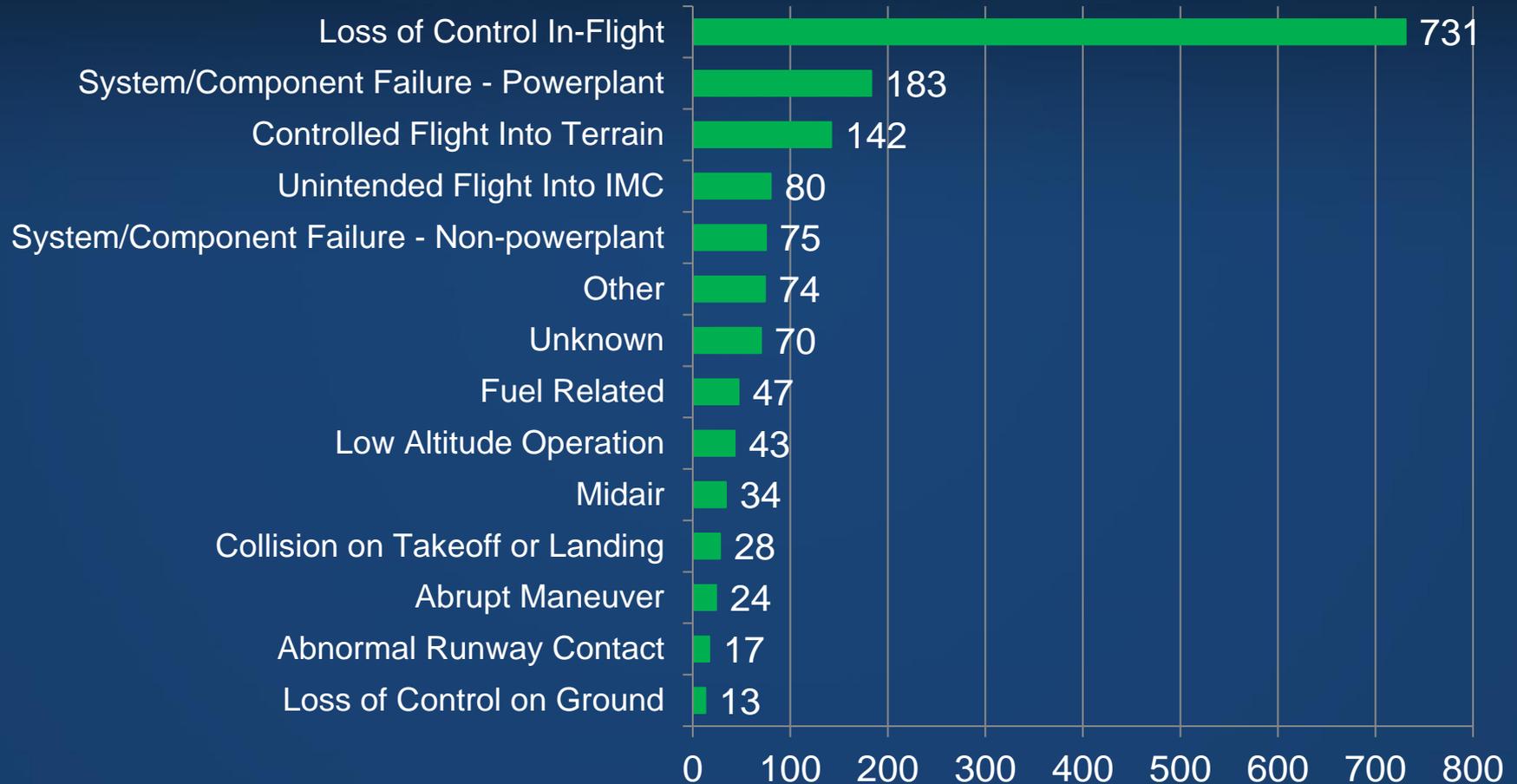
# Instructional Flying, 2008-2016

## Number of Fatal Accidents



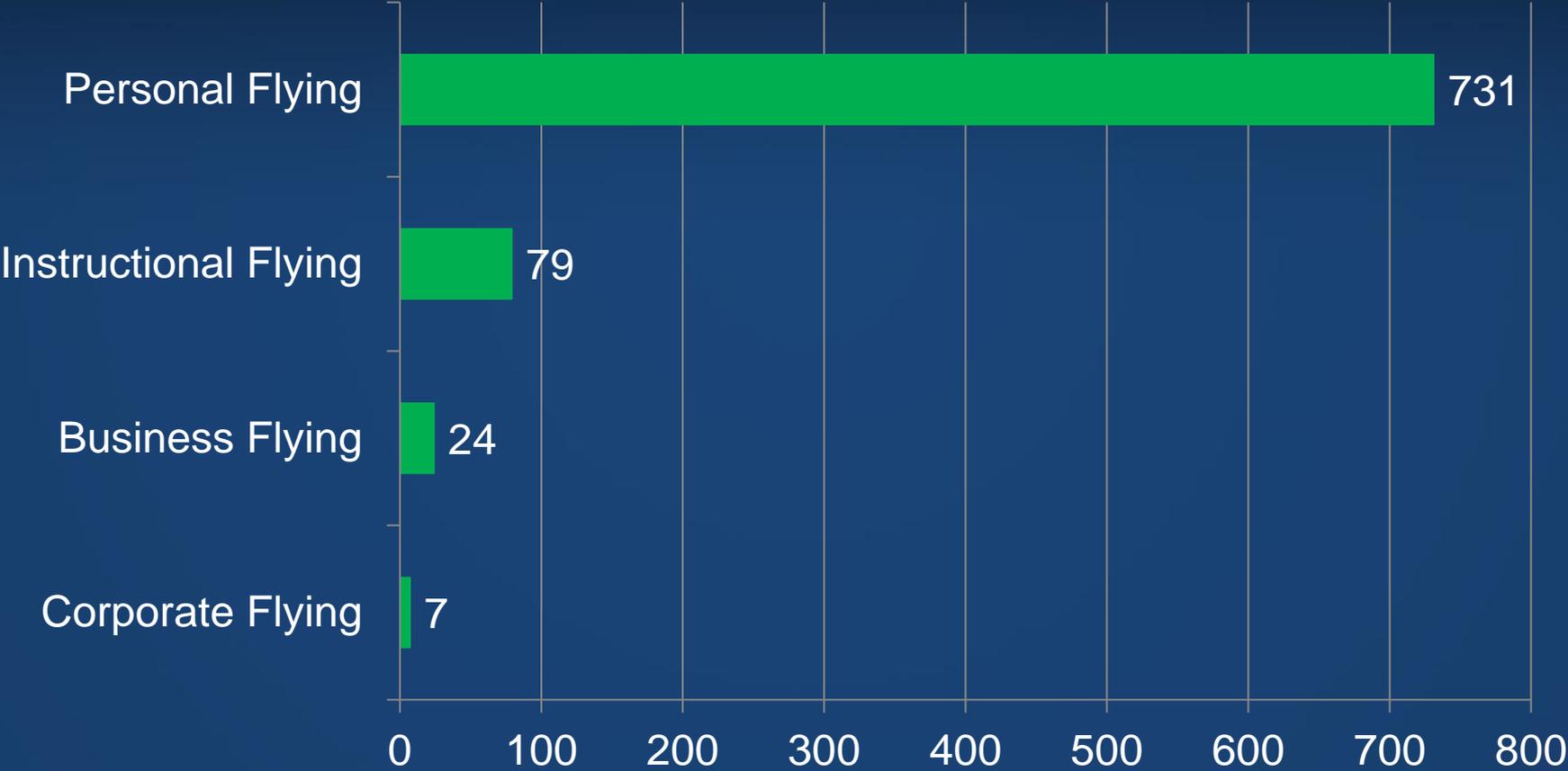
# Personal Flying, 2008-2016

## Number of Fatal Accidents



# Loss of Control In-Flight, 2008-2016

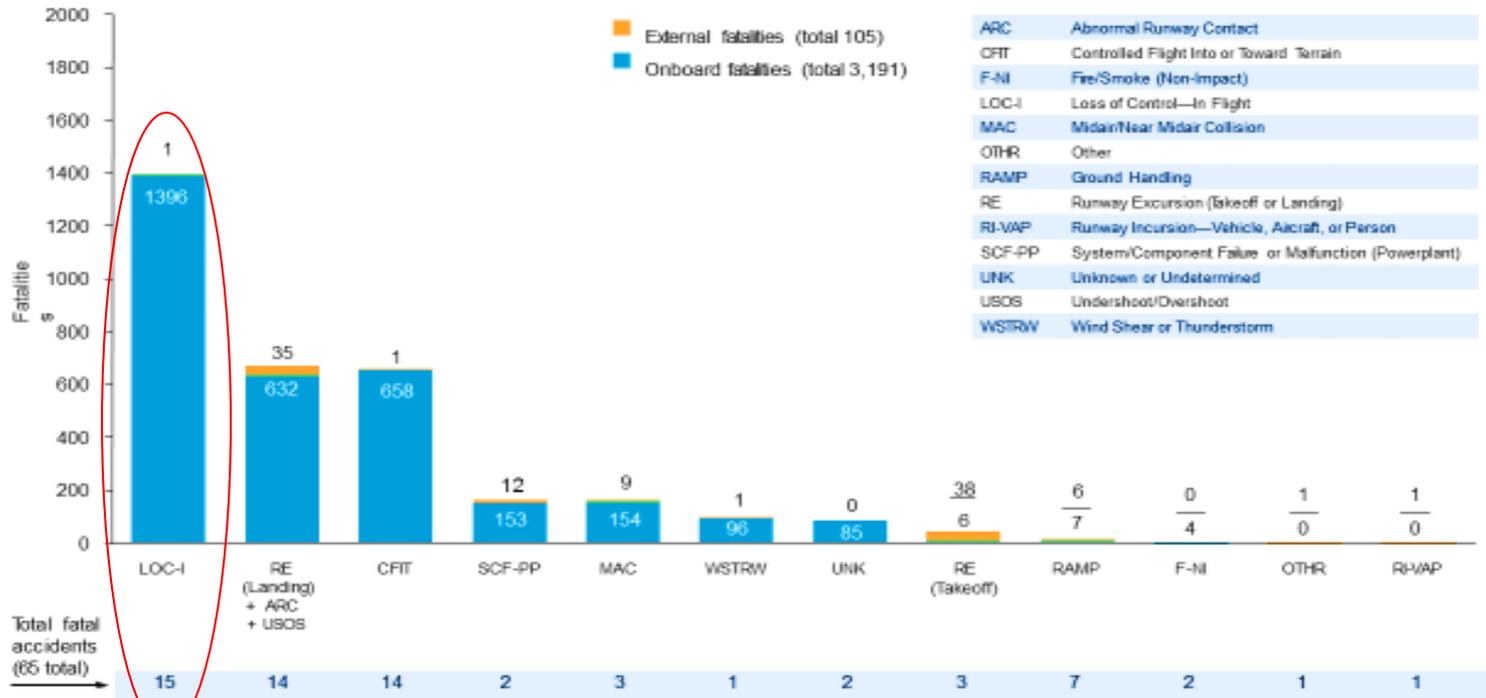
## Number of Fatal Accidents



# Boeing Annual Statistical Summary

## Fatalities by CICTT Aviation Occurrence Categories

Fatal Accidents | Worldwide Commercial Jet Fleet | 2006 through 2015



Note: Principal categories as assigned by CAST.

For a complete description of CAST/ICAO Common Taxonomy Team (CICTT) Aviation Occurrence Categories, go to [www.infliviationstandards.org](http://www.infliviationstandards.org).

## Steering Committee

Co-chairs – Mike O'Donnell (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)

## GAJSC

### Who We Are...

- Strategic guidance
- Management/Approval of Safety Plan
- Provide direction
- Membership Outreach
- Provides linkage to ASIAS

- Identify future areas of study/risk
- Charter safety studies
- Provide guidance and direction
- Draw data from various areas
- Develop a prioritized Safety Plan
- Develop metrics to measure effectiveness of safety solutions

- Data analyses
- Safety enhancement
- Mitigation development

# Changes to Safety Culture

## Reactive & Forensic

- Whack-a-mole management 
- Crisis safety management 
- Silos of knowledge 
- Data is collected 

## Risk-based & Predictive

- Risk management
- Change management
- Data analysis and information sharing
- Data answers questions

# Changes to Safety Culture

## Reactive & Forensic

- “Off with their heads”
- Safety organization responsible for safety
- Regulator is dictatorial and despised
- Safety expected by regulations



## Risk-based & Predictive

- Just culture
- Everyone responsible for safety
- Regulator is collaborative and respected
- Safety enhanced via voluntary initiatives

# Douglas Adams

## Author

“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.”



# Sequence of Events

- About 0717 AM local time
- Heavy fog in area
- CAT II Instrument Landing System approach to Runway 26 (99 foot minimums)
- Several aircraft landed prior to accident  
TC-MCL in same conditions

# Sequence of Events

- Flight path high during entire approach
- Did not intercept 3 degree glide slope
- Airplane overflew the runway
- Impact began 900 meters off departure end
- Numerous houses and buildings destroyed

# AA Question:

When an air carrier experiences an accident involving a full NTSB investigation, what are your thoughts and expectations for the carrier's internal investigation and internal communication process regarding the accident?

# Concurrent Internal Investigation

- Don't compromise or obstruct NTSB's investigation
- Work with cooperation and transparency
- Use relative ability to move quickly, to swiftly assess issues and take corrective action
- Work within all Party guidelines

# Safety Management System

- Safety Policy
- Safety Risk Management
- Safety Assurance
- Safety Promotion