

Reduce Dangers to Aircraft Flying in Icing Conditions



Safety Improvements Wanted

- Research into effects of in-flight icing, including freezing rain and critical ice shapes **A-98-92**
- Upgrade aircraft certification standards and operational procedures **A-96-54, A-96-56, A-07-16 (supercedes A-98-100)**



Recent Recommendations

- 18 recommendations and one safety alert related to icing in past two years
- Approach is a case-by-case basis



NTSB **MOST WANTED**

Transportation Safety Improvements

Cessna 560 **Pueblo, CO – February 16, 2005**



Main Wreckage

Right Wing



Accident Sequence

- Airplane slowed below $V_{approach}$
- Aircraft encountered two icing layers, the second during the final approach
- Presence of estimated 1/6 inch or less of ice accreted in SLD conditions caused airplane to stall prior to stick shaker
- Airplane entered a rapid left roll prior to stall warning
- Airplane did not recover in the 1,500 feet agl available



Cessna 560

- Resulted in 4 icing recommendations
- Superseded 2 previous icing recommendations
- Reiterated 2 icing recommendations currently on Most Wanted List



NTSB MOST WANTED

Transportation Safety Improvements

Saab 340B

American Eagle flight 3008 – January 2, 2006



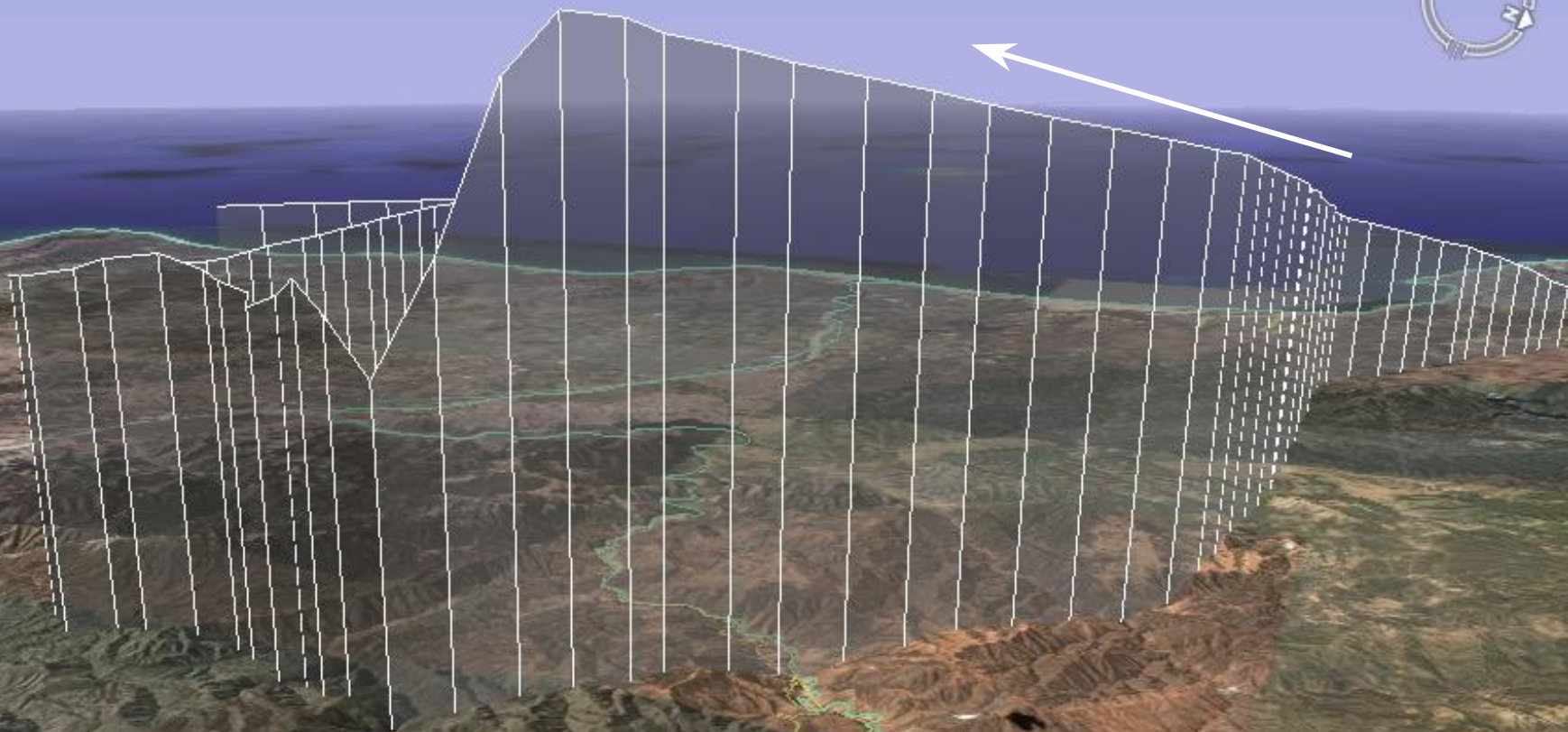
- Loss of Control Incident
 - Departed controlled flight in icing conditions
 - Lost 5000 feet altitude
 - Nearly inverted



AE3008 Overview

- Autopilot engaged during climb
- Aircraft continuously lost speed during last 2.5 minutes before entering stall (>55 kts in 2.5 minutes)
- Aircraft departed controlled flight at an indicated air speed of approximately 126 kts, concurrent with stick shaker
- Aircraft dropped from 11,700 ft-msl to 6500 ft-msl





166

2.76 mi

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Pointer 35°02'30.24" N 120°11'33.94" W elev 1295 ft

Streaming ||||| 100%

Eye alt 38649 ft

AE3008 - Saab 340B

- Resulted in 4 recommendations
 - Specific to this model airplane
- FAA working with Saab and EASA to determine response



Recent Recommendations

- In the past 4 years:
 - 18 recommendations
 - 1 alert related to icing
- Problem: recent recommendations address aircraft on case-by-case basis
- Most Wanted recommendations address all airplanes



FAA - Recent Actions

Airplane Performance and Handling Characteristics in Icing Conditions

- FAA issued NPRM - November 2005
- FAA issued final rule - August 2007
- Results of research sponsored by FAA and NASA (as requested in 98-92) are currently included in Appendix R of AC 20-73A



FAA - Recent Actions

Activation of Ice Protection

- Require means to ensure timely activation or airframe ice protection*
- FAA issued NPRM – April 2007
- Safety Board provided comments to FAA



FAA - Recent Actions and Limitations

- Actions satisfy the intent of several recommendations, including portions of A 98-92
- Need to ensure full range of icing conditions, including large droplets, are used in certification testing (A-96-54)
- Will only apply to newly certificated airplanes



Reduce Dangers to Aircraft Flying in Icing Conditions

Proposed Safety Board Action

- Keep issue area on Most Wanted List
- Retain red designation: Unacceptable response

Timeliness Classification

RED

