



NTSB National Transportation Safety Board

Office of Aviation Safety

Colgan Air Flight 3407 Clarence Center, New York

Investigator-in-Charge
presentation

History of Flight

- February 12, 2009
- 2217 eastern standard time
- Colgan Air, Inc.
- Bombardier DHC-8-400
- Continental Connection flight 3407
- Buffalo, New York
- 2 pilots, 2 flight attendants,
45 passengers, and 1 resident killed



History of Flight

- Snow and light-to-moderate icing expected en route
- Captain set reference speeds switch to increase (icing conditions)
 - Lowered angle-of-attack reference for stick shaker activation
 - Raised low-speed cue on airspeed displays by 15 knots
 - Improved performance margins

History of Flight

- First officer obtained landing speeds for non-icing conditions
 - Mismatch with position of ref speeds switch resulted in landing speed that was 13 knots lower than stick shaker activation speed

History of Flight

- Stick shaker activated; autopilot disengaged
- Airplane had minimum ice accretion
- Captain pulled back on control column and added power short of rating detent
 - Increased angle-of-attack, pitch, and load factor
 - Airplane entered accelerated stall

History of Flight

- Stick pusher activated three times
- After each activation, captain continued to pull back on control column
 - Exacerbated airplane's stalled condition
 - Prevented potential recovery

HOT-2: gear's down.

HOT-1: flaps fifteen before landing checklist.

HOT-2: uhhh.



National Transportation Safety Board Board Meeting

22:16:27

130

knots

2280

Shaker ON

Pusher OFF

Power

Condition

Flap

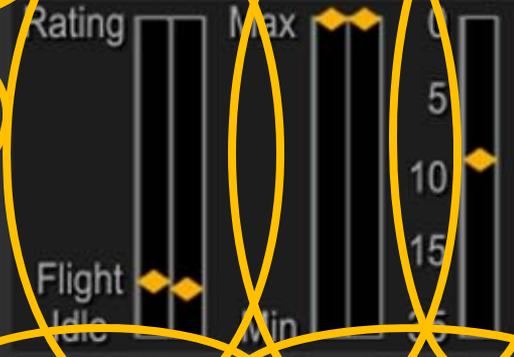


Heading

247°



Pedal



Flight Idle



Min



Max



Auto Pilot OFF

Gear DOWN

Investigation

- On scene for 8 days
- 3-day public hearing covered
 - Effect of icing on airplane performance
 - Cold weather operations
 - Sterile cockpit rules
 - Flight crew experience
 - Fatigue management
 - Stall recovery training

Investigation

- Flight crew and airplane properly certificated
- No evidence of any preimpact structural, engine, or systems failures
- ATC not factor in accident
- Accident not survivable

Investigation

- Weather was typical for time of year
- Ice accretion did not affect crew's ability to fly and control airplane
- Need to provide complete and accurate weather documents
- Change in icing definitions needed

Safety Issues

- Crew response and monitoring failures
- Airspeed selection procedures
- Stall training
- Pilot training records and remedial training programs

Safety Issues

- Pilot professionalism
 - Sterile cockpit
 - Leadership training
 - Use of personal portable electronic devices
- Fatigue and commuting
- FOQA programs, FAA oversight, and SAFO process

Parties to the Investigation

- Federal Aviation Administration
- Colgan Air, Inc.
- Air Line Pilots Association
- National Air Traffic Controllers Association
- United Steelworkers Union
(Flight Attendants)

Accredited Representatives

- Transportation Safety Board –
Canada
 - Transport Canada
 - Bombardier
 - Pratt & Whitney Canada
- Air Accidents Investigation Branch –
United Kingdom
 - Dowty Propellers





NTSB