NTSB National Transportation Safety Board

Office of Aviation Safety

Colgan Air Flight 3407 Buffalo, New York

Case Study

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History of Flight

- February 12, 2009
- Colgan Air, Bombardier DHC-8-400
- Continental Connection flight 3407
  - Newark to Buffalo
- All 49 people on-board, 1 resident were killed

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Accident Overview

- Inadvertent Low Speed Warning

- **Incorrect response from Captain**
  - Pulled back on Control Column (instead of pushing forward)
  - Airplane pitched up and lost control

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Accident Animation

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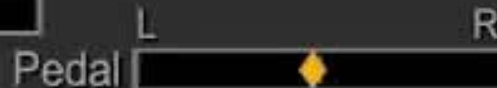
22:16:16

157 knots **2260** feet Shaker **OFF** Pusher **OFF**

Power Condition Flap

L R



Heading **253**°

Pedal

Auto Pilot **ON**

Gear **DOWN**

Investigation Protocol

- NTSB Notified of Accident
- Go-team Assembled
  - Launched from DC at 6am
  - Two trips on FAA Gulfstream
  - FDR/CVR returned to DC
- Parties Notified

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Parties to the Investigation

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

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Accredited Representatives

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

Organizational Meeting

- Overview of Site and Hazards
- Named Investigative Groups:

  Operations, ATC, Meteorology

  Powerplants, Systems, Structures

  FDR/CVR, Maintenance

  Aircraft Performance

  Human Performance

Each Group Led By NTSB

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On- Scene for Eight Days

- Focus on perishable info
- Progress Meetings
- Press Briefings, Family Briefings
- Wreckage recovered and stored

Post On- Scene Activities

- Interviews
- Teardowns
- Performance Study of FDR Data
- Investigative Public Hearing

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Public Hearing

- May 12 – 14, 2009 in DC
- Sworn Testimony from 19 People
  - Colgan Directors of Training, Operations
  - FAA Principal Inspectors
  - NASA Aerodynamics Researchers

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Wrap Up Activities

- Complete all Group Work
- Technical Review
- Party Submissions
- NTSB Staff Prepared Draft Report

Final Report of Investigation

- Board Meeting on February 2, 2010
  - Less than a year after the accident
- 46 Findings
- Probable Cause
- 25 Safety Recommendations

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Key Findings

- Inappropriate control inputs
- Typical of startle and confusion
- Breakdown in flight monitoring, sterile cockpit rules
- Impairment due to fatigue

Probable Cause

- Inappropriate response to warning which led to stall aerodynamic stall

- Contributing factors:
  - failure to monitor airspeed
  - failure to adhere to sterile cockpit
  - inadequate procedures for airspeed selection in icing conditions.

Key Recommendations

- Leadership training for captains
- Fatigue mitigation – commuting pilots
- Airspeed selection procedure
- Stall recovery training

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