The Role of the NTSB: Improving Safety through Accident Investigation

Robert L. Sumwalt, III
Board Member
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NTSB’s Mission

NTSB is an independent federal agency, charged by Congress to investigate transportation accidents, determine probable cause, and issue safety recommendations.
Since 1967 ...

• 142,000 accident investigations
  – 133,000 aviation accidents

• 13,084 safety recommendations
  – 82 percent overall acceptance

Our independence is crucial to our mission.
Facilities

- Headquartered in Washington, DC
- NTSB Training Center
- 9 Regional Offices
The Board

- 5 Members, appointed by the President, with advice and consent of the Senate
GA Accidents - 2008

- 1559 accidents
- 275 fatal
- 495 fatalities
Propellers
Light Bulb Filaments
• Was this light illuminated or extinguished at impact?
Cockpit Instruments
Cockpit – Instruments (JFK Jr)
JFK Jr. Attitude Indicator
Cockpit Instruments (JFK Jr)
Airspeed Indicator Witness Marks
January 25, 2007
East River Class B Exclusion
Impact Site
Ground Wreckage
Personnel Information

- Pilot/Owner
  - Private Pilot
  - Purchased airplane on June 9, 2006
  - 87.8 hours of flight time
  - 12.5 in Cirrus aircraft
  - 13.7 hours flown in the last 90 days
  - 0 hours flown in the last 30 days
East River Exclusion/Class B boundary height 1100'

Start of turn

600'

Looking south
“... the pilots’ inadequate planning, judgment, and airmanship in the performance of a 180° turn maneuver inside of a limited turning space.”
A Few Tips to Avoid This
Negative Publicity Avoidance
“You never know on which flight your career will be judged.”
Your name here ( ? )
Pilots’ acts might have led to crash

Tail section of doomed jet found on ocean floor

By ERIC MALM, MATT SURMAN and MITCHELL LANDSBERG
Los Angeles Times

PORT HUENEME, Calif. — Investigators are considering whether the pilots of Alaska Airlines Flight 261 unwittingly triggered their violent plunge into the Pacific Ocean by following prescribed procedures for an emergency landing, air safety officials said Thursday.

Late Thursday searchers found the tail of the jet after recovering the flight data recorder earlier in the day.

Underwater robots exploring the ocean floor found where the wreckage came to rest after the MD-83's, some of which are believed trapped under the debris.

National Transportation Safety Board officials raised the question about the pilots' actions after listening to a recording of the final 30 minutes that was contained in a cockpit voice recorder retrieved late Wednesday.

One NTSB official, speaking on condition of anonymity, said the investigation into the crash is increasingly focusing on the pilots' actions during their preparation for an emergency landing at Los Angeles International Airport.

In hindsight, investigators say, it appears possible that a by-the-book response to the mechanical problem reported by the pilots — a "horizontal stabilizer jam" — could have sent the plane into its wild, corkscrewing descent into the sea.
Take the Most Conservative Approach
What to do?

Take the most conservative approach

De-ice?
Divert?
Add more fuel?
Don’t de-ice
Continue?
Risk min fuel landing?
Accident Causal Factors

Hull-loss Accidents over 10 Year Period

<table>
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<tr>
<th>Primary Factor</th>
<th>10</th>
<th>20</th>
<th>30</th>
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<tbody>
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<td>Flying pilot non-adherence to procedure</td>
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<td>Other operational procedural considerations</td>
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<td>Non-flying pilot non-adherence to procedure</td>
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<td>Embedded piloting skills</td>
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<td>Design improvement</td>
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<td>Captain or instructor pilot exercise of authority</td>
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<td>Maintenance or inspection action</td>
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<td>Approach path stability</td>
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<td>ATC system performance</td>
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<td>First officer’s cross-check performance as non-flying pilot</td>
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<td>Go-around decision</td>
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<td>Runway hazards eliminated</td>
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138 Accidents  5,686 Fatalities

Each bar represents the percentage of hull-loss accidents that contained at least one instance of the listed prevention strategy.

Source: Boeing
How SOPs relate to error

• Studies reveal that crews that intentionally deviate from SOPs are approximately three times more likely to commit additional errors with consequential results.

• “Normalization of Deviance”
E PLURIBUS UNUM
NATIONAL TRANSPORTATION SAFETY BOARD
NTSB
Be Professional
What is a professional?

• A mindset
  – Precise checklist usage
  – Precise callouts
  – Precise compliance with SOPs and regulations
  – Staying abreast and current with knowledge and skills
  – The ability and willingness to say “I don’t know” or “I am wrong”
Doing the right things, even when no one is watching.
In summary, the NTSB, through effective investigations, seeks to prevent accidents by finding out what happened, and therefore, make recommendations to prevent future accidents.
“Public service is one of the highest callings in the land. You have the opportunity to make a positive impact on families, communities, states and sometimes the world.”