

NTSB Board Meeting AA Flight 587



First Officer's Use of Controls

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Reasons for First Officer's Rudder Pedal Inputs

- Rudder System Characteristics
- Training
- Pilot Factors



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Pilot Factors

- Met all certification requirements
- No history of accidents/violations
- Experienced first officer
- Positive relations with the captain
- Positive reports on pilot skills, except for reports of tendency to react aggressively to wake turbulence



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Pilot Factors: Reactions to Wake Turbulence Encounters

- First officer overreacted to minor turbulence with three rapid rudder inputs. Attributed response to pilot training.
- First officer executed sudden go around at max power in response to small wake encounter.



Pilot Factors: Reactions to Wake Turbulence on the Accident Flight

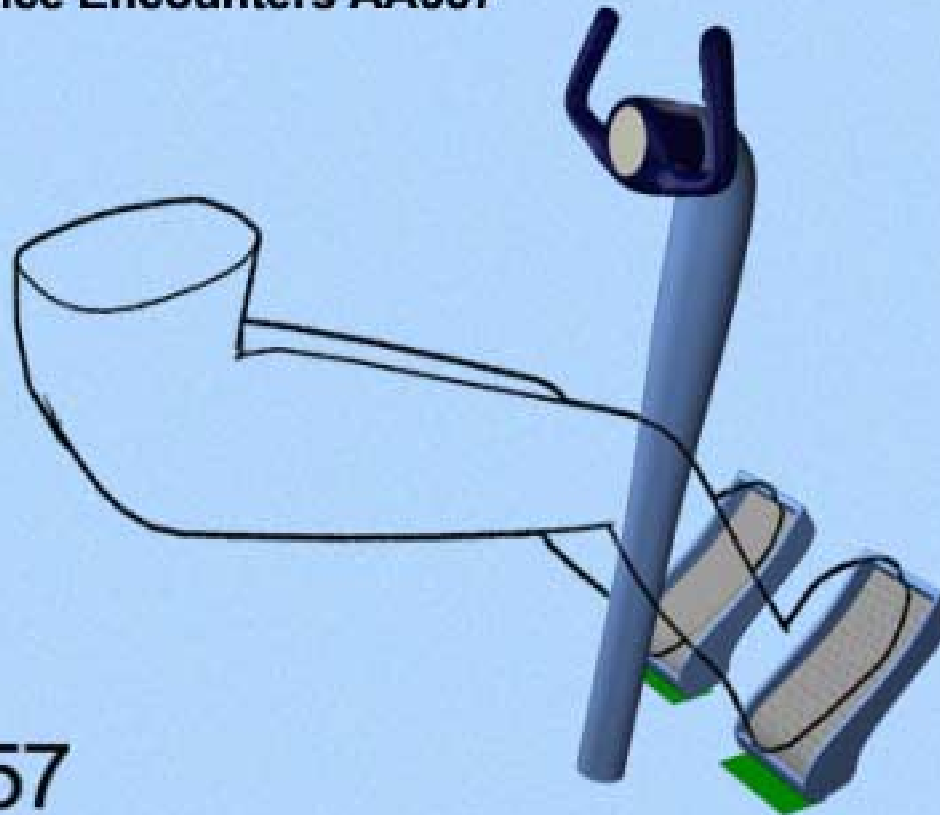
- First officer questioned spacing before takeoff on the accident flight.
- First officer applied unnecessary wheel inputs in response to first wake encounter.



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Wake Turbulence Encounters AA587



09 : 15 : 57

HOT-2: "let's go for power please."

CAM: [sound of loud thump]



Analysis of Pilot Actions

- Likely surprised and confused by large airplane response to initial input
- Continued making inputs as sideslip increased
- Failed to recognize airplane motion as being caused by his inputs



Aircraft-Pilot Coupling (APC)

- Rare, unexpected, and unintended excursions in aircraft attitude and flight path are caused by anomalous interactions between aircraft and pilot.
- Trigger causes pilot to switch to high-gain control strategy.
- Pilot has difficulty ending the APC event.



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Rudder System Factors Involved in the Accident Sequence

- Light forces
- Small pedal displacements
- Changing performance as airspeed increases
- A300-600 susceptible to potentially hazardous rudder inputs at high airspeed



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Training Factors Involved in the Accident Sequence

- Could have encouraged unrealistic view of wake turbulence effects
- Could have associated wake turbulence with a need for aggressive recovery technique
- Could have produced surprise and confusion when airplane responded differently than intended



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Pilot Factors Involved in the Accident Sequence

- Alerted by first encounter
- Airplane bank may have provoked more aggressive response
- Initial response was unnecessary and excessive



Causes of Excessive Reaction

Pilot
Factors

The diagram consists of three light gray ovals arranged in a triangular pattern, overlapping a larger orange oval in the background. The top oval is labeled 'Pilot Factors', the bottom-left oval is labeled 'Training', and the bottom-right oval is labeled 'Rudder System Characteristics'. All text is in a bold, orange, sans-serif font.

Training

Rudder System
Characteristics

National Transportation Safety Board



American Airlines Flight 587
Belle Harbor, New York
November 12, 2001

NTSB Board Meeting
October 26, 2004

