# Aviation Investigation Final Report

| | | | |
|---|---|---|---|
| **Location:** | New York, New York | **Accident Number:** | DCA18LA285 |
| **Date & Time:** | September 6, 2018, 12:45 Local | **Registration:** | N173AN |
| **Aircraft:** | Boeing 757 | **Aircraft Damage:** | None |
| **Defining Event:** | Abrupt maneuver | **Injuries:** | 1 Serious, 2 Minor, 110 None |
| **Flight Conducted Under:** | Part 121: Air carrier - Scheduled | | |

## Analysis

The airplane was descending toward the destination airport with the autopilot and autothrottle systems engaged. As the airplane was approaching 12,000 ft, and the autopilot was capturing the altitude, the captain adjusted the altimeter resulting in a displayed altitude of 12,100 ft. The captain (the pilot flying) selected flight level change mode on the autopilot to recapture the altitude and set the speed at 250 knots to slow from about 255 knots. As a result, the autothrottles went to Throttle Hold mode when the throttle levers reached the aft stop. As the captain was briefing the approach, the airplane slowed and pitched up as it tried to maintain altitude with a reduced throttle setting. An international relief officer who was in the cockpit at the time commented on the airplane's decreasing speed three times when the airplane's airspeed was about 186 knots before stating that the captain should push the nose over. The captain disengaged the autopilot and auto throttles, aggressively pitched down, and increased the throttles. These aggressive maneuvers caused the flight attendants in the aft galley to be thrown against the ceiling. One flight attendant sustained a compound arm fracture; two other flight attendants sustained minor injuries. The crew subsequently landed the airplane without further incident.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The flight crew's failure to adequately monitor the airplane's airspeed, which led to the captain's aggressive control inputs to increase airspeed; these aggressive inputs resulted in injuries to three cabin crewmembers.

## Findings

| | |
|---|---|
| **Personnel issues** | Aircraft control - Pilot |

# Factual Information

## History of Flight

| | |
|---|---|
| **Enroute-descent** | Abrupt maneuver (Defining event) |

On September 6, 2018, about 1248 eastern daylight time, American Airlines flight 279, a Boeing 757-223, N173AN, was involved in an in-flight upset during the descent to John F. Kennedy International Airport (JFK), New York, New York. The flight crew subsequently made an uneventful landing. During the event, one flight attendant sustained serious injuries, and two flight attendants sustained minor injuries. The other 110 airplane occupants were not injured, and the airplane was not damaged. The flight was operating under the provisions of Title 14 *Code of Federal Regulations* Part 121 as a scheduled international passenger flight from Edinburgh Airport, Edinburg, Scotland, to JFK.

The captain was the pilot flying during the descent, and the first officer was the pilot monitoring. An international relief officer was in the cockpit jumpseat during the descent. According to crew interviews, flight data recorder (FDR) information, and cockpit voice recorder (CVR) information, the airplane began descending from flight level 240 with the autopilot and auto throttles engaged.

At 1245:39, as the aircraft neared 12,000 ft (which had previously been dialed into the mode control panel [MCP]), the autopilot Altitude Hold mode engaged. About 16 seconds later, the recorded altimeter setting changed from 29.92 to 30.13 inches of mercury, resulting in an immediate change to the displayed altitude. The captain reported that the altitude at that time was 12,100 ft. According to the captain, he then selected flight level change (FLCH) on the MCP, and the auto throttle system immediately transitioned to FLCH descent mode to reacquire the desired altitude of 12,000 ft. The captain stated that the MCP speed window displayed an airspeed of about 253-255 knots, which was slightly above the flight crew's desired airspeed of 250 knots. The MCP speed was then manually moved to 250 knots, which caused both engine throttle lever angles to decrease (indicating the throttles were moving aft and reducing thrust) and the airplane to decelerate. Once the throttles reached the aft stop, the auto throttle system entered the Throttle Hold (THR HOLD) mode.

Starting about 1246:23, the captain began briefing the approach. During the briefing, air traffic control cleared the flight to descend to 7,000 ft and, at 1247:22, provided instructions to expedite through 9,000 ft .

With the autopilot in FLCH mode, a target altitude of 12,000 ft, and the auto throttles in THR HOLD mode, the airplane's pitch attitude began to increase (to hold 12,000 ft), and the airspeed started to decay below 250 knots. Between 1247:27 and 1247:32, the international relief officer made three comments about the decreasing speed. At 1247:34, the airspeed was about 186 knots, the throttle lever angles increased rapidly, the auto throttle system exited

THR HOLD mode, and both engines' fan speeds began to increase. At 1247:40, the international relief officer stated loudly, "push. push it over. get the autopilot off. push it over," because, according to the relief officer, the airspeed was getting "dangerously low."

At 1247:42, the FDR recorded the autopilot and autothrottle systems being disengaged. The throttle lever angles began to decrease, and the airspeed began increasing from 195 knots. Two seconds later, the airplane's pitch attitude was about 10° nose up, and the control column position moved forward quickly to command nose-down attitude. From 1247:44 to 1247:55, the recorded vertical acceleration varied between 1.476 and -0.156 G, and the pitch attitude varied between 10° nose up and 3° nose down.

After the event, the airspeed increased to about 250 knots, the control column position and pitch stabilized, and the autopilot was re-engaged. The airplane then began descending to 7,000 ft, as ATC instructed. The flight crew completed the remainder of the flight uneventfully and landed the airplane at the destination airport about 1701.

## Pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Airline transport; Commercial; Flight engineer | **Age:** | 62,Male |
| **Airplane Rating(s):** | Multi-engine land | **Seat Occupied:** | Left |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | 5-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | None | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 1 With waivers/limitations | **Last FAA Medical Exam:** | April 11, 2018 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | April 5, 2018 |
| **Flight Time:** | 15162 hours (Total, all aircraft), 13612 hours (Total, this make and model), 8315 hours (Pilot In Command, all aircraft), 182 hours (Last 90 days, all aircraft), 44 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft) | | |

## Co-pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Airline transport; Commercial; Flight instructor | **Age:** | 55,Male |
| **Airplane Rating(s):** | Multi-engine land | **Seat Occupied:** | Right |
| **Other Aircraft Rating(s):** | None | **Restraint Used:** | 5-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | Airplane multi-engine; Airplane single-engine | **Toxicology Performed:** | No |
| **Medical Certification:** | Class 1 With waivers/limitations | **Last FAA Medical Exam:** | June 18, 2018 |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | May 21, 2018 |
| **Flight Time:** | 4038 hours (Total, all aircraft), 565 hours (Total, this make and model), 211 hours (Last 90 days, all aircraft), 58 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft) | | |

## Co-pilot Information

| | | | |
|---|---|---|---|
| **Certificate:** | Airline transport; Commercial; Flight instructor | **Age:** | Male |
| **Airplane Rating(s):** | Multi-engine land | **Seat Occupied:** | Center |
| **Other Aircraft Rating(s):** | | **Restraint Used:** | 5-point |
| **Instrument Rating(s):** | Airplane | **Second Pilot Present:** | Yes |
| **Instructor Rating(s):** | | **Toxicology Performed:** | No |
| **Medical Certification:** | Unknown Unknown | **Last FAA Medical Exam:** | |
| **Occupational Pilot:** | Yes | **Last Flight Review or Equivalent:** | |
| **Flight Time:** | 1009 hours (Total, all aircraft) | | |

## Aircraft and Owner/Operator Information

| | | | |
|---|---|---|---|
| **Aircraft Make:** | Boeing | **Registration:** | N173AN |
| **Model/Series:** | 757 223 | **Aircraft Category:** | Airplane |
| **Year of Manufacture:** | 2002 | **Amateur Built:** | |
| **Airworthiness Certificate:** | Transport | **Serial Number:** | 32399 |
| **Landing Gear Type:** | Retractable - Tricycle | **Seats:** | 187 |
| **Date/Type of Last Inspection:** | September 4, 2018 Continuous airworthiness | **Certified Max Gross Wt.:** | 255500 lbs |
| **Time Since Last Inspection:** | | **Engines:** | 2 Turbo fan |
| **Airframe Total Time:** | 53074 Hrs as of last inspection | **Engine Manufacturer:** | Rolls-Royce |
| **ELT:** | C126 installed, not activated | **Engine Model/Series:** | RB211 |
| **Registered Owner:** | | **Rated Power:** | 42500 Lbs thrust |
| **Operator:** | | **Operating Certificate(s) Held:** | Flag carrier (121) |

## Meteorological Information and Flight Plan

| | | | |
|---|---|---|---|
| **Conditions at Accident Site:** | Unknown | **Condition of Light:** | Day |
| **Observation Facility, Elevation:** | | **Distance from Accident Site:** | |
| **Observation Time:** | | **Direction from Accident Site:** | |
| **Lowest Cloud Condition:** | Unknown | **Visibility** | |
| **Lowest Ceiling:** | Unknown | **Visibility (RVR):** | |
| **Wind Speed/Gusts:** | / | **Turbulence Type Forecast/Actual:** | / |
| **Wind Direction:** | | **Turbulence Severity Forecast/Actual:** | / |
| **Altimeter Setting:** | | **Temperature/Dew Point:** | |
| **Precipitation and Obscuration:** | No Obscuration; No Precipitation | | |
| **Departure Point:** | Edinburgh, OF (EGPH) | **Type of Flight Plan Filed:** | IFR |
| **Destination:** | New York, NY (JFK ) | **Type of Clearance:** | IFR |
| **Departure Time:** | 10:10 Local | **Type of Airspace:** | Class B |

## Wreckage and Impact Information

| | | | |
|---|---|---|---|
| **Crew Injuries:** | 1 Serious, 2 Minor, 6 None | **Aircraft Damage:** | None |
| **Passenger Injuries:** | 104 None | **Aircraft Fire:** | None |
| **Ground Injuries:** | | **Aircraft Explosion:** | None |
| **Total Injuries:** | 1 Serious, 2 Minor, 110 None | **Latitude, Longitude:** | 40.639999,-73.77861 |

## Administrative Information

| | | | |
|---|---|---|---|
| **Investigator In Charge (IIC):** | Lovell, John | | |
| **Additional Participating Persons:** | Lauren Tascione; American Airlines; Dallas, TX<br>John Deleeuw; APA; Dallas , TX<br>Patrick Lusch; FAA; DC<br>Daniel Marcotte; Boeing; Seattle, WA | | |
| **Original Publish Date:** | May 4, 2022 | **Investigation Class:** | 3 |
| **Note:** | The NTSB did not travel to the scene of this accident. | | |
| **Investigation Docket:** | https://data.ntsb.gov/Docket?ProjectID=98259 | | |