

---

## Idiopathic control wheel lockup, Boeing 737-3M8, November 29, 2003

---

**Micro-summary:** This Boeing 737-3M8 experienced a momentary lock-up of the pilots' wheels on the control column.

---

**Event Date:** 2003-11-29 at 0840 MST


**Investigative Body:** National Transportation Safety Board (NTSB), USA


**Investigative Body's Web Site:** <http://www.nts.gov/>


---

### **Cautions:**

1. Accident reports can be and sometimes are revised. Be sure to consult the investigative agency for the latest version before basing anything significant on content (e.g., thesis, research, etc).
  2. Readers are advised that each report is a glimpse of events at specific points in time. While broad themes permeate the causal events leading up to crashes, and we can learn from those, the specific regulatory and technological environments can and do change. ***Your company's flight operations manual is the final authority as to the safe operation of your aircraft!***
  3. Reports may or may not represent reality. Many many non-scientific factors go into an investigation, including the magnitude of the event, the experience of the investigator, the political climate, relationship with the regulatory authority, technological and recovery capabilities, etc. It is recommended that the reader review all reports analytically. Even a "bad" report can be a very useful launching point for learning.
  4. Contact us before reproducing or redistributing a report from this anthology. Individual countries have very differing views on copyright! We can advise you on the steps to follow.
-

|   |             |                                 |                                  |                                      |  |
|---|-------------|---------------------------------|----------------------------------|--------------------------------------|--|
|   |             | NTSB ID: DEN04IA026             |                                  | Aircraft Registration Number: N303FL |  |
|   |             | Occurrence Date: 11/29/2003     |                                  | Most Critical Injury: None           |  |
|   |             | Occurrence Type: Incident       |                                  | Investigated By: NTSB                |  |
| Location/Time   |             |                                 |                                  |                                      |  |
| Nearest City/Place<br>Denver  | State<br>CO | Zip Code<br>80249               | Local Time<br>0840               | Time Zone<br>MST                     |  |
| Airport Proximity: Off Airport/Airstrip   |             | Distance From Landing Facility: |                                  | Direction From Airport:              |  |
| Aircraft Information Summary  |             |                                 |                                  |                                      |  |
| Aircraft Manufacturer<br>Boeing   |             | Model/Series<br>737-3M8         |                                  | Type of Aircraft<br>Airplane         |  |
| Sightseeing Flight: No  |             |                                 | Air Medical Transport Flight: No |                                      |  |
| Narrative   |             |                                 |                                  |                                      |  |
| <p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On November 29, 2003, at 0840 mountain standard time, a Boeing 737-3M8, N303FL, operating as Frontier Airlines flight 567, experienced a momentary lock up of the captain and first officer's aileron and flight spoiler controls, while on final approach into Denver International Airport (DEN), Denver, Colorado. The airline transport certificated captain and first officer, 3 cabin crewmembers, and 130 passengers were not injured. Visual meteorological conditions prevailed. The scheduled domestic passenger flight was being conducted under the provisions of Title 14 CFR Part 121. An instrument flight rules (IFR) flight plan had been filed for the flight that departed Milwaukee, Wisconsin, at 0637 central standard time.</p> <p>The captain reported that they were on final approach approximately 1/4 mile from the end of the runway when he applied right aileron to correct for a crosswind. "The [control] yoke felt like it had 'bound up'." He had to use excessive pressure to get the control yoke to respond. An uneventful landing was made at DEN. After landing, he cycled the yoke left and right. After a few cycles, it seemed to free up. The captain said that while taxiing to parking with the number 2 engine shut down, he made a sharp left turn and the tiller [wheel] seemed to "bind up."</p> <p>After the passengers had deplaned, the airplane was taken to Frontier's maintenance hangar where mechanics performed a "[nose landing gear] wheel steering test [in accordance with Maintenance Manual] 32-51-00. Checked good. Performed cable tension to nose wheel steering [in accordance with Maintenance Manual] 32-51-00. Tension good. Found [right hand] nose steering accumulator leaking. Leak limits good [in accordance with Maintenance Manual] 29-00-00, page 605. Inspected case drain filters. Found no discrepancies [reference Maintenance Manual 24-15-91]. Removed and reinstalled #2 engine case drain plug to inspect. Found no discrepancies [reference Maintenance Manual 29-15-00]. Inspected [left hand] and [right hand] aileron cables from main [wheel well] outboard visually. No discrepancies noted. Complied with flight control movement card 7-9002. No discrepancies noted. Performed aileron PCU internal leak check procedure [reference Maintenance Manual 84-00-00. No discrepancies noted. Aircraft is released for operational check flight. Performed post operational check flight, walk around inspection." During the test flight, no discrepancies were noted and the airplane was returned to service.</p> <p>The digital flight data recorder (DFDR) was removed from the airplane and sent to NTSB's Vehicle Recorder Laboratory for readout. According to the DFDR engineer, no data was recovered that would explain the event as described by the captain.</p> |             |                                 |                                  |                                      |  |
| FACTUAL REPORT - AVIATION   |             |                                 |                                  |                                      |  |
| Page 1  |             |                                 |                                  |                                      |  |

|   |  |  |  |                                      |                                    |              |
|---|--|--|--|--------------------------------------|------------------------------------|--------------|
|  |  | NTSB ID: DEN04IA026                              |  |                                      |                                    |              |
|   |  | Occurrence Date: 11/29/2003                      |  |                                      |                                    |              |
|   |  | Occurrence Type: Incident                        |  |                                      |                                    |              |
| Landing Facility/Approach Information   |  |  |  |                                      |                                    |              |
| Airport Name<br>Denver International  |  | Airport ID:<br>DEN                               | Airport Elevation<br>5431 Ft. MSL      | Runway Used<br>NA                    | Runway Length                      | Runway Width |
| Runway Surface Type: Unknown  |  |  |  |                                      |                                    |              |
| Runway Surface Condition: Unknown   |  |  |  |                                      |                                    |              |
| Type Instrument Approach: Visual  |  |  |  |                                      |                                    |              |
| VFR Approach/Landing: Straight-in   |  |  |  |                                      |                                    |              |
| Aircraft Information  |  |  |  |                                      |                                    |              |
| Aircraft Manufacturer<br>Boeing   |  | Model/Series<br>737-3M8                          |  | Serial Number<br>25039               |                                    |              |
| Airworthiness Certificate(s): Transport   |  |  |  |                                      |                                    |              |
| Landing Gear Type: Retractable - Tricycle   |  |  |  |                                      |                                    |              |
| Homebuilt Aircraft? No  |  | Number of Seats: 144                             | Certified Max Gross Wt. 135000 LBS     |                                      | Number of Engines: 2               |              |
| Engine Type:<br>Turbo Fan   |  | Engine Manufacturer:<br>General Electric         |  | Model/Series:<br>CFM-56-3B2          | Rated Power:<br>20000 LBS          |              |
| - Aircraft Inspection Information   |  |  |  |                                      |                                    |              |
| Type of Last Inspection<br>Continuous Airworthiness                               |  | Date of Last Inspection<br>11/2003               | Time Since Last Inspection<br>88 Hours |                                      | Airframe Total Time<br>38084 Hours |              |
| - Emergency Locator Transmitter (ELT) Information                                 |  |  |  |                                      |                                    |              |
| ELT Installed? Yes  |  | ELT Operated? No                                 |  | ELT Aided in Locating Accident Site? |                                    |              |
| Owner/Operator Information  |  |  |  |                                      |                                    |              |
| Registered Aircraft Owner<br>Wells Fargo Bank Northwest NA Trustee                |  | Street Address<br>299 S. Main St., MAC U1228-120 |  |                                      |                                    |              |
|   |  | City<br>Salt Lake City                           |  | State<br>UT                          | Zip Code<br>84111                  |              |
| Operator of Aircraft<br>Frontier Airlines Inc                                     |  | Street Address<br>7001 Tower Rd.                 |  |                                      |                                    |              |
|   |  | City<br>Denver                                   |  | State<br>CO                          | Zip Code<br>80249                  |              |
| Operator Does Business As:  |  |  |  | Operator Designator Code: F3LA       |                                    |              |
| - Type of U.S. Certificate(s) Held:   |  |  |  |                                      |                                    |              |
| Air Carrier Operating Certificate(s): Flag Carrier/Domestic                       |  |  |  |                                      |                                    |              |
| Operating Certificate:  |  |  | Operator Certificate:                  |                                      |                                    |              |
| Regulation Flight Conducted Under: Part 121: Air Carrier                          |  |  |  |                                      |                                    |              |
| Type of Flight Operation Conducted: Scheduled; Domestic; Passenger Only           |  |  |  |                                      |                                    |              |

|  |                             |
|--|-----------------------------|
|  <p><b>National Transportation Safety Board</b><br/><b>FACTUAL REPORT</b><br/><b>AVIATION</b></p> | NTSB ID: DEN041A026         |
|  | Occurrence Date: 11/29/2003 |
|  | Occurrence Type: Incident   |

**First Pilot Information**

|                 |                 |                  |                          |           |
|-----------------|-----------------|------------------|--------------------------|-----------|
| Name<br>On File | City<br>On File | State<br>On File | Date of Birth<br>On File | Age<br>50 |
|-----------------|-----------------|------------------|--------------------------|-----------|

|        |                     |                                      |                             |
|--------|---------------------|--------------------------------------|-----------------------------|
| Sex: M | Seat Occupied: Left | Principal Profession: Civilian Pilot | Certificate Number: On File |
|--------|---------------------|--------------------------------------|-----------------------------|

Certificate(s): Airline Transport; Commercial

Airplane Rating(s): Multi-engine Land; Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s): Airplane Multi-engine; Airplane Single-engine

|   |   |
|---|---|
| Type Rating/Endorsement for Accident/Incident Aircraft? Yes | Current Biennial Flight Review? 09/2003 |
|---|---|

|                        |  |                                    |
|------------------------|--|------------------------------------|
| Medical Cert.: Class 1 | Medical Cert. Status: Valid Medical--w/ waivers/lim. | Date of Last Medical Exam: 11/2003 |
|------------------------|--|------------------------------------|

| - Flight Time Matrix  | All A/C | This Make and Model | Airplane Single Engine | Airplane Multi-Engine | Night | Instrument |           | Rotorcraft | Glider | Lighter Than Air |
|-----------------------|---------|---------------------|------------------------|-----------------------|-------|------------|-----------|------------|--------|------------------|
|                       |         |                     |                        |                       |       | Actual     | Simulated |            |        |                  |
| Total Time            |         |                     |                        |                       |       |            |           |            |        |                  |
| Pilot In Command(PIC) |         |                     |                        |                       |       |            |           |            |        |                  |
| Instructor            |         |                     |                        |                       |       |            |           |            |        |                  |
| Last 90 Days          | 144     |                     |                        |                       |       |            |           |            |        |                  |
| Last 30 Days          | 40      |                     |                        |                       |       |            |           |            |        |                  |
| Last 24 Hours         |         |                     |                        |                       |       |            |           |            |        |                  |

|                    |                            |                          |                   |
|--------------------|----------------------------|--------------------------|-------------------|
| Seatbelt Used? Yes | Shoulder Harness Used? Yes | Toxicology Performed? No | Second Pilot? Yes |
|--------------------|----------------------------|--------------------------|-------------------|

**Flight Plan/Itinerary**

Type of Flight Plan Filed: IFR

|                              |             |                           |                        |                  |
|------------------------------|-------------|---------------------------|------------------------|------------------|
| Departure Point<br>Milwaukee | State<br>WI | Airport Identifier<br>MKE | Departure Time<br>0637 | Time Zone<br>CST |
|------------------------------|-------------|---------------------------|------------------------|------------------|

|   |       |                           |  |
|---|-------|---------------------------|--|
| Destination<br>Same as Accident/Incident Location | State | Airport Identifier<br>DEN |  |
|---|-------|---------------------------|--|


Type of Clearance: IFR

Type of Airspace: Class B

**Weather Information**

Source of Briefing: Company

Method of Briefing: Teletype

|  |                             |
|--|-----------------------------|
| <br><b>National Transportation Safety Board</b><br><b>FACTUAL REPORT</b><br><b>AVIATION</b> | NTSB ID: DEN04IA026         |
|  | Occurrence Date: 11/29/2003 |
|  | Occurrence Type: Incident   |

**Weather Information**

|                                  |                     |  |               |                                 |                              |
|----------------------------------|---------------------|--|---------------|---------------------------------|------------------------------|
| WOF ID                           | Observation Time    | Time Zone  | WOF Elevation | WOF Distance From Accident Site | Direction From Accident Site |
| DEN                              | 0853                | MST  | 5431 Ft. MSL  | NM                              | Deg. Mag.                    |
| Sky/Lowest Cloud Condition: Few  |                     |  | 12000 Ft. AGL | Condition of Light: Day         |                              |
| Lowest Ceiling: Broken           |                     |  | * Ft. AGL     | Visibility: 10 SM               | Altimeter: 29.94 "Hg         |
| Temperature: 13 °C               | Dew Point: -9 °C    | Wind Direction: 210                                    |               | Density Altitude: 6450 Ft.      |                              |
| Wind Speed: 11                   | Gusts:              | Weather Conditions at Accident Site: Visual Conditions |               |                                 |                              |
| Visibility (RVR): Ft.            | Visibility (RVV) SM | Intensity of Precipitation:                            |               |                                 |                              |
| Restrictions to Visibility: None |                     |  |               |                                 |                              |
| Type of Precipitation: None      |                     |  |               |                                 |                              |

**Accident Information**

|                       |                     |                          |
|-----------------------|---------------------|--------------------------|
| Aircraft Damage: None | Aircraft Fire: None | Aircraft Explosion: None |
|-----------------------|---------------------|--------------------------|

Classification: U.S. Registered/U.S. Soil

| - Injury Summary Matrix | Fatal | Serious | Minor | None | TOTAL |
|-------------------------|-------|---------|-------|------|-------|
| First Pilot             |       |         |       | 1    | 1     |
| Second Pilot            |       |         |       | 1    | 1     |
| Student Pilot           |       |         |       |      |       |
| Flight Instructor       |       |         |       |      |       |
| Check Pilot             |       |         |       |      |       |
| Flight Engineer         |       |         |       |      |       |
| Cabin Attendants        |       |         |       | 3    | 3     |
| Other Crew              |       |         |       |      |       |
| Passengers              |       |         |       | 130  | 130   |
| - TOTAL ABOARD -        |       |         |       | 135  | 135   |
| Other Ground            |       |         |       |      |       |
| - GRAND TOTAL -         |       |         |       | 135  | 135   |

National Transportation Safety Board

**FACTUAL REPORT**

**AVIATION**



NTSB ID: DEN04IA026

Occurrence Date: 11/29/2003

Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)

Arnold W. Scott

Additional Persons Participating in This Accident/Incident Investigation:

James B Hopkins  
Air Safety Inspector - Operations  
FAA Flight Standards District Office  
26805 E. 68th Ave., Suite 200  
Denver, CO 80249