



# Aviation Investigation Final Report

|                                |                                   |                         |            |
|--------------------------------|-----------------------------------|-------------------------|------------|
| <b>Location:</b>               | DENVER, Colorado                  | <b>Incident Number:</b> | DEN891A124 |
| <b>Date &amp; Time:</b>        | May 24, 1989, 08:05 Local         | <b>Registration:</b>    | N296WA     |
| <b>Aircraft:</b>               | BOEING 727-247                    | <b>Aircraft Damage:</b> | Minor      |
| <b>Defining Event:</b>         |                                   | <b>Injuries:</b>        | 121 None   |
| <b>Flight Conducted Under:</b> | Part 121: Air carrier - Scheduled |                         |            |

## Analysis

THE LEFT MAIN LANDING GEAR COLLAPSED AS THE AIRCRAFT WAS PULLED FORWARD SLIGHTLY TO BRING THE NOSEWHEEL OFF THE CHOCKS PRIOR TO PUSHBACK. INSPECTION DISCLOSED A FRACTURE OF THE FORWARD TRUNNION BEARING SUPPORT FITTING (P/N 65-16206-11) AND HEAVY SURFACE CORROSION. MICROSCOPIC EXAMINATION DISCLOSED EXTENSIVE INTERGRANULAR STRESS CORROSION, AND A CRACK THAT HAD DEVELOPED 0.1 INCHES INBOARD FROM THE FORWARD EDGE OF THE BORE, WHICH HAD PROPAGATED APPROXIMATELY 2.1 INCHES AFT INTO THE BORE SURFACE. THE FINAL FRACTURE RESULTED FROM DUCTILE SEPARATION.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: FAILURE OF THE LEFT MAIN LANDING GEAR FORWARD TRUNNION BEARING SUPPORT FITTING DUE TO A CRACK INITIATING AT THE FORWARD EDGE OF THE BORE AND PROPAGATING BY INTERGRANULAR STRESS CORROSION INTO THE BORE SURFACE THAT RESULTED IN AN EVENTUAL DUCTILE FRACTURE.

## Findings

Occurrence #1: MAIN GEAR COLLAPSED  
Phase of Operation: TAXI - PUSHBACK/TOW

Findings

1. (C) LANDING GEAR,MAIN GEAR ATTACHMENT - FAILURE,TOTAL
2. (C) LANDING GEAR,MAIN GEAR ATTACHMENT - FRACTURED
3. (C) LANDING GEAR,MAIN GEAR ATTACHMENT - STRESS CORROSION

## Factual Information

### Pilot Information

|                                  |   |  |                   |
|----------------------------------|---|--|-------------------|
| <b>Certificate:</b>              | Airline transport; Commercial; Flight engineer                            | <b>Age:</b>                              | 50, Male          |
| <b>Airplane Rating(s):</b>       | Single-engine land; Multi-engine land                                     | <b>Seat Occupied:</b>                    | Left              |
| <b>Other Aircraft Rating(s):</b> | None  | <b>Restraint Used:</b>                   |                   |
| <b>Instrument Rating(s):</b>     | Airplane  | <b>Second Pilot Present:</b>             | Yes               |
| <b>Instructor Rating(s):</b>     | None  | <b>Toxicology Performed:</b>             | No                |
| <b>Medical Certification:</b>    | Class 1 Valid Medical--no waivers/lim.                                    | <b>Last FAA Medical Exam:</b>            | November 29, 1988 |
| <b>Occupational Pilot:</b>       | Yes   | <b>Last Flight Review or Equivalent:</b> |                   |
| <b>Flight Time:</b>              | 8200 hours (Total, all aircraft), 3000 hours (Total, this make and model) |  |                   |

## Aircraft and Owner/Operator Information

|                                      |   |                                       |                    |
|--------------------------------------|---|---------------------------------------|--------------------|
| <b>Aircraft Make:</b>                | BOEING                                  | <b>Registration:</b>                  | N296WA             |
| <b>Model/Series:</b>                 | 727-247 727-247                         | <b>Aircraft Category:</b>             | Airplane           |
| <b>Year of Manufacture:</b>          |   | <b>Amateur Built:</b>                 |                    |
| <b>Airworthiness Certificate:</b>    | Transport                               | <b>Serial Number:</b>                 | 22533              |
| <b>Landing Gear Type:</b>            | Retractable - Tricycle                  | <b>Seats:</b>                         | 157                |
| <b>Date/Type of Last Inspection:</b> | April 27, 1989 Continuous airworthiness | <b>Certified Max Gross Wt.:</b>       | 190500 lbs         |
| <b>Time Since Last Inspection:</b>   | 217 Hrs                                 | <b>Engines:</b>                       | 3 Turbo fan        |
| <b>Airframe Total Time:</b>          | 25391 Hrs                               | <b>Engine Manufacturer:</b>           | P&W                |
| <b>ELT:</b>                          | Not installed                           | <b>Engine Model/Series:</b>           | JT8D-15            |
| <b>Registered Owner:</b>             | FIRST SECURITY BANK OF UTAH             | <b>Rated Power:</b>                   | 15000 Lbs thrust   |
| <b>Operator:</b>                     | DELTA AIR LINES                         | <b>Operating Certificate(s) Held:</b> | Flag carrier (121) |
| <b>Operator Does Business As:</b>    |   | <b>Operator Designator Code:</b>      | DALA               |

## Meteorological Information and Flight Plan

|   |                                  |   |                         |
|---|----------------------------------|---|-------------------------|
| <b>Conditions at Accident Site:</b>     | Visual (VMC)                     | <b>Condition of Light:</b>                  | Day                     |
| <b>Observation Facility, Elevation:</b> | DEN ,5333 ft msl                 | <b>Distance from Accident Site:</b>         |                         |
| <b>Observation Time:</b>                | 08:24 Local                      | <b>Direction from Accident Site:</b>        |                         |
| <b>Lowest Cloud Condition:</b>          | Scattered / 20000 ft AGL         | <b>Visibility</b>                           | 60 miles                |
| <b>Lowest Ceiling:</b>                  | None                             | <b>Visibility (RVR):</b>                    |                         |
| <b>Wind Speed/Gusts:</b>                | 8 knots /                        | <b>Turbulence Type Forecast/Actual:</b>     | /                       |
| <b>Wind Direction:</b>                  | 90°                              | <b>Turbulence Severity Forecast/Actual:</b> | /                       |
| <b>Altimeter Setting:</b>               | 29 inches Hg                     | <b>Temperature/Dew Point:</b>               | 20°C / -1°C             |
| <b>Precipitation and Obscuration:</b>   | No Obscuration; No Precipitation |   |                         |
| <b>Departure Point:</b>                 | (DEN )                           | <b>Type of Flight Plan Filed:</b>           | IFR                     |
| <b>Destination:</b>                     | ATLANTA , GA (ATL )              | <b>Type of Clearance:</b>                   | IFR                     |
| <b>Departure Time:</b>                  | 00:00 Local                      | <b>Type of Airspace:</b>                    | Class B;Class D;Class E |

## Airport Information

|                             |                      |                                  |          |
|-----------------------------|----------------------|----------------------------------|----------|
| <b>Airport:</b>             | STAPELTON INT'L KDEN | <b>Runway Surface Type:</b>      | Concrete |
| <b>Airport Elevation:</b>   | 5333 ft msl          | <b>Runway Surface Condition:</b> | Dry      |
| <b>Runway Used:</b>         | 0                    | <b>IFR Approach:</b>             | None     |
| <b>Runway Length/Width:</b> |                      | <b>VFR Approach/Landing:</b>     | None     |

## Wreckage and Impact Information

|                            |          |                             |                            |
|----------------------------|----------|-----------------------------|----------------------------|
| <b>Crew Injuries:</b>      | 7 None   | <b>Aircraft Damage:</b>     | Minor                      |
| <b>Passenger Injuries:</b> | 114 None | <b>Aircraft Fire:</b>       | None                       |
| <b>Ground Injuries:</b>    | N/A      | <b>Aircraft Explosion:</b>  | None                       |
| <b>Total Injuries:</b>     | 121 None | <b>Latitude, Longitude:</b> | 39.759796,-104.920349(est) |

## Administrative Information

|  |   |
|--|---|
| <b>Investigator In Charge (IIC):</b>     | Scott, Arnold   |
| <b>Additional Participating Persons:</b> | RICHARD SPAULDING; DENVER , CO<br>JOHN TOMPKINS; DENVER , CO<br>RICHARD M KOSTER;<br>SAADI BAQAI;     |
| <b>Original Publish Date:</b>            | August 26, 1992   |
| <b>Last Revision Date:</b>               |   |
| <b>Investigation Class:</b>              | <a href="#">Class</a>   |
| <b>Note:</b>                             |   |
| <b>Investigation Docket:</b>             | <a href="https://data.nts.gov/Docket?ProjectID=17619">https://data.nts.gov/Docket?ProjectID=17619</a> |

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