



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	KINSTON, NC	<b>Accident Number:</b>	ATL90FA146
<b>Date &amp; Time:</b>	07/22/1990, 1455 EDT	<b>Registration:</b>	N210US
<b>Aircraft:</b>	BOEING 737-222	<b>Aircraft Damage:</b>	Substantial
<b>Defining Event:</b>		<b>Injuries:</b>	2 Minor, 25 None

**Flight Conducted Under:** Part 121: Air Carrier - Scheduled

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## Analysis

AS ENGINE POWER WAS INCREASED FOR TAKEOFF, THE NO. 1 ENGINE ACCELERATED BEYOND TARGET EPR. ENGINE SHUT DOWN HAD TO BE DONE WITH THE FUEL SHUT OFF LEVER. THE ASYMMETRIC THRUST WAS CONTROLLED WITH NOSE WHEEL STEERING. BEFORE THE AIRPLANE COULD BE STOPPED THE NOSE WHEELS SEPARATED FROM THE LANDING GEAR. THE INVESTIGATION REVEALED THAT THE FUEL PUMP OUTPUT SPLINE TO THE FUEL CONTROL HAD STRIPPED. IT OCCURRED AT SUCH A TIME THAT THE FUEL CONTROL SENSED AN UNDERSPEED & INCREASED FUEL FLOW. MISALIGNMENT OF THE SPLINE SHAFT RESULTED FROM IMPROPER MACHINING DURING PUMP MODIFICATION. THE NOSE GEAR INNER CYLINDER FAILED IN FATIGUE IN AN AREA OF EXCESSIVE GRINDING DURING OVERHAUL.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: FAILURE OF THE FUEL PUMP CONTROL SHAFT BECAUSE OF IMPROPER MACHINING BY THE REPAIR FACILITY DURING MAINTENANCE MODIFICATION OF THE PUMP AND IMPROPER PROCEDURES DURING OVERHAUL OF THE NOSE LANDING GEAR.

## Findings

Occurrence #1: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION

Phase of Operation: TAKEOFF - ABORTED

### Findings

1. 1 ENGINE
2. (C) FUEL SYSTEM,PUMP - DISCONNECTED
3. (C) FUEL SYSTEM,PUMP - WORN
4. (C) MAINTENANCE,MODIFICATION - IMPROPER - OTHER MAINTENANCE PERSONNEL
5. POWERPLANT - OVERSPEED

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Occurrence #2: NOSE GEAR COLLAPSED

Phase of Operation: TAKEOFF - ABORTED

### Findings

6. (C) LANDING GEAR,NOSE GEAR - FAILURE,TOTAL
7. LANDING GEAR,NOSE GEAR - FATIGUE

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Occurrence #3: NOSE GEAR COLLAPSED

Phase of Operation: TAKEOFF - ROLL/RUN

## Factual Information

### Pilot Information

<b>Certificate:</b>	Airline Transport	<b>Age:</b>	47, Male
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	Seatbelt, Shoulder harness
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	Yes
<b>Instructor Rating(s):</b>		<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 1 Valid Medical--no waivers/lim.	<b>Last Medical Exam:</b>	01/18/1990
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	10100 hours (Total, all aircraft), 3300 hours (Total, this make and model), 127 hours (Last 90 days, all aircraft), 41 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Manufacturer:</b>	BOEING	<b>Registration:</b>	N210US
<b>Model/Series:</b>	737-222 737-222	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>		<b>Serial Number:</b>	19555
<b>Landing Gear Type:</b>	Retractable - Tricycle	<b>Seats:</b>	
<b>Date/Type of Last Inspection:</b>	06/19/1990, Continuous Airworthiness	<b>Certified Max Gross Wt.:</b>	109000 lbs
<b>Time Since Last Inspection:</b>	238 Hours	<b>Engines:</b>	2 Turbo Fan
<b>Airframe Total Time:</b>	51264 Hours	<b>Engine Manufacturer:</b>	P&W
<b>ELT:</b>	Not installed	<b>Engine Model/Series:</b>	JT8-D-9
<b>Registered Owner:</b>	USAIR	<b>Rated Power:</b>	14500 lbs
<b>Operator:</b>	USAIR	<b>Air Carrier Operating Certificate:</b>	Flag carrier (121)

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	ISO, 94 ft msl	Observation Time:	1502 EDT
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:	Scattered / 3500 ft agl	Temperature/Dew Point:	34° C / 23° C
Lowest Ceiling:	Broken / 20000 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	6 knots, 240°	Visibility (RVR):	0 ft
Altimeter Setting:	29 inches Hg	Visibility (RVV):	0 Miles
Precipitation and Obscuration:			
Departure Point:		Type of Flight Plan Filed:	IFR
Destination:	CHARLOTTE, NC (CLT)	Type of Clearance:	IFR
Departure Time:	1450 EDT	Type of Airspace:	

## Airport Information

Airport:	KINSTON REGIONAL JETPORT (ISO)	Runway Surface Type:	Concrete
Airport Elevation:	94 ft	Runway Surface Condition:	Dry
Runway Used:	23	IFR Approach:	None
Runway Length/Width:	7500 ft / 150 ft	VFR Approach/Landing:	None

## Wreckage and Impact Information

Crew Injuries:	5 None	Aircraft Damage:	Substantial
Passenger Injuries:	2 Minor, 20 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Minor, 25 None	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	PRESTON E HICKS	Adopted Date:	03/12/1993
Additional Participating Persons:			
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinq@ntsb.gov">pubinq@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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