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## Engine fire, Boeing 727-100, July 13, 2001

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**Micro-summary:** This Boeing B-727-100 experienced an engine failure on takeoff.

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**Event Date:** 2001-07-13 at 0428 CDT


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

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

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  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!***
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		NTSB ID: ATL011A083		Aircraft Registration Number: N189FE	
		Occurrence Date: 07/13/2001		Most Critical Injury: None	
		Occurrence Type: Incident		Investigated By: NTSB	
Location/Time					
Nearest City/Place MEMPHIS	State TN	Zip Code 38118	Local Time 0428	Time Zone CDT	
Airport Proximity: On Airport		Distance From Landing Facility: 0		Direction From Airport: 0	
Aircraft Information Summary					
Aircraft Manufacturer Boeing		Model/Series B-727-100		Type of Aircraft 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 July 13, 2001, at 0428 central daylight time, a Boeing B-727-100, N189FE, registered to Federal Express Corporation, experienced a number 3, engine failure and fire during takeoff at the Memphis International Airport in Memphis, Tennessee. The airplane was operated by the Federal Express Corporation under the provisions of Title 14 CFR Part 121, and instrument flight rules. Visual meteorological conditions prevailed and a company IFR Flight plan was filed for the flight to Indianapolis, Indiana. The airline transport pilot, co-pilot and flight engineer were not injured, and the airplane sustained minor damage to the # 3 engine. The flight was originating from Memphis, Tennessee, at the time of the incident.</p> <p>According to Federal Express the flight had a normal start and taxi to runway 36R. The crew accomplished a normal takeoff using standard power. At 100 feet above ground level (AGL) the #3 engine fire warning light with normal engine indications illuminated. The captain made the takeoff and gave control of the aircraft to the first officer after cleaning up the airplane. The first officer flew visual pattern to runway 36C while the captain and second officer accomplished the engine fire/severe damage checklist. During the procedure the #3 oil low pressure light came on and the #3 generator tripped off. Also, the #3 exhaust gas temperature (EGT) started to rise above the red line and fluctuate. The #3 engine was shut down in accordance with the engine fire/severe damage checklist. The fire warning light did not go out until the second fire bottle was used. An emergency was declared with the tower. The captain took control of the airplane at 1000 feet AGL and made the landing on runway 36C. They made a normal landing and taxied clear of the runway. Emergency crews inspected the airplane and observed no indication of fire. They subsequently did a normal taxi back to the gate and there was a normal shutdown.</p> <p>Examination of the engine found the starter impeller missing from the starter, however it was found in the engine cowling. The bottom of the lower left side of the engine was burned with holes in the combustion chamber fan duct, but there were no penetrations. The N1 rotor was free to rotate and the fan rotated concurrently with the low pressure turbine. There was no apparent damage to the first stage fan blades and fourth stage turbine blades. The combustion chamber fan duct had two holes and axial split as follows: There was a 4 1/2- inch long axial by 4-inch wide circumferential hole at the 8 o'clock, 18 1/2-inches from the front flange. There was a 6-inch long axial split at the 7 o'clock, 8 1/2-inches from the front flange. There was a 3-inch hole with the edge pedaled outward at the 6 o'clock, 20-inches from the forward flange. The acoustic material was visible in the holes and was intact.</p> <p>The starter turbine was missing from the starter assembly, but the turbine was recovered from the cowling. The turbine impeller was intact, except for one turbine impeller vane that was broken across the airfoil 1/4-inch above the hub. The fractured airfoil had an approximately 1/8-inch long section of the forward edge that was flat and the remainder of the fracture surface was at a 45 degree angle. All of the tips on the full length airfoils had rub marks with material displaced away from the direction of rotation. The starter shaft was separated 2 1/4-inchs from the impeller.</p>					
FACTUAL REPORT - AVIATION					
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National Transportation Safety Board

**FACTUAL REPORT**

**AVIATION**

SAFETY BOARD


NTSB ID: ATL011A083


Occurrence Date: 07/13/2001

Occurrence Type: Incident

Narrative (Continued)

The bearing was broken and rubbed flush to the shaft. The ignition exciter box brackets were burned and the box was hanging by the cable. The ignition exciter box was burned open. The engine was not disassembled.

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>		NTSB ID: ATL011A083			
		Occurrence Date: 07/13/2001			
		Occurrence Type: Incident			
<b>Landing Facility/Approach Information</b>					
Airport Name	Airport ID:	Airport Elevation	Runway Used	Runway Length	Runway Width
Memphis International Arpt	MEM	332 Ft. MSL	36R	9000	150
Runway Surface Type: Asphalt					
Runway Surface Condition: Dry					
Type Instrument Approach: ILS-complete; Visual					
VFR Approach/Landing: Precautionary Landing					
<b>Aircraft Information</b>					
Aircraft Manufacturer		Model/Series		Serial Number	
Boeing		B-727-100		19082	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 5	Certified Max Gross Wt.	161000 LBS	Number of Engines: 3	
Engine Type:	Engine Manufacturer:	Model/Series:	Rated Power:		
Turbo Fan	P&W Canada	JT8D-7B	14000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection	Date of Last Inspection	Time Since Last Inspection	Airframe Total Time		
Continuous Airworthiness	07/2001	12 Hours	65531 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? No	ELT Operated? No	ELT Aided in Locating Accident Site? No			
<b>Owner/Operator Information</b>					
Registered Aircraft Owner		Street Address			
Federal Express Corporation		2005 CORPORATE AVE.			
		City	State	Zip Code	
		MEMPHIS	TN	38132	
Operator of Aircraft		Street Address			
Same as Reg'd Aircraft Owner		Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As:			Operator Designator Code: FDEA		
- Type of U.S. Certificate(s) Held:					
Air Carrier Operating Certificate(s): Cargo; Flag Carrier/Domestic; Supplemental					
Operating Certificate: Large Aircraft Operator			Operator Certificate:		
Regulation Flight Conducted Under: Part 121: Air Carrier					
Type of Flight Operation Conducted: Scheduled; Domestic; Cargo					
FACTUAL REPORT - AVIATION					

 <p><b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b></p>	NTSB ID: ATL01IA083
	Occurrence Date: 07/13/2001
	Occurrence Type: Incident

**First Pilot Information**

Name On File	City On File	State On File	Date of Birth On File	Age 44
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Sex: M	Seat Occupied: Left	Principal Profession: Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport

Airplane Rating(s): Multi-engine Land

Rotorcraft/Glider/LTA:

Instrument Rating(s): Airplane

Instructor Rating(s): None

Type Rating/Endorsement for Accident/Incident Aircraft? Yes	Current Biennial Flight Review? 05/2001
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Medical Cert.: Class 1	Medical Cert. Status: Unknown	Date of Last Medical Exam:
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- 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	4468	3408		4468						
Pilot In Command(PIC)										
Instructor										
Last 90 Days	97	97		97						
Last 30 Days	17	17		17						
Last 24 Hours	1	1		1						

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot? Yes
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**Flight Plan/Itinerary**

Type of Flight Plan Filed: IFR

Departure Point Same as Accident/Incident Location	State	Airport Identifier MEM	Departure Time 0428	Time Zone CDT
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Destination Indianapolis	State IN	Airport Identifier IND	
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Type of Clearance: IFR

Type of Airspace: Class B

**Weather Information**

Source of Briefing: Company


Method of Briefing: Teletype

 <p><b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b></p>	NTSB ID: ATL01IA083
	Occurrence Date: 07/13/2001
	Occurrence Type: Incident

<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
MKL	0453	CDT	434 Ft. MSL	120 NM	180 Deg. Mag.
Sky/Lowest Cloud Condition: Clear			Ft. AGL	Condition of Light: Night	
Lowest Ceiling: Overcast		3600 Ft. AGL		Visibility: 10 SM	Altimeter: 29.99 "Hg
Temperature: 23 °C	Dew Point: 17 °C	Wind Direction: 20		Density Altitude: 1279 Ft.	
Wind Speed: 6	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					

<b>Accident Information</b>		
Aircraft Damage: Minor	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				1	1
Cabin Attendants					
Other Crew					
Passengers					
- TOTAL ABOARD -				3	3
Other Ground					
- GRAND TOTAL -				3	3

 National Transportation Safety Board <b>FACTUAL REPORT</b> AVIATION	NTSB ID: ATL01IA083
	Occurrence Date: 07/13/2001
	Occurrence Type: Incident

Administrative Information

Investigator-In-Charge (IIC)  
BUTCH WILSON

Additional Persons Participating in This Accident/Incident Investigation:

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