Analysis

NTSB investigators traveled in support of this investigation and used data obtained from various sources to prepare this aircraft accident report.

The NTSB's full report is available at http://www.ntsb.gov/investigations/AccidentReports/Pages/AccidentReports.aspx. The Aircraft Accident Report number is NTSB/AAR-18/01.

On October 28, 2016, about 1432 central daylight time, American Airlines flight 383, a Boeing 767-323, N345AN, had started its takeoff ground roll at Chicago O'Hare International Airport, Chicago, Illinois, when an uncontained engine failure in the right engine and subsequent fire occurred. The flight crew aborted the takeoff and stopped the airplane on the runway, and the flight attendants initiated an emergency evacuation. Of the 2 flight crewmembers, 7 flight attendants, and 161 passengers on board, 1 passenger received a serious injury and 1 flight attendant and 19 passengers received minor injuries during the evacuation. The airplane was substantially damaged from the fire. The airplane was operating under the provisions of 14 Code of Federal Regulations Part 121. Visual meteorological conditions prevailed at the time of the accident.

Flight Events

Takeoff-rejected takeoff - Uncontained engine failure
Other - Fire/smoke (non-impact)
Other - Evacuation

Probable Cause

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

The failure of the high-pressure turbine (HPT) stage 2 disk, which severed the main engine fuel feed line and breached the right main wing fuel tank, releasing fuel that resulted in a fire on the right side of the airplane during the takeoff roll. The HPT stage 2 disk failed because of low-cycle fatigue cracks that initiated from an internal subsurface manufacturing anomaly that was most likely not detectable during production inspections and subsequent in service inspections using the procedures in place. Contributing to the serious passenger injury was (1) the delay in shutting down the left engine and (2) a flight attendant’s deviation from company procedures, which resulted in passengers evacuating
from the left overwing exit while the left engine was still operating. Contributing to the delay in shutting down the left engine was (1) the lack of a separate checklist procedure for Boeing 767 airplanes that specifically addressed engine fires on the ground and (2) the lack of communication between the flight and cabin crews after the airplane came to a stop.

Findings

Aircraft-Aircraft power plant-Engine (turbine/turboprop)-Turbine section-Failure - C
Aircraft-Aircraft systems-Fuel system-(general)-Damaged/degraded
Personnel issues-Task performance-Use of equip/info-Use of policy/procedure-Cabin crew - F
Personnel issues-Action/decision-Action-Delayed action-Flight crew - F
Personnel issues-Task performance-Communication (personnel)-Lack of communication-Flight crew - F
Personnel issues-Task performance-Communication (personnel)-Lack of communication-Cabin crew - F
Organizational issues-Development-Manufacture/production-Equipment manufacture-Manufacturer - C
Organizational issues-Development-Design-Task design-Manufacturer - F

Pilot Information

<table>
<thead>
<tr>
<th>Certificate</th>
<th>Airline Transport; Flight Engineer</th>
<th>Age:</th>
<th>61</th>
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<tr>
<td>Airplane Rating(s):</td>
<td>Multi-engine Land</td>
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<td>Instrument Rating(s):</td>
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<td>Other Aircraft Rating(s):</td>
<td>Glider</td>
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<tr>
<td>Instructor Rating(s):</td>
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<tr>
<td>Flight Time:</td>
<td>17400 hours (Total, all aircraft), 4000 hours (Total, this make and model)</td>
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Co-Pilot Information

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<td>Instrument Rating(s):</td>
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<td>Other Aircraft Rating(s):</td>
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<tr>
<td>Instructor Rating(s):</td>
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<tr>
<td>Flight Time:</td>
<td>22000 hours (Total, all aircraft), 1846 hours (Total, this make and model)</td>
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Aircraft and Owner/Operator Information

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<thead>
<tr>
<th>Aircraft Make:</th>
<th>BOEING</th>
<th>Registration:</th>
<th>N345AN</th>
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</thead>
<tbody>
<tr>
<td>Model/Series:</td>
<td>767 323</td>
<td>Engines:</td>
<td>2 Turbo Fan</td>
</tr>
<tr>
<td>Operator:</td>
<td>AMERICAN AIRLINES INC</td>
<td>Engine Manufacturer:</td>
<td>General Electric</td>
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<td>Operating Certificate(s)</td>
<td>Flag carrier (121)</td>
<td>Engine Model/Series:</td>
<td>CF6-80C2 B6</td>
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<td>Held:</td>
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<tr>
<td>Flight Conducted Under:</td>
<td>Part 121: Air Carrier - Scheduled</td>
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</table>
Meteorological Information and Flight Plan

<table>
<thead>
<tr>
<th>Conditions at Accident Site:</th>
<th>Visual Conditions</th>
<th>Condition of Light:</th>
<th>Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation Facility, Elevation:</td>
<td>KORD</td>
<td>Weather Information Source:</td>
<td>Unknown</td>
</tr>
<tr>
<td>Lowest Ceiling:</td>
<td>Overcast / 25000 ft agl</td>
<td>Wind Speed/Gusts, Direction:</td>
<td>11 knots / , 180°</td>
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<tr>
<td>Temperature:</td>
<td>16 °C</td>
<td>Visibility</td>
<td>10 Miles</td>
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<td>Precipitation and Obscuration:</td>
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<td>Departure Point:</td>
<td>Chicago, IL (KORD)</td>
<td>Destination:</td>
<td>Miami, FL (KMIA)</td>
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</table>

Airport Information

| Airport: | Chicago O'Hare International A (KORD) | Runway Surface Type: | Asphalt; Concrete |
| Runway Used: | 28R | Runway Surface Condition: | Dry |
| Runway Length/Width: | 13000 ft / 150 ft |

Wreckage and Impact Information

| Crew Injuries: | 1 Minor, 8 None | Aircraft Damage: | Substantial |
| Passenger Injuries: | 1 Serious, 19 Minor, 141 None | Aircraft Fire: | On-Ground |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Latitude, Longitude: | 41.968889, -87.917778 |

Administrative Information

| Investigator In Charge (IIC): | Effie Lorenda Ward | Adopted Date: | 02/06/2018 |
| Note: | The NTSB traveled to the scene of this accident. |
| Investigation Docket: | [http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=94308](http://dms.ntsb.gov/pubdms/search/dockList.cfm?mKey=94308) |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report.