



# Aviation Investigation Preliminary Report

<b>Location:</b>	Louisville, KY	<b>Accident Number:</b>	DCA26MA024
<b>Date &amp; Time:</b>	November 4, 2025, 17:14 Local	<b>Registration:</b>	N259UP
<b>Aircraft:</b>	McDonnell Douglas MD-11F	<b>Injuries:</b>	14 Fatal, 2 Serious, 21 Minor
<b>Flight Conducted Under:</b>	Part 121: Air carrier - Non-scheduled		

On November 4, 2025, about 1714 eastern standard time (EST), United Parcel Service (UPS) flight 2976, a Boeing (McDonnell-Douglas) MD-11F airplane, N259UP, was destroyed after it impacted the ground shortly after takeoff from runway 17R at Louisville Muhammad Ali International Airport (SDF), Louisville, Kentucky. The 3 crewmembers aboard the airplane and 11 people on the ground were fatally injured. There were 23 others on the ground who were injured. Flight 2976 was a domestic cargo flight operating under the provisions of Title 14 *Code of Federal Regulations (CFR)* Part 121 from SDF to Daniel K. Inouye International Airport (HNL), Honolulu, Hawaii.

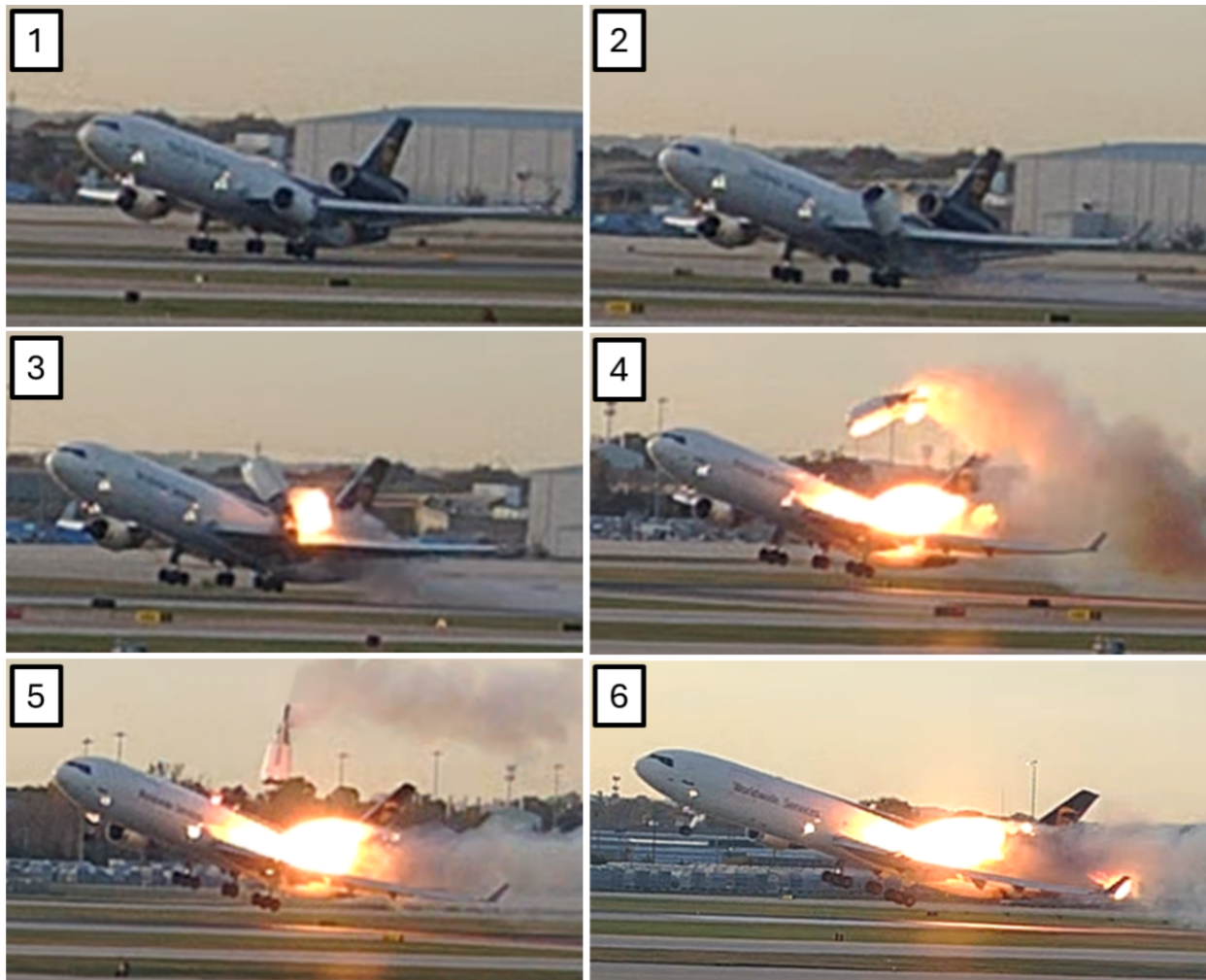
In response to the accident, the NTSB traveled to SDF on November 5, 2025, and started the process of documenting the accident site, and collecting the perishable data necessary for the investigation. As part of the investigative process, the NTSB invited qualified parties to participate in the investigation. These included the Federal Aviation Administration (FAA), UPS, The Boeing Company, Independent Pilots Association (IPA), General Electric (GE) Aerospace, and Teamsters Airline Division.

The parties were formed into specialized investigative groups led by NTSB group chairmen in the areas of Structures, Systems, Powerplants, Maintenance, Air Carrier Operations and Human Performance, Hazardous Materials, Aircraft Performance, Materials, Cockpit Voice Recorder (CVR), and Flight Data Recorder (FDR). A NTSB Air Traffic Controller (ATC) specialist was on site to collect ATC information, but an ATC group was not formed. NTSB Board Member Inman was the Board Member on scene.

## History of Flight

UPS flight 2976 received their takeoff clearance from SDF ATC tower about 1711 and the flight crew acknowledged the takeoff clearance. The taxi and takeoff roll were uneventful until the

airplane rotated for takeoff. Airport surveillance video of the airplane showed the left (No. 1) engine and pylon separating from the wing shortly after airplane rotation, with a fire igniting on the left engine while it traversed above the fuselage and subsequently impacted the ground (see figure 1). A fire ignited near the area of the left pylon attachment to the wing, which continued until ground impact.



**Figure 1.** Still images from an airport surveillance video showing the left engine and left pylon separation from the left wing. (Source: UPS)

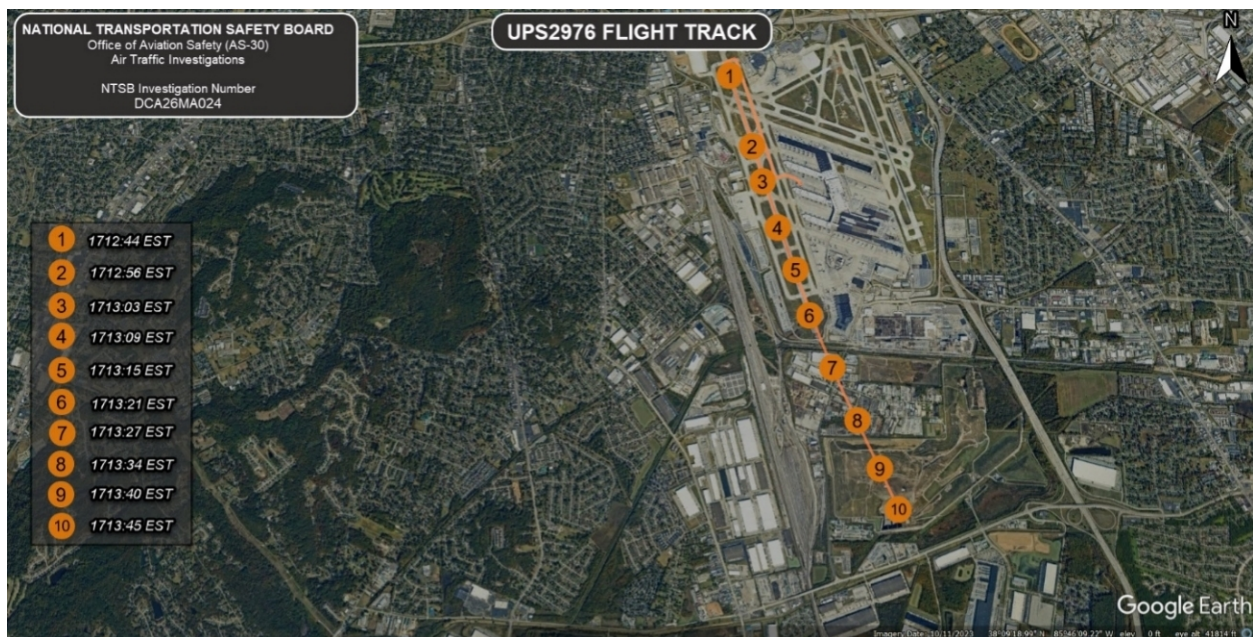
The airplane initially climbed but did not get higher than about 30 ft above ground level (agl) according to radio altitude data from the FDR. (Based on FAA-provided ADS-B data, the last data point showed 481 ft mean sea level [msl] and 100 ft agl.) The airplane cleared the blast fence beyond the end of runway 17R, but the left main landing gear impacted the roof of a UPS Supply Chain Solutions warehouse at the southern edge of the airport (see figures 2 and 3). The airplane then impacted a storage yard and two additional buildings, including a petroleum recycling facility, and was mostly consumed by fire. The wreckage area continued from the



UPS warehouse to about 3,000 ft south-southeast of it (see figure 4). The accident site debris was centered about 38° 8' 49.85" north by 85° 44' 3.86" west.



**Figure 2.** The fire in the area of the left pylon attachment to the wing continued as the airplane cleared the blast fence.



**Figure 3.** Graphic depicting the flight track of UPS flight 2976 based on ADS-B data.



**Figure 4.** Accident site composite view created from aerial imaging overlaid on a Google Earth image. The upper end of the yellow-dashed bracket is the initial impact between the airplane landing gear and the UPS building roof.

A witness in the SDF ATC tower reported that the takeoff speed appeared normal for that type of aircraft; however, the climb rate was not normal, as the airplane did not climb above the tower's height of approximately 200 feet agl. Another witness reported that the airplane stopped climbing and began to lose altitude before rolling slightly to the left.

### **Crew Experience**

The captain, who was the pilot monitoring, held an airline transport pilot certificate with a type rating for the MD-11. The captain had accumulated about 8,613 total hours of flight experience as reported to the FAA, of which 4,918 hours were in the accident airplane make and model.

The first officer (FO), who was the pilot flying, held an airline transport pilot certificate with a type rating for the MD-11. The FO had accumulated about 9,200 total hours of flight experience as reported to the FAA, of which about 994 hours were in the accident airplane make and model.



The relief officer (RO) held an airline transport pilot certificate with a type rating for the MD-11. The RO had accumulated about 15,250 total hours of flight experience as reported to the FAA, of which 8,775 hours were in the accident airplane make and model.

### **Recorders**

The airplane was equipped with a FDR and a CVR, which were both recovered from the accident scene and transported to the NTSB Vehicle Recorders Laboratory in Washington, DC. Data from both the CVR and FDR were downloaded successfully. The CVR contained about 2 hours and 4 minutes of recorded data, including the entirety of the accident flight. The FDR contained about 63 hours of data that spanned 24 flights, including the accident flight. The FDR recorded about 450 parameters of flight data. The flight data for the accident flight started about 1707 EST, with the takeoff roll starting about 1712 EST. The flight data ended about 1713:30 EST. The NTSB convened separate CVR and FDR Groups, composed of qualified party members, for transcribing the accident flight recording from the CVR and validating the flight data from the FDR, respectively.

### **Airplane and Operator Information**

The MD-11 is a three-engine widebody passenger airplane originally manufactured by McDonnell-Douglas, which subsequently merged with The Boeing Company. The MD-11F is the freighter version of the MD-11. The MD-11 can be equipped with either GE CF-6 series or Pratt and Whitney PW4000 series engines. The accident airplane was equipped with GE CF-6 engines. The MD-11 was developed from the McDonnell-Douglas DC-10 series airplane.

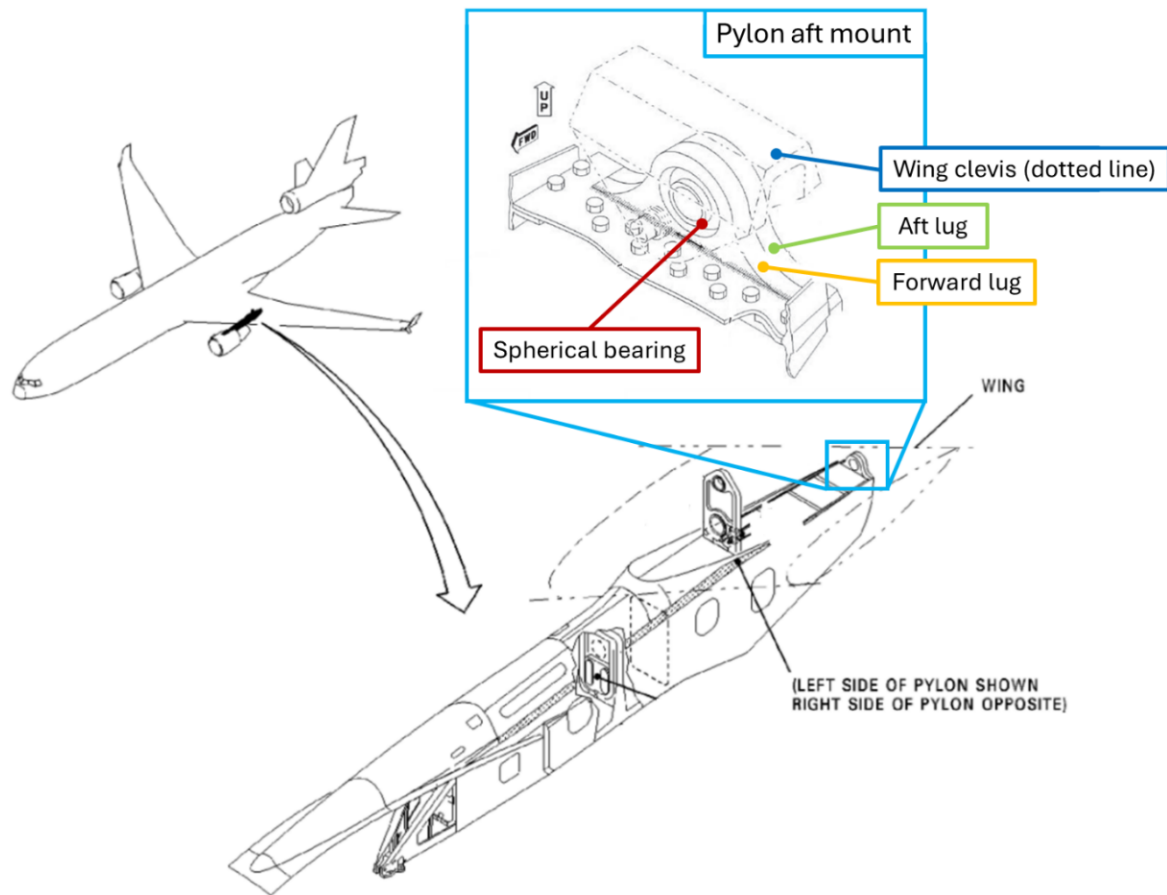
UPS is a cargo airline and is based in Louisville, Kentucky. The company operates a variety of aircraft including Boeing 757-200F, 767-300F, A300-600F, MD-11F, 747-400F, and 747-8F airplanes. As part of FAA requirements, the accident airplane was equipped with ADS-B Out.

### **MD-11 Engine Pylon-to-Wing Connection**

The left (No. 1) and right (No. 3) engines of the MD-11 airplane are attached to the underside of pylons that are in turn attached to the underside of each wing. The center (No. 2) engine is attached to the base of the vertical stabilizer. The left and right pylon attaches to their respective wing via a forward mount bulkhead, a thrust link assembly, and an aft mount bulkhead. (For simplification, this report will refer to these bulkheads as the “forward mount” and the “aft mount”.) The forward mount contains two spherical bearings that are vertically aligned (upper and lower) that attach to the wing.

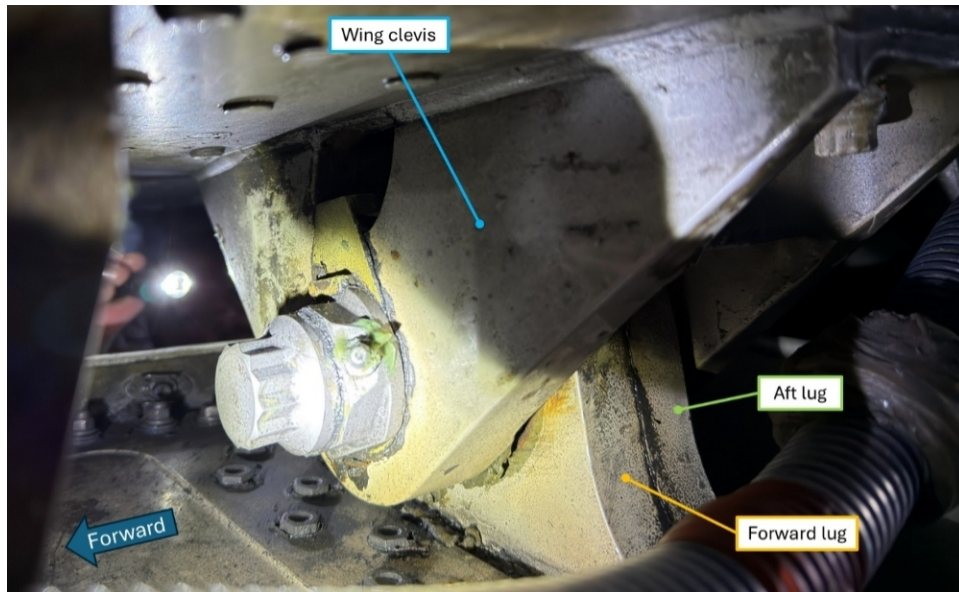
The thrust link assembly, located immediately behind the forward mount’s lower spherical bearing, primarily transmits thrust loads. The pylon aft mount is an assembly composed of two independent fittings bolted together, with lugs (forward lug and aft lug) that house a single spherical bearing (see figures 5 and 6). For this report, references to the pylon aft mount spherical bearing includes both the bearing’s ball element (sphere) and its outer race. A clevis

on the underside of each wing ("wing clevis") connects to the pylon aft mount via attachment hardware.



**Figure 5.** The pylon-to-wing mount diagram, with the inset image showing details of the pylon aft mount connection to the wing clevis. (Source: Boeing, edited by NTSB)





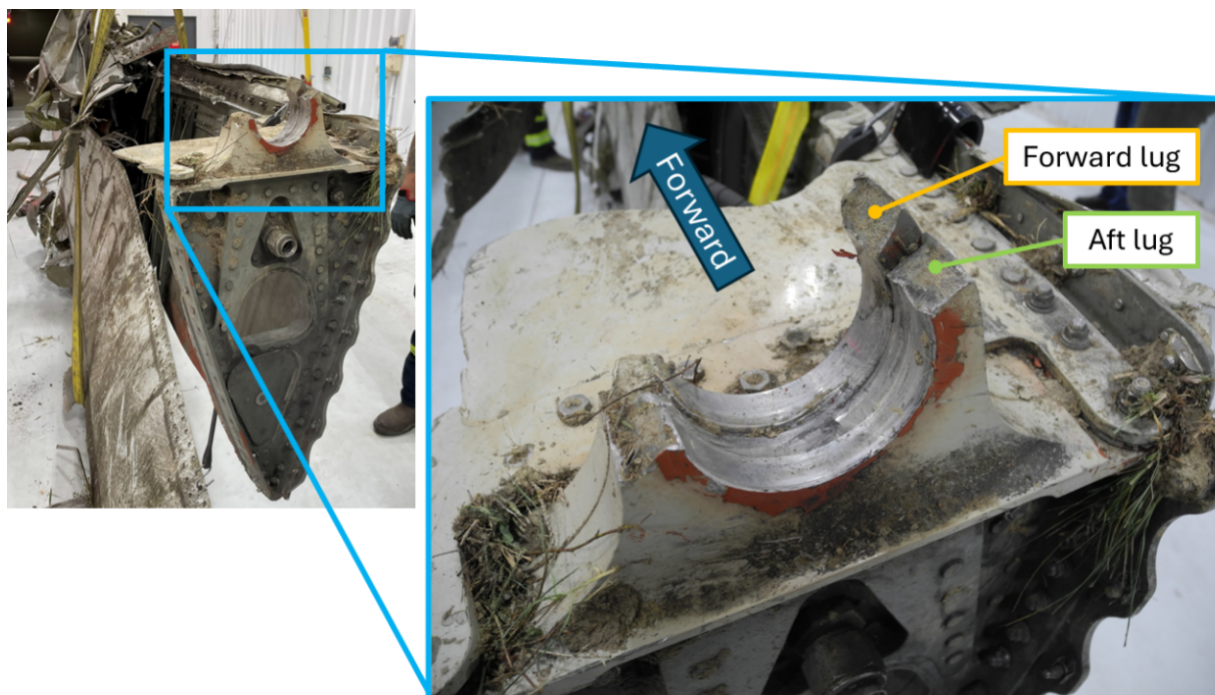
**Figure 6.** An exemplar installation of the pylon aft mount to the wing clevis. The aft mount spherical bearing is obscured by the wing clevis.

### **Recovery Operations and Wreckage Examination**

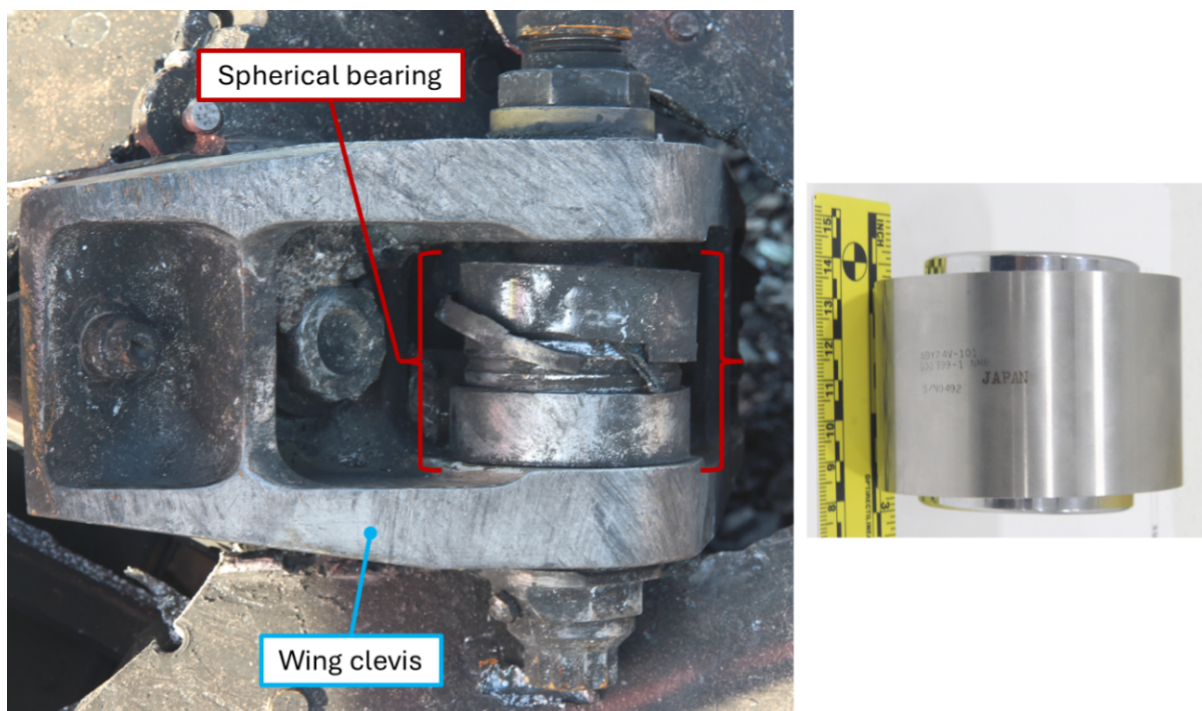
The airplane wreckage was spread over a wide area and significantly fragmented and burned. The left engine, left pylon, including its forward and aft mounts, fragments of engine fan blades, and separated pieces from the left engine were found on and adjacent to runway 17R. Recovered portions were transferred to a secure hangar on the airport property for further examination by investigators.

The left pylon aft mount's forward and aft lugs were both found fractured near their 2 o'clock (inboard fracture) and 9 o'clock (outboard fracture) positions when in the aft-looking-forward frame of reference (see figure 7). The fractured and separated upper portions of the forward and aft lugs were found adjacent to runway 17R. The left wing clevis, aft mount spherical bearing, and aft mount attachment hardware were found with a portion of the left wing at the accident site. The bolt, spherical bearing, and associated hardware remained attached to the wing clevis. The spherical bearing outer race had fractured circumferentially, exposing the ball element (see figure 8).

The right engine remained attached to the right wing pylon, both found at the accident site. The right wing pylon-to-wing forward and aft mounts had separated from the right wing pylon but were found about 87 ft from the right engine. The right pylon aft mount remained attached to the right wing clevis.



**Figure 7.** The separated left pylon after recovery (left image) and the left pylon aft mount's fractured forward and aft lugs (right/enlarged image).

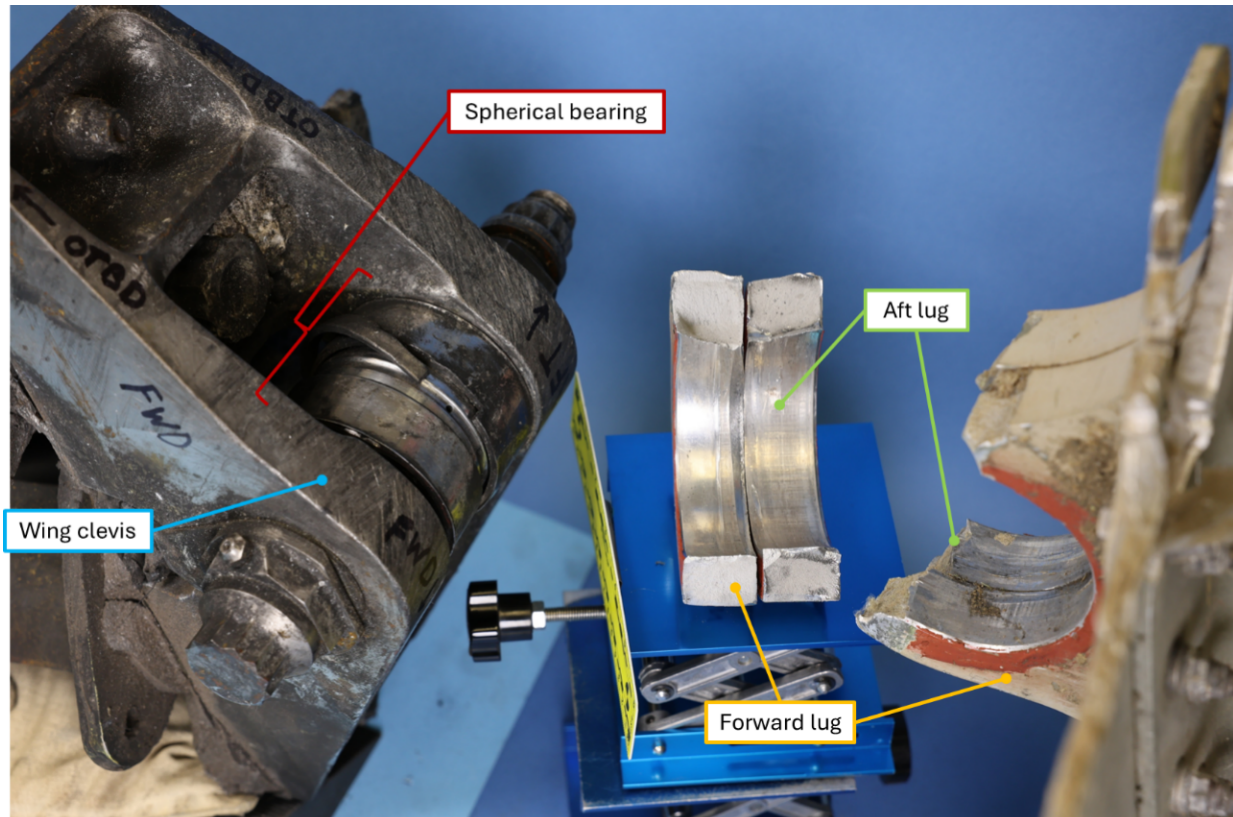


**Figure 8.** The left wing clevis, fractured spherical bearing (marked by the red brackets), and associated attachment hardware found at the accident site (left) and an exemplar spherical bearing (right).



## **NTSB Materials Laboratory Examination**

The left pylon aft mount, fractured lugs from the left pylon aft mount, and the left wing clevis (containing the aft mount spherical bearing and attachment hardware) were retained for further examination at the NTSB Materials Laboratory (see figure 9). The right pylon aft mount and wing clevis assembly as well as two engine fan blade fragments found on runway 17R were also retained for further examination at the NTSB Materials Laboratory.



**Figure 9.** The left pylon aft mount, the fractured and separated forward and aft lugs, and the left wing clevis containing the attachment hardware and fractured spherical bearing.

After initial cleaning of the fracture surfaces, examination of the left pylon aft mount lug fractures found evidence of fatigue cracks in addition to areas of overstress failure. On the aft lug, on both the inboard and outboard fracture surfaces, a fatigue crack was observed where the aft lug bore met the aft lug forward face. For the forward lug's inboard fracture surface, fatigue cracks were observed along the lug bore. For the forward lug's outboard fracture surface, the fracture consisted entirely of overstress with no indications of fatigue cracking. The forward top flange of the aft mount assembly was examined for indications of deformation or pre-existing fractures, but no indications were found. The spherical bearing was removed from the wing clevis for further evaluation (see figure 10).



**Figure 10.** The spherical bearing and attachment hardware after removal from the left wing clevis.

### **Maintenance and Inspections**

At the time of the accident, N259UP had accumulated a total time of about 92,992 hours and 21,043 cycles. The accident airplane was maintained under a continuous airworthiness maintenance program (CAMP). A review of the inspection tasks for the left pylon aft mount found both a general visual inspection (GVI) and a detailed visual inspection of the left pylon aft mount, required by UPS's maintenance program at a 72-month interval, was last accomplished on October 28, 2021. A 24-month/4,800 hour lubrication task of the pylon thrust links and pylon spherical bearings was last accomplished on October 18, 2025. A special detailed inspection (SDI) of the left pylon aft mount lugs would have been due at 29,200 cycles and of the left wing clevis support would have been due at 28,000 cycles. The accident airplane records showed these two SDI tasks had not been accomplished (the airplane had 21,043 cycles).

### **Safety Actions**

UPS grounded their MD-11 fleet on November 7, 2025, as a precautionary measure and at the recommendation of Boeing. The FAA issued Emergency Airworthiness Directive (AD) 2025-23-51 on November 8, 2025, that prohibited further flight of MD-11 and MD-11F airplanes until they were inspected and all applicable corrective actions were performed using a method approved by the FAA Continued Operational Safety Branch (AIR-520). The FAA subsequently



issued Emergency AD 2025-23-53 on November 14, 2025, which superseded Emergency AD 2025-23-51 and included both MD-11 and DC-10 series airplanes, the latter based on their similar design to the MD-11.

### **Similar Events**

On May 25, 1979, about 1504 central daylight time, American Airlines flight 191, a McDonnell-Douglas DC-10-10 aircraft, crashed into an open field just short of a trailer park about 4,600 ft northwest of the departure end of runway 32R at Chicago-O'Hare International Airport, Chicago, Illinois. Flight 191 was taking off from runway 32R. The weather was clear and the visibility was 15 miles. During the takeoff rotation, the left engine and pylon assembly and about 3 ft of the leading edge of the left wing separated from the airplane and fell to the runway. Flight 191 continued to climb to about 325 ft agl and then began to roll to the left. The airplane continued to roll to the left until the wings were past the vertical position, and during the roll, the airplane's nose pitched down below the horizon.

Flight 191 crashed into the open field and the wreckage scattered into an adjacent trailer park. The airplane was destroyed in the crash and subsequent fire. Two hundred and seventy-one persons on board Flight 191 were killed; two persons on the ground were killed, and two others were seriously injured. An old aircraft hangar, several automobiles, and a mobile home were destroyed. The NTSB investigated American Airlines flight 191 accident, see NTSB No. DCA79AA017 and aircraft accident report AAR-79-17.

The NTSB's investigation of UPS flight 2976 is ongoing.

### **Aircraft and Owner/Operator Information**

<b>Aircraft Make:</b>	McDonnell Douglas	<b>Registration:</b>	N259UP
<b>Model/Series:</b>	MD-11F	<b>Aircraft Category:</b>	Airplane
<b>Amateur Built:</b>			
<b>Operator:</b>	UNITED PARCEL SERVICE CO	<b>Operating Certificate(s) Held:</b>	Flag carrier (121)
<b>Operator Designator Code:</b>			

## Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	VMC	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	KSDF, 501 ft msl	<b>Observation Time:</b>	16:56 Local
<b>Distance from Accident Site:</b>	0 Nautical Miles	<b>Temperature/Dew Point:</b>	17°C / 5°C
<b>Lowest Cloud Condition:</b>	Scattered / 20000 ft AGL	<b>Wind Speed/Gusts, Direction:</b>	6 knots / None, 120°
<b>Lowest Ceiling:</b>	Broken / 25000 ft AGL	<b>Visibility:</b>	10 miles
<b>Altimeter Setting:</b>	30.22 inches Hg	<b>Type of Flight Plan Filed:</b>	IFR
<b>Departure Point:</b>	Louisville, KY	<b>Destination:</b>	Honolulu, HI (PHNL)

## Wreckage and Impact Information

<b>Crew Injuries:</b>	3 Fatal	<b>Aircraft Damage:</b>	Destroyed
<b>Passenger Injuries:</b>		<b>Aircraft Fire:</b>	Both in-flight and on-ground
<b>Ground Injuries:</b>	11 Fatal, 2 Serious, 21 Minor	<b>Aircraft Explosion:</b>	None
<b>Total Injuries:</b>	14 Fatal, 2 Serious, 21 Minor	<b>Latitude, Longitude:</b>	38.14718, -85.734333

## Administrative Information

<b>Investigator In Charge (IIC):</b>	Shin, Chihoon
<b>Additional Participating Persons:</b>	Heidi Kemner; FAA Jacob Chambers; UPS Nick James; Independent Pilots Association James Mall; GE Nathan Williams; Boeing Chuck Landis; Teamsters Airline Division
<b>Investigation Class:</b>	<a href="#">Class 1</a>
<b>Note:</b>	The NTSB traveled to the scene of this accident.