

National Transportation Safety Board

Office of Aviation Safety

Washington, DC 20594



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MAINTENANCE/HUMAN PERFORMANCE

Group Chair's Factual Report

April 27, 2023

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A. ACCIDENT

Location: Miami, FL
Date: June 21, 2022
Time: 1738 Eastern Standard Time
2138 Universal Coordinate Time (UTC)
Airplane: Boeing (McDonnell Douglas) DC-9-82 (Serial No. 53027), Dominican Republic Registration HI-1064, RED Air flight 203

B. MAINTENANCE/HUMAN PERFORMANCE GROUP

Group Chair Pocholo Cruz
National Transportation Safety Board
Washington, DC

Group Member Katherine Wilson
National Transportation Safety Board
Washington, DC

Group Member Dan Marcotte
The Boeing Company
Seal Beach, CA

C. SUMMARY

On June 21, 2022, about 1738 local time, RED Air flight 203, a Boeing DC9-82, HI-1064 experienced a Lefthand Main Landing Gear failure shortly after landing on runway 09 at Miami International Airport (MIA), Miami, Florida. The airplane departed runway 09 and came to a stop in the grassy area between runway 09 and 30. A post-crash fire occurred and was extinguished by ARFF. The airplane was evacuated, and 4 passengers received minor injuries. The flight was a 14 CFR Part 129 scheduled international passenger flight from Santo Domingo, Dominican Republic (SDQ) to MIA.

D. DETAILS OF THE INVESTIGATION

According to Boeing and FAA Records, the airplane was manufactured and delivered to American Airlines on December 18, 1990. American Airlines flew the airplane until August 20, 2014 (end of airplane lease). The owner, HNB Investment Corp, sold the airplane to Aerothrust Holdings Leasing LLC on May 28, 2015. The airplane was then subsequently sold and parked by Heflin Business Inc. on January 21, 2016. The airplane was then sold and exported to Laser Airlines in Venezuela on August 21/22, 2017; at which time it was de-registered by the FAA. The airplane was flown by Laser Airlines (Venezuelan registration YV3367) until March 2020. The

airplane was then parked until it was purchased and parked by RED Air on February 15, 2021 and given the Dominican Republic registration HI1064. RED Air began operating the airplane on November 3, 2021.

According to the RED Air maintenance records, at the time of the accident, the airplane had accumulated 69,838.31 hours and 36,990 cycles.

D.1 Department of Transportation (DOT) and Federal Aviation Administration (FAA)

The DOT and the FAA allows foreign air carriers to conduct scheduled operations within the United States in accordance with its Air Operator Certificate (AOC) and FAA issues Foreign Operations Specification (OpSpecs). In general, the FAA's authority to regulate foreign operators using foreign-registered aircraft is limited to assuring compliance with all the applicable operating rules, the ability to safely navigate and communicate within the U.S. National Airspace System (NAS) and protecting persons and property on the ground.

The FAA International Field Office (IFO) Management Branch (AFS-54) determines and assigns international responsibility to an IFO for oversight of operations under Part 129 Foreign Operations. The Miami IFO was assigned to oversee the RED Air Certificate (Identification No. REDF628F). The RED Air OpSpecs were signed by the FAA on October 12, 2021.

The OpSpecs issued to RED Air were limited to Part A Operations Specifications - General and Part C - Airplane Terminal Instrument and Airport Authorizations and Limitations. The FAA does not issue Part D Operations Specification - Aircraft Maintenance to Part 129 foreign air carriers and foreign persons who conduct operations with only foreign registered aircraft (FAA Order 8900.1 Vol 12 Chapter 4 Section 5.3.b). Part D would typically contain Authorization and Limitations related to Maintenance such as the airworthiness maintenance program, Minimum Equipment list authorizations, Aging aircraft programs to name a few. Airworthiness Ramp inspection of foreign registered aircraft were also limited to mostly maintenance logbook items. Should the Aviation Safety Inspectors require to see the non-US registered aircraft maintenance program a written request must be made to the foreign air operator or the state of CAA of the foreign air operator (FAA Order 8900.1 Vol 12 Chapter 4 Section 10).

D.2 Dominican Republic Civil Aviation

The Comision Investigadora de Accidentes de Aviacion (CIAA) was created to conduct the technical investigation into any accident or serious incident involving civil aircraft in Dominican Republic territory and in international waters when Dominican-registered aircraft were involved. The CIAA is an independent body from the Instituto

Dominicano de Aviacion Civil (IDAC) and follows the guidelines set out in Annex 13 to the convention on international civil.

IDAC is the civil aviation authority of the Dominican Republic. The agency provides oversight and regulates aviation in the Dominican Republic, including airports, aircraft, and pilots.

D.3 Maintenance Documents

The Dominican Republic accredited representative provided the investigative team with RED Air maintenance documents which included the Life Limited Component Listing, Airworthiness Directive Listing, Major/Minor Damage Listing, Lefthand and Righthand Landing Gear Overhaul Records (See Attachment 1). Most of the maintenance records were in Spanish, faded, and at times difficult to read with the exception of the Landing Gear Overhaul Records. See Attachment 1.

D.3.1 Aircraft Logbooks

Investigators on scene were provided the on-board logbook which was also written in Spanish. Investigators used a Spanish to English translation program to review the discrepancies and corrective actions. The logbooks reviewed were dated from March 21, 2022, to June 21, 2022. A review of the logbook revealed normal routine maintenance/servicing of the airplane with no discrepancy or chronic issues with the accident airplane's landing gear. See Attachment 2.

D.3.2 Maintenance Program

During the on-scene investigation, investigators were provided with a Samsung Galaxy Tablet that contained several RED Air Manuals (i.e., RED Air Maintenance Program (in Spanish), Wiring Diagram Manuals, Standard Wiring Practices Manual, Structural Repair Manual, Minimum Equipment List, Illustrated Parts Catalog, Online Maintenance Guide, Engineering Technical Bulletins and Aircraft Maintenance Manual) for the DC-9-82. Once again, investigators used a Spanish to English translation program to review the RED Air manuals as required.

The RED Air DC-9-82 Maintenance Program (dated May 21, 2021; Edition 01) was an approved program by the Regulaciones Aeronauticas Dominicanas (RAD) and Dominican Republic authorities. The program was derived from several Boeing DC-9-82 documents (i.e., Maintenance Review Board Report, Maintenance Planning Document, Supplemental Inspection Document, Service Bulletins and Service Letters) and Pratt JT8D-200 Engine Maintenance Program. Further, the Maintenance Program Manual references FAA Airworthiness Directives for the DC-9-82.

The aircraft maintenance program consisted of:

Pre-Flight Check - performed before an aircraft was dispatched for flight. It consisted of external visual inspection/verification of conditions to determine the general condition of the structure, components, fluids, tire pressure, amount of fuel and lubricating oils. In addition, a visual inspection of the passenger cabin and cockpit was conducted for any issues. The check was referenced in task card RED-ING-2020-001. The last Pre-Flight Check accomplished on the accident airplane was on June 21, 2022, at SDQ.

Daily Service (Daily Walk Around) - performed every 24 hours and consisted of visual confirmation of safety, security and airworthiness of the aircraft since the last daily check. The check was similar to the pre-flight check and consisted of external visual inspection/verification of condition to determine the general condition of the structure, components, fluids, tire pressure, amount of fuel and lubricating oils. In addition, a visual inspection of the passenger cabin and cockpit was conducted for any issues. A maintenance release was written in the logbook. The check was referenced in task card RED-ING-2020-002. The last Daily Service accomplished on the accident airplane was on June 21, 2022, at SDQ.

'S' Service - performed every three days. The S Service consisted basically of a walk around inspection of the aircraft to examine for discrepancies and security, completion of records and review of the maintenance logbook. It was carried out in stations where there were line personnel and spare parts available to correct logbook entries and open items. The check was referenced in task card RED-ING-2020-003. The last 'S' Service accomplished on the accident airplane was on June 20, 2022, at SDQ (See Attachment 2).

'A' Service - performed every 450 flight hours. The check generally consisted of task cards that must be performed at specified intervals along with unscheduled tasks. The 'A' Service was accomplished at the following intervals:

- 1A - 450 flight hours
- 2A - 900 flight hours
- 4A - 1,800 flight hours

Task Cards were used based on the system interval requirements in RED-ING-2021-004. Maintenance personnel were required to make a record of compliance to the 'A' Service. Investigators could not determine when the last 'A' Service was accomplished because of limited records.

'C' Service - performed every 3600 flight hours or 18 months whichever came first. The C Service provided general inspection details of component installations in each zone. The C Service included checkup of all internal and

external areas of the aircraft, including adjacent structure, installation, system service, special items, correction of pending reports, review of the logbook, and a check of various significant structural items based on flight hours flown. The 'C' Service was accomplished at the following intervals:

- 1C - 3,600 flight hour or 18 Months
- 2C - 7,200 flight hours or 36 months
- 3C - 10,800 flight hour or 54 months
- 4C - 14,400 flight hours or 72 months
- 5C - 18,000 flight hours or 90 months
- 6C - 21,600 flight hours or 108 months
- 8C - 28,800 flight hours or 144 months

Investigators could not determine when the last 'C' Service was accomplished because of limited records.

D.3.3 Landing Gear

All the landing gears installed on the accident airplane were overhauled by Suncoast Landing Systems, Medley, FL, in August 2016. RED Air provided the following Landing Gear Component Tracking Information:

Landing Gear Component	Part Number	Serial Number	RED Air Program Limits (Cycles, Days, Years)	Description of Work	Last accomplished	Next accomplish	Organization Compliance by
Left Main Landing Gear	5930999-5501	CPT0718	20,000 Cycles, 3,650 Days, 10 Years	Restoration	35,405 cycles August 5, 2016	55,405 cycles August 3, 2026	Suncoast Landing Systems
Left Upper Lock Link	5935349-503	ALM0050	48,000 Cycles	Discard	35,405 cycles August 5, 2016	59,447 cycles	Suncoast Landing Systems
Bracket Assembly Bungee	5937032-1	AML0038	48,000 Cycles	Discard	35,405 cycles	59,725 cycles	Suncoast Landing Systems
Fixed Side Strut	5935848-501	LET457-83	150,000 Cycles	Discard	35,405 cycles	146,268 cycles	Suncoast Landing Systems
Right Main Landing Gear	5930999-5502	CPT1232	20,000 Cycles, 3,650 Days, 10 Years	Restoration	35,405 cycles August 5, 2016	55,405 cycles August 3, 2026	Suncoast Landing Systems
Right Upper Lock Link	5935349-503	AEC076	48,000 Cycles	Discard	35,405 cycles	53,816 cycles	Suncoast Landing Systems
Right Bracket Assembly Bungee	5937032-1	AML0081	48,000 Cycles	Discard	35,405 cycles	59,725 cycles	Suncoast Landing Systems
Right Fixed Side Strut	5935848-501	LET509-83	150,000 Cycles	Discard	35,405 cycles	146,005 cycles	Suncoast Landing Systems
Nose Landing Gear Assembly	5910447-5071	CP1784A	20,000 Cycles, 3,650 Days, 10 Years	Restoration	35,405 cycles August 29, 2016	55,405 Cycles August 27, 2026	Suncoast Landing Systems
Upper Lock Link	3914464-11	WP10100	46,500 Cycles	Discard	35,405 cycles	64,639 cycles	Suncoast Landing Systems
Lower Lock Link	3913958-513	CP11560	59,333 Cycles	Discard	35,405 cycles	74,568 cycles	Suncoast Landing Systems

D.3.4 Shimmy Damper

According to the Boeing MD-80 Maintenance Planning Document (Item No. 05-001-02), a service check of the aircraft nose and main gear wheel wells, which included the shimmy dampers, were to be visually checked for condition, security, and proper servicing every three days. The RED Air maintenance program accounted for the shimmy damper check during the airplane's 'S' Service, which was accomplished on June 20, 2022 (See Attachment 2). The maintenance records did not show any non-routines written up for the check of the shimmy dampers.

D.4 IDAC and Red Air Personnel Interviews

In December 2022, the investigative team travelled to the Dominican Republic to discuss the investigation with the Dominican authorities. During the visit, interviews were conducted with IDAC personnel as well as RED Air personnel. Transcripts from the interviews can be seen in Attachment 3.

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