



NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

October 31, 2017

Maintenance Factual

CEN17FA168

A. ACCIDENT CEN17FA168

Operator: Rico Aviation, L.L.C.
Location: Amarillo, TX
Date: April 28, 2017
Time: about 2348 Central Daylight Time (CDT)
Airplane: Pilatus PC-12/45, Registration Number: N933DC (S/N 105)

B. MAINTENANCE RECORDS

Gregory Borsari
National Transportation Safety Board
Washington, DC

C. SUMMARY

On April 28, 2017, about 2348 CDT, a Pilatus PC-12/45 airplane, N933DC, impacted terrain near Rick Husband Amarillo International Airport (AMA), Amarillo, Texas. The airline transport pilot and two flight crew were fatally injured. The airplane was destroyed. The airplane was registered to and operated by Rico Aviation, L.L.C. under the provisions of *14 Code of Federal Regulations* Part 135 as an air ambulance flight. Instrument meteorological conditions prevailed at the time of the accident and the flight was operated on an instrument flight rules (IFR) flight plan. The flight was the originating flight at the time of the accident and was flying to Clovis Municipal Airport (CVN), Clovis, New Mexico.

D. DETAILS OF THE INVESTIGATION

1.0 Air Carrier Certificate

On February 18, 2004, Federal Aviation Administration (FAA), South West Region Flight Standards District Office (FSDO), issued Rico Aviation, LLC of 2322 Lakeview, Amarillo, Texas 79109 Certificate Number R4CA260K. The Certificate was reissued on November 16, 2006.

2.0 Operations Specifications (OpSpecs)¹

Rico Aviation, LLC was authorized to conduct 14 CFR Part 135 On Demand Operations, Nine Passengers or Less under the code of Federal Aviation Regulations, which includes the standards, terms, conditions, and limitations contained in the FAA approved Operations Specifications. Parts D and E contained the following;

- a) Per section D085 of the OpSpecs, Rico Aviation, LLC had two Cessna Conquest CE-441, one Cessna Citation CE-525A and one Pilatus PC-12/45 aircraft.

¹ Operations Specifications contains the authorizations, limitations, and certain procedures under which each kind of operation, if applicable, is to be conducted by the certificate holder.

- b) Per section D092 of the OpSpecs, Rico Aviation, LLC was authorized to use operations for Designated Reduced Vertical Separation Minimums (RVSM) Airspace for the Cessna Citation CE-525A.
- c) According to Section D095 of the OpSpecs, Rico Aviation, LLC was authorized to use an approved Minimum Equipment List (MEL).
- d) According to D101 of the OpSpecs, Rico Aviation, LLC was to use the following to maintain the Pilatus PC12/45 engine, propeller and governor:
 - Engine – Pratt & Whitney PT-6A-67B. Pilatus MM Document No. 02049.
 - Propeller – Hartzell Propeller HCE4A-3D. Pilatus MM Document No. 02049.
 - Governor – Woodward Governor 8210-137H. Pilatus MM Document No. 02049.
- e) Per section E096 of the OpSpecs, Rico Aviation, LLC was authorized for a Weight and Balance Program per Rico Aviation, LLC General Operations Manual (GOM).

3.0 Type Certificate Data Sheet

The Type Certificate Data Sheet (A78EU) prescribes conditions and limitations under which the product for which the Type Certificate (TC) was issued meets the airworthiness requirements of the Federal Aviation Regulations. According to the document, Pilatus Aircraft Ltd is the holder of the TC.

4.0 Aircraft Information

Pilatus Aircraft Ltd. manufactured the airplane and an Export Certificate of Airworthiness was issued on November 17, 1994. FAA issued a Standard Certificate of Airworthiness on November 28, 1994. The current owner of the airplane is Rico Aviation LLC of Amarillo, TX.

According to the last available Flight Logs and information reviewed prior to the accident flight, the airplane had approximately 4,466.9 total hours and approximately 3,769 total cycles.

5.0 Maintenance

Rico Aviation, LLC aircraft that are type certificated with 9 or fewer passenger seats shall be maintained in accordance with the manufacturers maintenance documents, FAR Parts 43, 91 and 135. All maintenance, preventive maintenance and alterations to the aircraft, engines, propeller and appliances will be performed in accordance with current FAA regulations, manufacturer's service manuals, recommendations and specifications, manufacturers service bulletins and service letters and airworthiness directives.

The Pilatus PC-12/45 Aircraft Maintenance Manual (AMM) chapters 4 and 5 contain the maintenance intervals for each airworthiness limitation item, 100 hour inspection, annual inspection, supplemental structural inspections and progressive inspection requirements.

The following is a listing of recent routine maintenance inspections and tasks accomplished on airplane N933DC on March 2, 2017. Maintenance was performed in Denton, TX. Aircraft total time 4,407.5 hours, total cycles 3,658 at the time of the maintenance.

Table 1 - Maintenance Checks

TASK
Annual / 100 Hour Inspection
12 Month / 150 Hour In-Situ Inspection Inboard Flap Drive Arms
12 Month / 150 Hour Lubricate Flap Actuators
200 Hour Flap System Electrical Test
6 Month / 600 Hour Capacity Check No.1 Lead Acid Battery
12 Month / 1,000 Hour / 1,300 Cycle Flap Actuator Backlash Checks
12 Month Internal Corrosion Inspection
12 Month External Corrosion Inspection
12 Month / 1,000 Hour Servo Mount (Pitch, Roll, and Yaw) Remove for Clutch Check
200 Hour Starter/Generator Brush Inspection
12 Month Emergency Locator Transmitter Inspection
12 Month / 3,000 Hour Functional Test Horizontal Stabilizer Trim Runaway Aural Warning System
12 Month / 200 Hour Service Flap Up Down Limit Switches
12 Month / 1,000 Hour 1,300 Cycle Backlash Checks of Flap Actuators
12 Month Examine Main Landing Gear Shock Absorber Top and Bottom Attachment Bolts and Nuts
12 Month Lubricate Main and Nose Wheel Bearings
12 Month / 2,000 Hour Inspection of Main Landing Gear Axles and Bushes
Complied with Initial Doors – Passenger / Crew Inspection of Doors Shot Bolt Fittings
Time Limits – Reviewed Maintenance Records to determine compliance of Landing Gear Attachment Bolts Inspection
Engine Inspection of Interconnect Rod
Performed Engine Annual / 100 Hour Inspection
12 Month / 500 Hour Power Plant Torque Limiter Test

Table 1 - Maintenance Checks (cont.)

TASK
12 Month / 500 Hour Engine Performance Test
12 Month / 500 Hour Oil Pressure Transducer Electrical Connector
12 Month / 500 Hour Engine Torque & Stick Pusher Torque Cleaning
12 Month / 3,000 Hour Propeller Feathering Micro Switches Test
12 Month / 600 Hour Bridge Check Magnetic Chip Detector
200 Hour Inspect Power Turbine Blades
Annual / 100 Hour Propeller Inspection
12 Month / 400 Hour Propeller Inspection
12 Month / 400 Hour Propeller Lubrication
Blend Propeller Blades

In addition to the routine maintenance and inspections task, 21 discrepancies (non-routine items) were generated and corrected at this visit. The following items were noted:

- Pressurization bumps – Removed intermittent Outflow Valve Controller P/N 64547-130374-36, S/N 62-G0003. Installed Repaired Outflow Valve Controller P/N 64547-130374-36, S/N 10-G0256.
- Autopilot disconnecting on approach – Removed Autopilot Computer P/N 065-0064-15, S/N 2175. Installed Autopilot Computer P/N 065-0064-15, S/N X1898.
- Prop De-Ice inoperative – Removed Deicer Controller P/N 4E3163-2, S/N U1066. Installed repaired Deicer Controller P/N 4E3163-2, S/N U0686.
- Rudder autopilot cable tension low – Adjusted rudder autopilot cable tensions in accordance with AMM 27-20-00.
- Engine leaking oil and fuel – Removed Fuel Control Unit (FCU). Installed new seal and new O-ring in the Accessory Gear Box. Reinstalled FCU, functional and operational checks satisfactorily.

There was one additional log entry for a discrepancy reported on April 27, 2017. The Autopilot disconnects on climb and cruise. Maintenance troubleshoot system. Suspect Autopilot Trim Adapter to be causing issue. Removed Autopilot Trim Adapter P/N: 065-00164-0100, S/N: 1745. Installed Tested Autopilot Trim Adapter (KTA336-100) P/N 065-00164-0100, S/N: 1794. System ops check good. All work performed in accordance with the Pilatus PC-12 Maintenance Manual Ch. 22-10-07.

The airplane was equipped with a Pratt and Whitney PT-6A-67B Engine, a Hartzell HCE4A-3D Propeller and a Woodward 8210-137H Propeller Governor. Engine, Propeller and Governor times can be seen below in table 2:

Table 2 – Engine, Propeller and Governor Information

Engine	Power Section & Gas Generator
Manufacturer	Pratt & Whitney Canada
Part Number	PT6A-67B
Serial Number	PCE110008
Manufacture Date	November, 1993
Date Installed	November 11, 1994
Location of Installation	Stans, Switzerland
Total Time	4,466.9
Total Cycles	3,769
Date Overhauled (Power Section & Gas Generator)	September 11, 2013
Total Engine Time at Overhaul	3,511.0
Total Engine Cycles at Overhaul	3,136
Total Time of Airframe at engine overhaul	3,511.0
Total Cycles of Airframe at engine overhaul	3,136
Time Since Overhaul (hours)	955.9
Cycles Since Overhaul	633
Propeller	
Manufacturer	Hartzell Propeller
Part Number	HC-E4A-3D
Serial Number	HJ-325
Manufacture Date	October 5, 1994
Date First Installed	January 20, 1995
Location of Propeller Installation	Santa Ana, CA
Total Time of Airframe at Install	32.3
Total Cycles of Airframe at Install	28
Date Overhauled	February 24, 2016
Total Hours at Overhaul	4,174.20
Time Since Overhaul (hours)	292.7

Table 2 – Engine, Propeller and Governor Information (cont.)

Governor	
Manufacturer	Woodward Governor Co
Part Number	8210-137
Serial Number	2699936
Date Governor Overhauled	April 24, 2008
Location of Governor Installation	Santa Ana, CA
Total Time of Airframe at Install	2,240.7
Total Cycles of Airframe at Install	2,056
Time Since Overhaul (hours)	2,226.2

6.0 Supplemental Type Certificates (STC)² and Major Alterations

Supplemental Type Certificates (STCs) and Major Alterations were reviewed. There were approximately 13 STCs and Major Alterations found in the maintenance records and on file with the FAA.

The following major alterations were noted:

- Modification of the Pilot’s Pitot Static System and installation of a Co-Pilots Pitot Static System.
- Installation of a LifePort Patient Loading Utility System.
- Installation of a Garmin GTN 750 - GPS / NAV / COM / MFD.
- Installation of a Garmin GDL 69 – Datalink Weather.
- Installation of a Garmin GTX 33ES Mode S Transponder with ADS-B Out.

7.0 Airworthiness Directive (AD)³

Rico Aviation, LLC provided all logbook records for the airplane (including appliances, engine and propeller). A review of the applicable AD’s was completed and no discrepancies were found. All AD’s were either completed or being tracked for accomplishment prior to the mandated completion requirement.

² The FAA issues Supplement Type Certificates, which authorize a major change or alteration to an aircraft, engine or component that has been built under an approved Type Certificate.

³ Airworthiness Directive (AD) is a regulatory notice sent out by the FAA informing the operator of an action that must be taken for the aircraft to maintain its airworthiness status.

8.0 Service Difficulty Reports (SDR)⁴

A review of the FAA SDR Database found there were no SDRs on file with the FAA for the accident airplane.

9.0 Minimum Equipment List (MEL)⁵

Rico Aviation, LLC was authorized to use an approved MEL on its Pilatus PC-12/45 aircraft per its OpSpecs. At the time of the accident, there were no open MEL items found in the record review.

10.0 Weight and Balance Summary

Per the Rico Aviation, LLC Op Specs, the Pilatus PC-12/45 aircraft weight and balance was maintained by computation. The most recent weight and balance computation on the airplane found during record review was accomplished when the modification of the Pilot Pitot Static System and installation of a Co-Pilot Pitot Static System in accordance with STC SA00322DE was completed on August 17, 2016. The figures for the recalculated weight and balance are shown below:

Basic Empty Weight:	6,478.10 lbs
Arm:	232.53 in
Moment:	1,506,324.90 lb-in

11.0 Major Repairs

According to the FAA Airworthiness file there were no major repairs on file for the accident airplane.

12.0 Time Limit Components

Time Limit Component status for the airplane, the powerplant, the propeller and components were reviewed. No discrepancies were noted.

13.0 Manuals

Rico Aviation, L.L.C. used the following manuals to maintain the airworthiness of the Pilatus PC12/45 airplane.

General Operations Manual (GOM) - The GOM contains policies, procedures and instructions for the performance of maintenance, preventive maintenance and alterations for Rico Aviation, LLC operated aircraft that are type certified for a passenger seating configuration,

⁴ A Service Difficulty Report (SDR) is a report of the occurrence or detection of each failure, malfunctions, or defects as required by 14 CFR 135.415.

⁵ The FAA approved Minimum Equipment List contains a list of equipment and instruments that may be inoperative on a specific aircraft for continuing flight beyond a terminal point.

excluding any pilot seat, of nine or less, as required by FAR 135.411(a)(2), and continuous airworthiness of the aircraft.

Minimum Equipment List (MEL) – List of equipment and instruments that may be inoperative on a specific aircraft.

Manufacture Supplied Manuals - Aircraft/Engine Maintenance Manuals, Structural Repair Manuals, Overhaul Manuals, Wiring Manuals, Fault Isolation Manuals, Illustrated Parts Catalog, Corrosion Program Manual, NDT Manual, Significant Structure Items Manual, Service Bulletins and Engine Manuals.

14.0 Method of Record Keeping

Per FAR Parts 43, 91 and 135, Rico Aviation, LLC, maintains records for the PC-12/45 with the use of Aircraft, Engine and Propeller Log books.

In addition, Ricco Aviation had the airplane enrolled in the CAMP maintenance management program to assist in tracking:

- Scheduled maintenance.
- Aircraft Component/Equipment.
- Airworthiness Directive.
- Service Bulletin.
- Life Limited Components.

Submitted by: Gregory Borsari
Aviation Accident Investigator
Maintenance