Attitude Indicator and Directional Gyro Examination Notes
N5714W
NTSB Case # ERA13FA088
Parkton, North Carolina
December 16, 2012

A. ACCIDENT:

Location: Parkton, North Carolina
Date: December 16, 2012
Time: About 1532 EST/2032 UTC
Aircraft: Piper PA-28-160
Registration: N5714W

B. SYSTEMS GROUP:

Chairman: Timothy W. Monville
National Transportation Safety Board
Doral, Florida

C. SUMMARY

On December 16, 2012, about 1532 eastern standard time, a Piper PA-28-160, N5714W, registered to and operated by a private individual, descended in a wooded area near Parkton, North Carolina. Instrument meteorological conditions prevailed at the time and an instrument flight rules (IFR) plan was filed for the 14 Code of Federal Regulations (CFR) Part 91 personal flight from Summerville Airport (DYB), Summerville, South Carolina, to Fayetteville Regional Airport/Grannis Field (FAY), Fayetteville, North Carolina. The airplane sustained substantial damage and the private pilot, the sole occupant, was fatally injured.

D. COMPONENTS EXAMINED

1. Sigma Tek, Inc., Attitude Indicator, S/N 199080
2. Edo-Aire Directional Gyro, Model 4000-B-5, P/N 10262-001-6, S/N 30105C.

Both components were taken to a FAA certified repair station in Miami, Florida, on February 7, 2013, and examined with NTSB oversight.

Photographs of the attitude indicator were taken and are pictures IMG_5674.jpg thru IMG_5688.jpg. The initial inspection of the component revealed extreme crushing and tearing of the case.

Figure 1: Photograph depicting crushing of the instrument case.

Figure 2: Photograph depicting crushing of the instrument case.

Ink stamps “Jul 06 2011” “F201” were noted on the case. A Mid Continent Instrument Co., Inc., sticker was also noted on the case. The rotor housing was visible inside the instrument case.

The instrument case was cut in order to remove the rotor housing. The gimball ring support was fractured, and a portion was missing. The silhouette was missing, and a rotor shaft screw was broken.

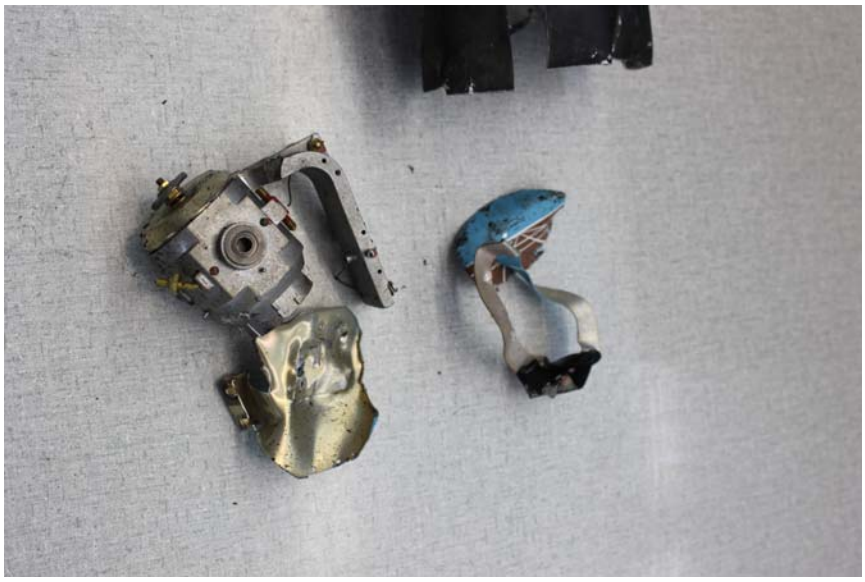

Figure 3: Photograph depicting the rotor housing, fractured and only remaining portion of the gimball ring support.

The rotor was removed from the rotor housing and no scoring was noted on the rotor.

Figure 4: Photograph depicting the rotor.

Inspection of the rotor housing revealed light rotational scoring at an area between the 4 and 7 o’clock positions; but no corresponding scoring of the rotor was noted.

Figure 5: Photograph depicting the interior surface of the rotor housing.

Further inspection of the rotor revealed the end with the broken screw exhibited a rough feel to the bearing during rotation of the rotor.

Photographs of the directional gyro were taken and are pictures IMG_5689.jpg thru IMG_5706.jpg. The initial inspection of the component revealed fire and impact damage.

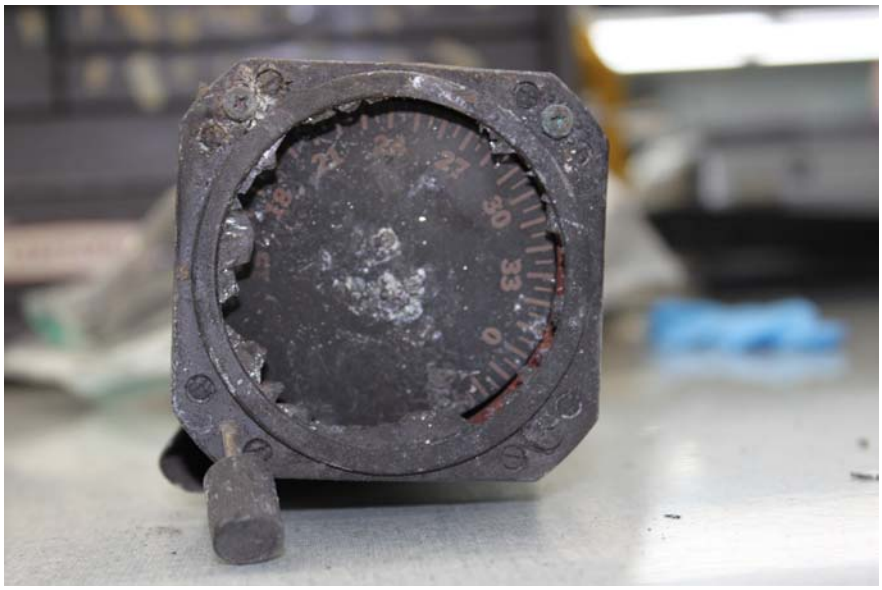

Figure 6: Photograph depicts the front portion of the directional gyro.

Figure 7: Photograph depicts the impact damage to the side of the directional gyro.

Figure 8: Photograph depicts the back portion of the directional gyro.

The glass bezel was broken, the knob shaft was bent down, and the rear plate exhibited extensive heat damage. The compass card was on heading 240 degrees. The housing was cut open to facilitate access to the rotor housing.

Figure 9: Photograph depicts the instrument following cutting of the housing.

The frame was fractured in multiple locations, but the rotor housing remained installed in the gimball ring. The rotor housing was noted to rotate freely in the gimball ring.

Figure 10: Photograph depicts the rotor housing installed in the gimball ring.

The rotor was removed from the rotor housing and both were inspected for signs of rotational scoring; none was noted. An ink mark on the end of the rotor depicted

“2/12/09”. The rotor bearings felt OK. Heat damage was noted to the rotor. One rotor assembly axis support was broken, and the phenolic gear train was melted.

Figure 11: Photograph depicting the rotor.

Following the inspection of both components they were boxed and shipped to the insurance adjuster via UPS on February 7, 2013.