NATIONAL TRANSPORTATION SAFETY BOARD

Office of Research and Engineering
Materials Laboratory Division
Washington, D.C. 20594

June 15, 2009

MATERIALS LABORATORY FACTUAL REPORT Report No. 09-033A

A. ACCIDENT

Place	:	North Canton, Ohio
Date	:	December 19, 2008
Vehicle	:	Piper PS-32R
NTSB No.	:	CEN09FA099
Investigator	:	Mitchell Gallo NTSB-NCRA

B. COMPONENTS EXAMINED

Two air speed indicators, directional gyro face, unknown internal gyro component, horizontal situation indicator, attitude indicator, and annunciator panel

C. DETAILS OF THE EXAMINATION

The indicators, gyro component, and annunciator panel were submitted to the Materials Laboratory for examination. The indicators and the gyro face as shown in Figures 1 and 2 were submitted to determine if there were any witness marks on the face of the indicators. No witness marks were found.

The unidentified gyro component was submitted to determine if it was rotating at the time of the impact. A partial circumferential smear was found on the gyro case as shown in Figure 4. The fins on the back of the gyro also demonstrated smearing as shown in Figure 5.

The annunciator panel was submitted to determine if there was hot stretching relaxation of the coils in the filaments of the indicator light bulbs shown in Figure 3. The annunciator panel light designations are shown in the chart below. The DN/UP switch on the left was a flip switch. The upper row “DN” contained indicator lights and the lower row “UP” were push buttons.

DN	YD	FD	ALT	HDG	GS	NAV	APR	BD	TRIM	AP
UP		FD	ALT	HDG		NAV	APR	BD		AP ENG

The filaments from the light bulbs for the “DN” and “UP” APR light, the “DN” and “UP” FD light, the AP light and the AP engine light were examined for stretching. The “DN” APR light filament was broken but not stretched as shown in Figure 6. The “UP” APR light filament was stretched as shown in Figure 7. The “DN” FD light filament was not stretched as shown in Figure 8. The “UP” FD light was stretched as shown in Figure 9. The AP light filament was not stretched as shown in Figure 10. The AP ENGINE light filament was stretched as shown in Figure 11.

Nancy B. McAtee
Chemist

Figure 1. Overall (from left to right) of the two air speed indicators, horizontal situational indicator and the attitude indicator.

Figure 2. Directional gyro face

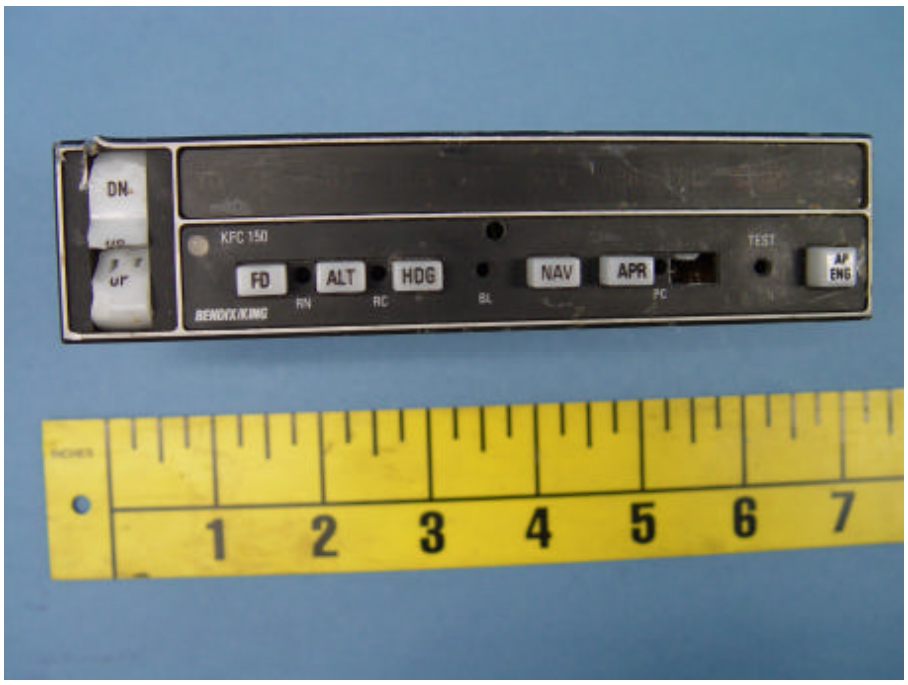

Figure 3. Annunciator panel

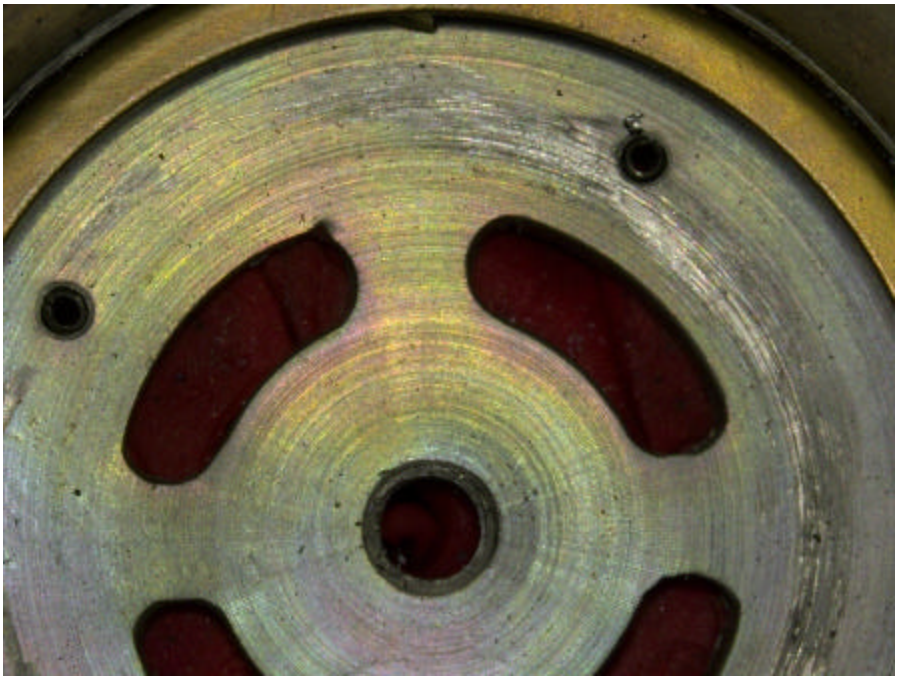

Figure 4. Smearing on gyro case

Figure 5. Smearing on fins of gyro

Figure 6. “DN” APR light filament

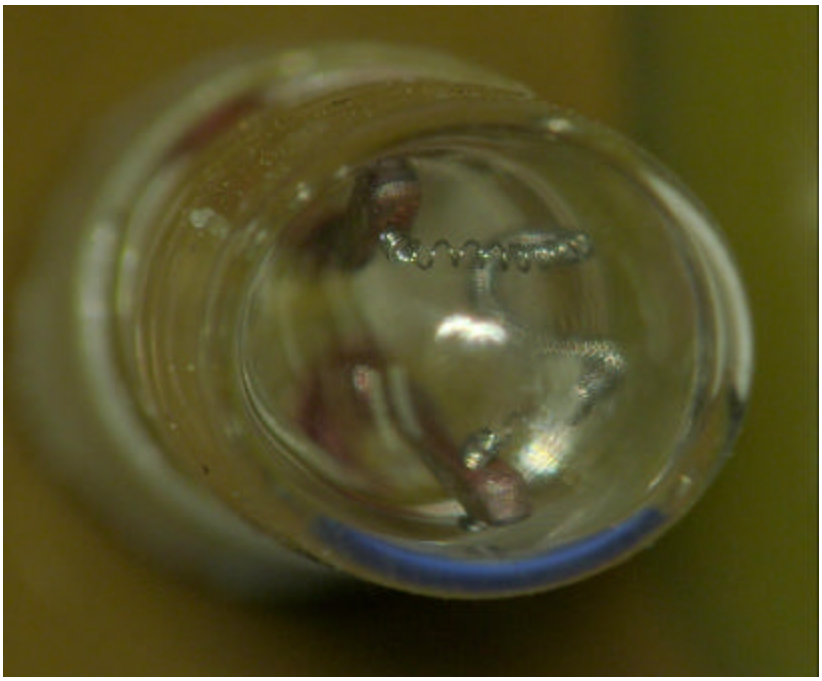

Figure 7. “UP” APR light filament

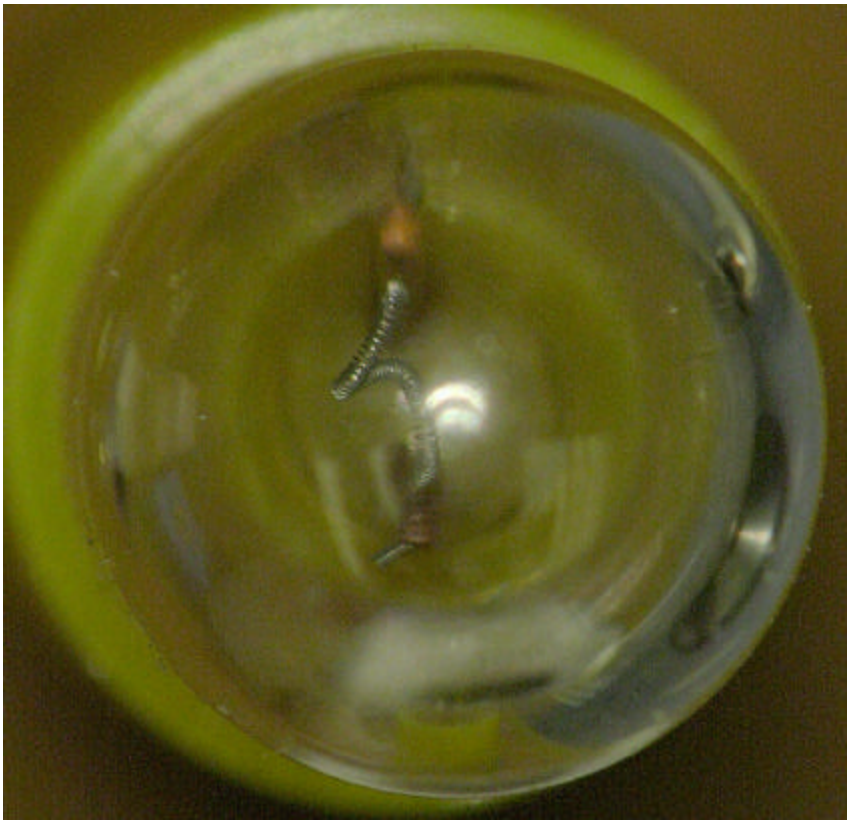

Figure 8, “DN” FD light filament

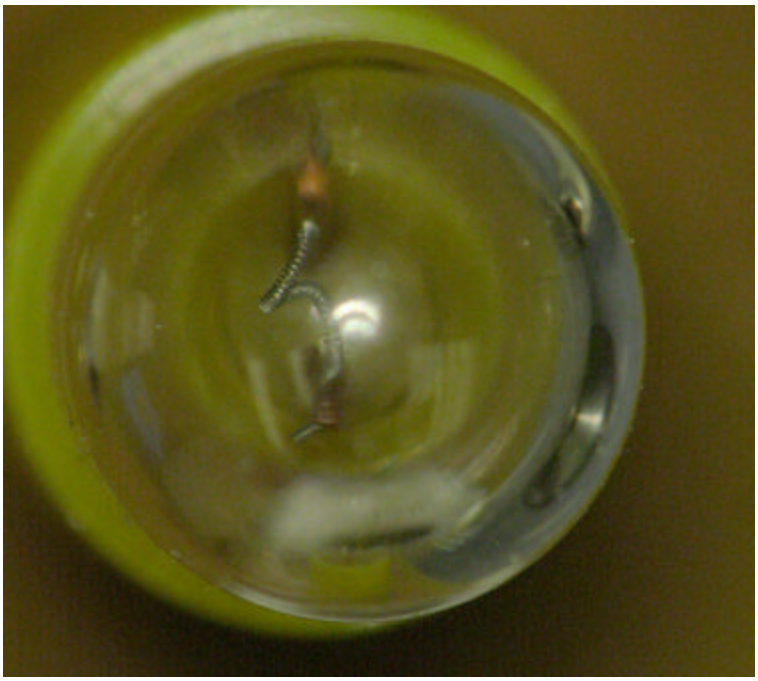

Figure 9. “UP” FD light filament

Figure 10. AP light filament

Figure 11. AP Engine light filament