

Ryan Enders  
Aviation Accident Investigator  
Eastern Region

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**Subject:** Engine Acoustic Analysis

**Contact:** Bill Schuster, Honeywell

A document received by Honeywell titled "Audiovisual Assessment of the Lear 55 Accident in Philadelphia Pennsylvania" containing an acoustic analysis of engine data obtained from video of the accident flight was received. The following is an excerpt of the conclusions section of that document.

"The computations discussed in previous sections were implemented in an Excel spreadsheet. The Doppler correction process is applied to the extracted 5, 6, 7, and 9-per-rev tone traces to produce estimates of the fan speed as a function of absolute time. The final results are shown in Figure 5. The dots represent the estimated source emission frequencies at the estimated source emission times, corresponding to each time-frequency pair that was extracted from the spectrogram. The time period of estimated source frequencies covers roughly four seconds, with the data ending approximately 2 seconds prior to impact. There appears to be a slight increase in speed over time, but it is unknown whether this is genuine or an artifact of uncertainties in the computation procedure. The data extracted for the different n-per-rev traces are consistent with one another, lending credence to the prior assumption that these are fan buzzsaw generated tones. The estimated average engine speed over the four seconds just prior to impact is approximately 10900 rpm. This is consistent with the engines operating at full take off power, shown in Table 1. The ambient conditions and flight speeds used in Table 1 are representative of the conditions during the accident flight from takeoff to just prior to impact and provide fan speeds at takeoff and maximum climb power setting."

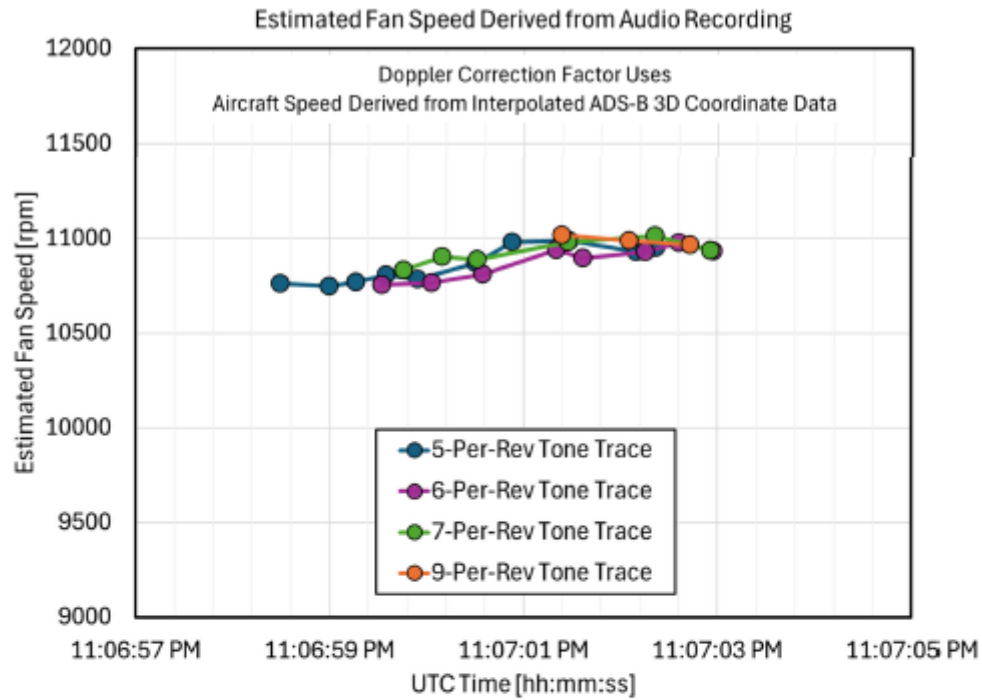


Figure 5. Engine Fan Speeds Estimated from Doppler Corrected Audio Traces.

Table 1. Fan Speeds of the TFE731-3AR-2B Engine at Normal Take-Off Power (NTO) and Max Climb (MCL).

|                     | Power Set for T/R Nozzle Configuration |
|---------------------|----------------------------------------|
| NTO:                | Fan Speed (rpm)                        |
| Sea Level Static/9C | 10856                                  |
| 1650ft/6C/218kts    | 10914                                  |
| 120ft/9C/300kts     | 10828                                  |
| MCL:                |                                        |
| 1650ft/6C/218kts    | 10914                                  |
| 120ft/9C/300kts     | 10828                                  |

Figure 1: Figure 5 and Table 1 from the document received as described in the conclusions excerpt