

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, DC 20594

January 21, 2014

Sound Spectrum Study

Specialist's Study Report
By Bill Tuccio, Ph.D.

1. EVENT

Location: Owasso, Oklahoma
Date: November 10, 2013
Aircraft: Mitsubishi MU-2B-25
Registration: N856JT
Operator: Private
NTSB Number: CEN14FA046

2. GROUP

A sound spectrum study group was not convened.

3. SUMMARY

On November 10, 2013, at 1546 central standard time, a Mitsubishi MU-2B-25 twin-engine airplane, N856JT, impacted wooded terrain while maneuvering near Owasso, Oklahoma. The commercial pilot, who was the sole occupant, sustained fatal injuries. The airplane was destroyed. The airplane was registered to Anasazi Winds, LLC, Tulsa, Oklahoma, and operated by the pilot under the provisions of 14 *Code of Federal Regulations* Part 91 as a personal flight. Visual meteorological conditions prevailed for the flight, and an instrument flight plan had been filed. The flight departed Salina Regional Airport (SLN), Salina, Kansas, approximately 1500, and was en route to Tulsa International Airport, Tulsa, Oklahoma.

An air traffic control (ATC) recording was sent to the National Transportation Safety Board Vehicle Recorder Division's Audio Laboratory for evaluation.

4. DETAILS OF INVESTIGATION

A sound spectrum study was performed to determine if four ATC transmissions made by the accident aircraft may inform the condition and

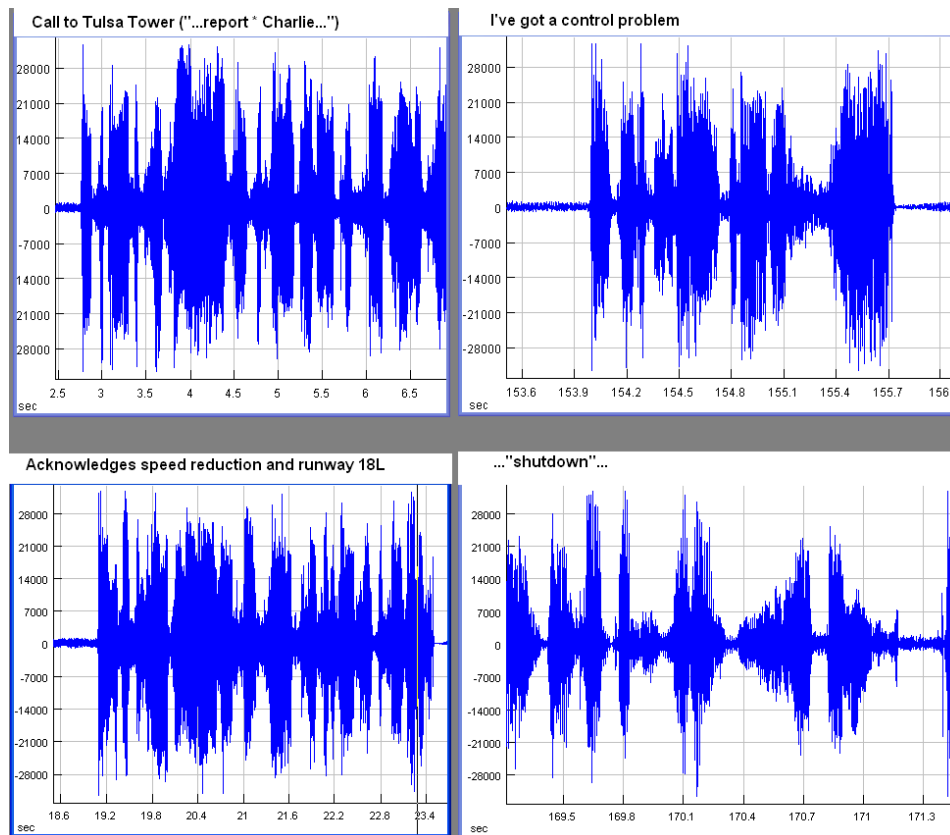
operation of the engines. A recording obtained from ATC was used as the source of the study¹.

Figure 1 shows waveforms of the four radio transmissions. The horizontal axes show time relative to the start of the recording, the vertical axes show intensity of the sound. In the two transmissions on the right side of figure 1, the pilot reported problems versus the left two transmissions where no problems were yet reported.

In order to discern engine operation, the radio transmissions were examined in two ways. First, for areas where a transmission from the aircraft was made, but the pilot was not talking. Second, to identify areas of assumed normal operation (the left transmissions in figure 1) and problematic operation (the right transmissions in figure 1) containing similar words or sounds uttered by the pilot. If areas of non-talk or similar utterances existed, sound frequencies may then be examined either for differences or for comparison with aircraft/engine manufacturer known frequency data.

Across the four transmissions, no suitable periods of non-talk or similar utterances were identified. Due to this limitation, no frequency analysis was performed.

Figure 1. Waveforms of four ATC transmissions by accident aircraft.



¹ See the Operations/Air Traffic Control Factual Report in the public docket for the full transcript of the ATC recording.

4.1. Summary

The radio transmissions did not contain sufficient information for a frequency analysis. As such, the sound spectrum study was inconclusive.