NATIONAL TRANSPORTATION SAFETY BOARD

Vehicle Recorder Division Washington, DC 20594

June 1, 2020

Personal Electronic Device (PED)

Specialist's Factual Report By Nick Swann

1. EVENT

Location: Date: Aircraft: Operator: NTSB Number: Moose, Wyoming 06/09/2018 LET L 23, N317BA Teton Aviation Center CEN18FA217

2. GROUP

A group was not convened.

3. DETAILS OF INVESTIGATION

On August 23, 2018, the National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following Personal Electronic Device (PED):

Recorder Manufacturer/Model: Samsung Galaxy S7 Edge Unknown

3.1. Recorder Description

PEDs are a category of devices comprised primarily of portable computing devices and mobile phones. Portable computing devices are typically capable of internet access, email, messaging services, and can run user-installed applications to perform specific tasks. Depending on the model, mobile phones can perform many of the same tasks as portable computing devices, plus have voice call and text messaging capabilities. PED user and system data is typically stored on non-volatile memory¹ and can be accessed through manufacturer-provided interfaces.

¹ Non-volatile memory is semiconductor memory that does not require external power for data retention.

3.2. Recorder Damage

Upon arrival at the NTSB Vehicle Recorder Division, it was evident that the PED had sustained minor impact damage and the video and audio information was extracted from the device normally, without difficulty. Figure 1 below shows the damage to the PED.



Figure 1. Minor impact damage to PED

3.3. Video Files

85 images and 13 videos pertaining to the accident flight were extracted from the PED. The last video from the flight was summarized as it is the flight that contains the recording just prior to ground impact. The summarized recording is three minutes and nine seconds long. It was recorded at a resolution of 1920x1080 pixels and was captured at a frame rate of 29 frames per second.

3.4. Timing and Correlation

Timing of the transcript is expressed as video elapsed time, which is time from the beginning of the recording.

3.5. Summary of Recording Contents

In agreement with the Investigator-In-Charge, a video group did not convene and a summary report was prepared.

3.5.1. Video Recording One: Accident Flight

The video began with a view of the mountains off the left side of the aircraft. The range is identifiably the Teton range and the aircraft was on the west side of the range. The camera panned up at 00:06 to show one large peak (identified as Grand Teton), the top of which was roughly the same altitude as the aircraft. This view is shown in Figure 2. The sky showed no clouds but a slight haze was visible at a great distance.

At 00:14 elapsed, the camera panned over to show a view of the front left side of the aircraft. There was another smaller peak (identified as Middle Teton) ahead whose top was below the altitude of the aircraft.

At 00:30 elapsed, the aircraft then entered a left turn roughly toward Grand Teton. At 00:45, the aircraft was facing Grand Teton, the top of which was still at the same altitude as the aircraft. The aircraft had a northward heading. At this time, the instrument panel of the glider was seen. The instrument panel contains an airspeed indicator, turn coordinator, and vertical speed indicator. Additionally, a yaw string was visible in the lower middle section of the windscreen. The airspeed indicated was roughly 43 knots, the turn coordinator ball was in the center as was the yaw string. The vertical speed indicator was showing 5 knots down.

At 00:49, the frame pans to the right and then showed the smaller peak that was just passed as shown in Figure 3. It additionally shows the valley between Grand and Middle Teton. Visible in the recording was the flat land located to the east of the Teton Range. As the camera pans back forward at 00:56 elapsed, the peak of Grand Teton was above the altitude of the aircraft and off to its right side. The frame followed this peak as the aircraft passes on the west side of Grand Teton.

After passing Grand Teton, the aircraft entered a left turn. The camera panned back to the front of the aircraft and the instrument panel was once again visible. At 01:29 elapsed, the airspeed indicator showed roughly 42 knots, the turn coordinator ball was in the center as was the yaw string, and the vertical speed indicator showed 6 knots down. At 01:33 the camera panned up to show in front of the aircraft in its new southward path as shown in Figure 4.

At 01:37 elapsed, the camera has panned back over to the left side of the aircraft to show the large peak that had just been passed. After the roughly 180 degree turn, the peak was on the left side of the aircraft and the aircraft appears to have lost altitude in the turn. As such, the aircraft was then traveling south and was still on the west side of the Teton Range. The glider then began to descend. At 1:54, the valley between Grand Teton and Middle Teton was visible and the aircraft had approached the opening of the valley. At 02:06, the descent appeared to stop and the camera panned back toward the front of the aircraft but the instrument panel was not visible. The yaw string, however, was pointing straight. Middle Teton was in front of the aircraft and off to the left. At 02:09 the pilot can be heard saying "this is not good." The top of Middle Teton was at or above the current altitude of the aircraft. The glider then banked slightly right at 02:13 to be parallel to the ridgeline of Middle Teton, now off to the left side of the aircraft. The camera panned to the left to show the valley between Grand and Middle Teton passing off the left as shown in Figure 5 (showing the land to the east of the Teton Range) and remained there until Middle Teton is prominently visible at 02:28 elapsed.

At 02:36 the camera panned down briefly to the front of the glider again. The yaw string was seen blowing off to the right side of the aircraft at approximately 50 degrees as measured from the centerline of the windscreen. The instrument panel was visible at 02:37 and shows an indicated airspeed of roughly 35 knots. The turn coordinator ball was just outside of the box on the left side. The yaw string was still blowing to the right. The vertical speed showed 5 knots down.

At 02:38, the instrument panel was still visible and then indicated an airspeed of roughly 38 knots. The turn indicator ball was within the box and the vertical speed then showed 6 knots down. The yaw string was still blowing to the right, now at roughly 45 degrees.

In the last frame where the airspeed indicator was visible at 02:40, it showed an indicated airspeed of roughly 42 knots. The camera panned left and the ridge line being passed was visible. The top of the ridge line was above the altitude of the aircraft. From 02:48 to 02:52 the occupant recording made several exclamations of surprise. At 02:57 the aircraft then appeared to enter a steep descent, shown in Figure 6. The ridgeline to the left of the aircraft was coming to a downward slope and the peak of the ridge was once again at the same altitude as the aircraft. At 02:58 the pilot can be heard saying "this is not good." At 03:00, the aircraft appeared to exit the steep descent as it passes by a cliff marking the end of the left ridgeline it was following. The aircraft then appeared to enter another steep descent. At 03:03 elapsed, the yaw string was visible on the front of the aircraft, it was blown straight. At this time the pilot can also be heard saying "I'm in trouble." The camera panned forward and at 03:06 elapsed the aircraft returned to a neutral pitch attitude but appeared to still be descending, as shown in Figure 7. The yaw string began blowing to the right. The aircraft was traveling along the ridge that comprises the valley between Middle Teton and South Teton. As the aircraft descended, it was pointing toward the ridge line. The peak of the ridge is roughly the same altitude as the glider. In the last frame the yaw string was seen blowing to the right roughly at 45 degrees. At 03:09 elapsed, the recording ends.



Figure 2. Image from timestamp 00:06 showing Grand Teton and the initial heading



Figure 3. Image from timestamp 00:49 showing Middle Teton and the valley between Grand and Middle Teton



Figure 4. Image from timestamp 01:33 showing Middle Teton and the southward heading of the aircraft



Figure 5. Image from timestamp 02:19 showing the valley between Grand and Middle Teton



Figure 6. Image from timestamp 02:57 showing the glider's position as it passed Middle Teton



Figure 7. Image from timestamp 03:06 showing the glider's trajectory before the end of the recording and the ridge between Middle and South Teton