NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, D.C. 20594

July 29, 2015

Image Factual Report

Specialist's Factual Report
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1. EVENT

Location:	Conway, South Carolina
Date:	August 3, 2013
Aircraft:	Beech D55
Registration:	N7641N
Operator:	Private
NTSB Number:	ERA13FA348

On August 3, 2013, about 1254 eastern daylight time (EDT), a Beech D55, N7641N, owned and operated by a private individual, was destroyed by post impact fire/explosion when it impacted a telephone pole and then terrain near Conway, South Carolina. The private pilot and two passengers were fatally injured. The flight departed from Conway-Horry County Airport (HYW), Conway, South Carolina, about 1200. Visual meteorological conditions prevailed, and no flight plan was filed for the personal flight which was conducted under the provisions of 14 *Code of Federal Regulations* Part 91.

2. DETAILS OF DEVICE INVESTIGATION

The Safety Board's Vehicle Recorder Division received a Samsung Galaxy SIII smartphone (IMEI: 99000335787452). Initial recovery efforts were unsuccessful[1]. Further recovery attempts successfully recovered photos and videos. This report describes photo and video content from the day of the accident.

2.1. Samsung Galaxy SIII Smartphone Still Photos

A total of seven still photos taken on the day of the accident were recovered from the smartphone. One photograph of the accident airplane is shown in figure 1. The other photos were similar, taken from different vantage points.

[1] See Electronic Devices Factual Report (Samsung Galaxy Cell Phone) in the public docket for this accident.

Figure 1. Photo of the accident aircraft recovered from cell phone.

2.2. Samsung Galaxy SIII Videos

A total of five onboard videos recorded from the accident flight on August 3, 2013 were recovered from the cell phone. Table 1 summarizes the five videos. Given IIC information about the accident time, the time zone of the video time stamps was confirmed to be EDT.

Table 1. Summary of five videos recovered from cell phone.

Resolution	Filename	Length	Time Stamp
1920x1080, 30fps	20130803_112115.mp4	13 minutes 54 seconds[2]	11:21:15 EDT
1920x1080, 30fps	20130803_114631.mp4	6 minutes 36 seconds	11:46:31 EDT
1080x1920, 30fps	20130803_115708.mp4	8 minutes 38 seconds	11:57:08 EDT
1920x1080, 30fps	20130803_123132.mp4	3 minutes 27 seconds	12:31:32 EDT
1080x1920, 30fps	20130803_124441.mp4	1 minute 49 seconds	12:44:41 EDT

The videos began after the aircraft engines were started and the aircraft was parked in the location shown in figure 1. The aircraft then taxied, performed a run-up, and departed. The aircraft flew over two lakes, performed a low approach, and then climbed

[2] There was a gap in this video. At about 11 minutes 39 seconds elapsed time the video was interrupted for an unknown period of time.

to about 3,500 feet. The last video ended with the aircraft at 3,500 feet. All videos were taken from the backseat of the aircraft. The camera direction changed frequently, such that the field of view varied between left and right external views and internal cabin and cockpit views.

The video recordings are summarized in the attached chronological descriptions. The times used in the descriptions are elapsed time from the start of each recording.

2.2.1. Samsung Galaxy SIII Video Chronological Descriptions

Filename 20130803_112115.mp4:

[00:00:00] Engines were running, aircraft was stationary in front of hangar. Initially, camera was pointed out right window towards right engine.

Forward left seat pilot[3] had no mustache, green tattoos on right arm (at least), black short hair. Forward right seat occupant had a mustache, balding scalp covered by baseball cap. Person in back was taking photos and was wearing shorts with black/blue/green bottoms (based on still photos, this was the teenager with black hair).

Scattered to broken cumulus cloud cover was observed throughout all videos.

[00:00:10] As the camera panned from right to left, the altimeter indicated negative 800 feet.

[00:00:37] Voices were mostly obscured by engine sound; however, the word "seatbelt" was heard as the camera was being panned left to right.

[00:01:13] Front right door was ajar, being held open by forward right seat passenger.

[00:01:24] Unknown person said "you have your external GPS in here?" response was unintelligible.

[00:02:20] Unknown person said "I can hear you" as the forward right seat passenger was looking towards back seat.

[00:02:49] Altimeter indicated 50 feet.

[00:02:53] Airplane began to taxi.

[00:03:12] Complete view of forward instrument panel and engines as the engine taxied on the ramp. Aircraft was taxiing northeast (060 indicated on magnetic compass and HSI). Left fuel gauge was about half full; right fuel gauge was about 3/8th full. Propeller control levers were full forward. Both front seat occupants were wearing Bose headsets.

[3] Review of the video indicated the left seat occupant was the flying pilot.

The Garmin GTN-750 was visible with communication frequencies of 122.70 Mhz in the top position and 119.52 Mhz in the bottom position; VOR frequencies of 111.90 Mhz and 110.50 Mhz were displayed in the top and bottom position, respectively. A green background was displayed with an aircraft pointing about 60 degrees right of straight up.

[00:03:41] The aircraft entered the taxiway and taxied on a heading of about 40 degrees (indicated on the horizontal situation indicator (HSI) (the HSI was aligned with the magnetic compass)) at about the speed of a slow walk. The pilot and right seat passenger spoke, but the engines made speech unintelligible. As they spoke, the pilot adjusted a panel mounted device just to the left of the airspeed indicator. The pilot's window was open.

[00:05:07] The pilot communicated on the radio while taxiing. A Cessna was occupying the run-up pad.

[00:05:26] While stopped on the taxiway just prior to the run-up pad, the pilot increased both throttle control levers and the propeller RPM rose to 2,000 RPM. He pulled the left engine propeller control lever all the way back, then immediately forward; he pulled the right engine propeller control lever all the way back, then immediately forward. In both instances a corresponding change in sound was recorded, similar to a reduction in propeller RPM.

[00:05:33] The pilot began to reduce the throttle control lever; both RPMs indicated about 1,500 RPM.

[00:05:42] The left and right fuel gauges were visible, as shown in figure 2. Given the start time of the video was 11:21:15 EDT (see table 1), the local time of figure 2 was 11:26:57 EDT.

Figure 2. Fuel gauges at 00:05:42 elapsed time in video 20130803_112115.mp4 (11:26:57 EDT) (occupants redacted).

[00:05:47] With the RPM indicating 1,500 RPM, the pilot once again pulled the left engine propeller control lever all the way back, then immediately forward; he then pulled the right engine propeller control lever all the way back, then immediately forward.

[00:06:11] The pilot reduced both throttle control levers; RPM decreased to about 1,000 RPM on both engines.

[00:06:32] The right door was closed and verified closed by the pilot (leaning across from left to right). The pilot window was closed.

[00:06:58] The aircraft moved forward and held short of the take-off runway.

[00:07:25] When the camera panned to show the wings, the wing flaps were flush with the neutral ailerons.

[00:07:33] The aircraft taxied onto the take-off runway.

[00:07:35] The camera panned to the rear of the aircraft interior, revealing two flexible tubes, similar to a portable air conditioner.

[00:07:42] The pilot advanced the throttle control lever and began the take-off roll.

[00:08:01] The aircraft lifted-off (camera was pointed out the right window).

[00:08:04] The sound of a high impedance motor, similar to gear retraction, was recorded.

[00:08:11] The camera panned to include the instrument panel. The altimeter climbed through 200 feet. Airspeed indicated about 105 knots. Propeller and manifold pressures were aligned.

[00:08:21] The altimeter climbed through 400 feet.

[00:08:34] A throbbing engine sound was recorded, similar to the propellers slightly out of sync.

[00:08:42] Reduction in engine noise, similar to power decrease.

[00:09:32] The altimeter levelled at 1,300 feet. Airspeed indicated about 145 knots. Propeller RPMs both indicated 2,400. Manifold pressures indicated about 23 inHg. Heading on the HSI indicated about north.

[00:10:02] Altimeter varied between 1,200 to 1,300 feet.. Airspeed indicated about 160 knots. The pilot leaned the mixture on both engines.

[00:10:28] Pilot reduced both throttle control levers.

[4] [00:11:39] Apparent pause in video; unknown time gap. Aircraft altitude was lower than prior to time gap.

[4][00:11:56] Altimeter indicated 560 feet. Aircraft turned and levelled out flying easterly.

[4][00:12:23] Altimeter indicated 900 feet.

[4][00:13:53] The recording ended in cruise flight, below scattered to broken cumuliform clouds.

Filename 20130803_114631.mp4:

[00:00:00] The recording began in cruise flight, below scattered to broken cumuliform clouds. The camera was pointed out the right rear window.

[00:00:45] The camera panned across the instrument panel. Altimeter indicated about 2,000 feet. Heading indicated about 050 degrees on the HSI. Garmin GTN-750

[4] Elapsed times including and after 00:11:39 are elapsed recorded time. Due to the apparent pause in the video at 00:11:39, the relation between elapsed flight time and elapsed recorded time is unknown between 00:11:39 and the end of this video file.

indicated a groundspeed of 163 knots. Airspeed indicated about 150 knots. Pilot and front seat passenger were talking.

[00:01:17] About 25 mid-level tones over a 5-second period (could not determine if this was generated by aircraft, cellphone, or another source). The aircraft was heading towards a large lake, pilot was pointing at lake.

[00:01:35] The altimeter was descending through 1,800 feet. The airspeed indicated about 160 knots, groundspeed on the Garmin GTN-750 indicated 177 knots.

[00:01:59] The altimeter was descending through 1,500 feet.

[00:02:25] The altimeter was descending through 1,100 feet at 1,000 fpm. The airspeed indicated about 180 knots. The camera movement suggested other than smooth air.

[00:02:47] The aircraft was over the large lake.

[00:03:15] Garmin GTN-750 indicated a groundspeed of 179 knots. The aircraft was turning left through about 040 degrees. Altimeter indicated about 500 feet.

[00:03:27] The aircraft was over the south shore of the large lake.

[00:03:45] The aircraft was back over land, the large lake passing behind.

[00:04:05] Altimeter indicated a climb through 800 feet.

[00:04:56] Altimeter indicated 1,000 feet.

[00:06:35] Recording ended in cruise flight.

Filename 20130803_115708.mp4:

[00:00:00] Recording started with a view of the instrument panel. Altimeter was descending through 1,300 feet, heading about north on the HSI. Garmin GTN-750 was at an unknown scale, showing green/yellow weather returns northwest through northeast.

[00:00:11] The pilot was adjusting RPM on the both engines (small adjustment).

[00:00:56] Altimeter was descending through 800 feet, heading towards a lake.

[00:01:09] The camera angle turned 90 degrees (so the left wing was towards the top of the video image).

[00:01:39] Shore of lake was off left wing of plane.

[00:03:03] Altimeter indicated 1,100 feet.

[00:04:32] Aircraft was heading towards a lake.

[00:04:50] Aircraft passed over lake.

[00:05:47] Altimeter indicated 800 feet.

[00:07:26] Aircraft passed through light rain, visibility only slightly diminished (at least 5 miles visibility).

[00:07:58] Altimeter indicated 1,200 feet. Garmin GTN-750 indicated a groundspeed of 136 knots and a track of 237 degrees. The left fuel was slightly greater than half (right fuel gauge obscured behind mixture levers).

[00:08:11] The pilot began to make touchscreen entries on the Garmin GTN-750.

[00:08:37] The recording ended in cruise flight at 1,200 feet.

Filename 20130803_123132.mp4:

[00:00:00] Aircraft was approaching a runway, descending through 400 feet. Airspeed indicated 120 knots, heading indicated 170 degrees on the HSI.

[00:00:06] The left and right fuel gauges were visible, as shown in figure 3. Given the start time of the video was 12:31:32 EDT (see table 1), the local time of figure 3 was 12:31:38 EDT.

Figure 3. Fuel gauges at 00:00:06 elapsed time in video 20130803_123132.mp4 (12:31:38 EDT) (occupants redacted).

[00:00:16] A regional jet was holding short of runway 18, which was the runway the accident aircraft was over flying.

[00:00:24] The pilot began to increase the throttle control levers as the aircraft passed over the runway threshold. The Garmin GTN-750 top frequency was 119.2 Mhz. The top navigation frequency was 109.50. Annunciator panel above the altimeter had "VLOC" illuminated. Squawk was 0373. Garmin GTN-750 was displaying a message "Missed Approach." Runway distance markers visible out the front window showed 8,000 feet remaining. Altitude was 200 feet.

[00:00:54] Aircraft climbed through 300 feet maintaining runway heading, over the runway.

[00:01:10] Aircraft began slight right bank.

[00:01:54] A few clouds passed off the right side of the plane at the same altitude of the plane.

[00:02:11] Aircraft passed through few clouds[5].

[00:03:10] Altimeter indicated 1,800 feet.

[5] FAA Aviation Weather Services (Advisory Circular AC00-45G) defines few clouds as covering greater than 0 but at least 2/8 of the sky.

[00:03:26] The recording ended with the Atlantic Ocean about 20 miles off the left wing of the aircraft.

Filename 20130803_124441.mp4:

[00:00:00] The recording began with a view of the instrument panel. The altimeter indicated 2,900 feet. Heading was about 30 degrees on the HSI. Garmin GTN-750 indicated a squawk of 1200. The active communication frequency was 122.70.

[00:00:11] Camera angle rotated so that the left wing was up.

[00:00:45] Aircraft flew through the base of scattered clouds.

[00:00:59] Altimeter indicated a climb through 3,600 feet. The aircraft was in the bases of the clouds. The heading was north on the HSI.

[00:01:23] The aircraft emerged from the scattered cloud.

[00:01:48] The recording ended in cruise flight.