

NATIONAL TRANSPORTATION SAFETY BOARD
Vehicle Recorder Division
Washington, DC 20594

November 7, 2017

Onboard Image Recorder

Specialist's Factual Report
By Sean Payne

1. EVENT

Location:	Stafford, Virginia
Date:	June 6, 2016
Aircraft:	Boucher Duo Deuce, N808DD
Operator:	Private
NTSB Number:	ERA16LA204

2. GROUP

A group was not convened.

3. SUMMARY

On June 6, 2016, at 1759 eastern daylight time (EDT), an experimental amateur-built Duo Deuce, N808DD, was substantially damaged during a collision with terrain after takeoff from Stafford Regional Airport (RMN), Stafford, Virginia. The commercial pilot/owner/builder was seriously injured. Visual meteorological conditions prevailed, and no flight plan was filed for the initial test flight, which was conducted under the provisions of 14 *Code of Federal Regulations* Part 91.

4. DETAILS OF INVESTIGATION

On August 19, 2016, the National Transportation Safety Board (NTSB) Vehicle Recorder Division received the following video file:

Recorder Manufacturer/Model:	File
Filename:	IMG_1025.MOV.mov¹

4.1. Recorder Description

The recording was made by an unknown device.

4.2. Video Files

One file, IMG_1025.MOV.mov was received by the NTSB. The video was 33 seconds in length, however, it was provided at a playback rate that was much

¹ The user had placed a file suffix in the filename, thus resulting in the doubling of the file type.

higher than the original recorded rate. The file was 1280 by 720 pixels in resolution and was encoded to playback at 30 frames per second. The file's playback rate was reduced using video editing software until a near real-time playback rate was achieved. After the file's playback speed was reduced to real-time, the playback speed became approximately 2 frames per second.

The video file was provided from a cockpit mounted camera that provided an over the shoulder view of the pilot. The camera was forward looking, captured a portion of the rear of the pilot's head and headset, a view out of the forward windscreen, a portion of the left and right engine nacelle and a small segment of each propeller. None of the pilot's control manipulations, nor the instrument panel could be seen from the camera's view.

4.3. Timing and Correlation

The times used in this report are expressed in Video Elapsed Time, which is time from the beginning of the recording. The time format is given in MM:SS, where MM represents the number of elapsed minutes and SS represents the number of elapsed seconds. After the file was corrected to a real-time playback speed, no attempt was made to align the accident video to local time.

4.4. Summary of Recording Contents

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

The video began as the pilot was closing the aircraft's canopy near the ramp area of an airport. The left engine was already running. Around 00:56, the pilot began starting the right engine and by 01:26, the right engine began running. Around 03:07, the aircraft began to taxi.

The aircraft continued to taxi until 07:00 when the pilot stopped the aircraft in the run-up block near the threshold of runway 16 at RMN. As the aircraft was in the run-up block, the representation of the propeller due the effects of the camera's rolling shutter² changed. The change in the visual representation of the propeller due to the camera's rolling shutter effect suggested that the engine RPM of each engine varied during a run-up. By 08:44, the aircraft had moved out of the run-up block and by 09:05, the aircraft had crossed the hold short line for runway 16 and soon thereafter, lined up with the runway.

As soon as the aircraft lined up with the runway, the aircraft began accelerating down the runway. At 09:56, the aircraft began to rotate. At approximately 10:00, the aircraft became airborne. Nearly as soon as the aircraft became airborne, the aircraft began to drift to the right of runway centerline. Around 10:13, the aircraft

² Rolling shutter – a method of capture by an imaging sensor that does not record the entire area of the image sensor in a single instant, but rather by scanning across the scene rapidly. Specifically, in aviation applications, this effect results in making fast turning objects, such as propellers, represented as a series of moving curves.

stopped climbing. By 10:18, the aircraft was well right of centerline and was no longer over the runway but over a grassy area. Between 10:22 and 10:27, the aircraft appeared to climb by a small amount. The aircraft banked left back toward the centerline of the runway and by 10:26, the aircraft had returned to an area above the runway but right of centerline. The aircraft no longer appeared to be climbing for the remainder of the recording.

Around 10:34, the departure end of runway 16 disappeared under the aircraft. The aircraft continued to drift to the right, the aircraft was not still not climbing. Around 10:51, the aircraft began to bank right and lose altitude. Around 10:55, the aircraft impacted the ground in a nose low, approximately 45 degree right banked attitude. Blurry images of the impact sequence were recorded and the video cut to black.³

Throughout the takeoff roll, flight and subsequent impact with terrain, the effect of the camera's rolling shutter effects on the representation of each propeller did not substantially change. Because the distortion due to rolling shutter of each propeller was consistent, the recording suggested each propeller's RPM remained at an unquantified but mostly steady state.

³ It was unclear if the camera stopped recording or if the video was edited by someone prior to being provided to the NTSB.