

NATIONAL TRANSPORTATION SAFETY BOARD

Office of Aviation Safety
Washington, D.C. 20594

Aerial Imagery Factual Report

10/12/2017

A. ACCIDENT DCA17FA109

Operator: Air Cargo Carriers flight 1260
Location: Charleston, WV
Date: May 5, 2017
Time: 0651 Eastern Daylight Time (EDT)
Aircraft: Short Brothers Ltd. SD3-30 Variant 200
Registration: N334AC

B. PERSONNEL

UAS Program Lead: Bill English
 National Transportation Safety Board
 Washington, D.C.

C. SUMMARY

On May 5, 2017 at 6:51 a.m. eastern daylight time (EDT), Air Cargo Carriers flight 1260, a Shorts SD3-30, N334AC, crashed during landing on runway 5 at the Charleston Yeager International Airport, Charleston, WV (CRW). The airplane was destroyed and the two pilots suffered fatal injuries. The flight was a scheduled cargo flight from Louisville, Kentucky, operated under the provisions of 14 CFR 135. The aircraft was executing a VOR-A approach, weather was reported as overcast clouds at 500 feet and 10 miles visibility with light winds at the time of the accident.

D. DETAILS OF IMAGERY

1.0 Equipment and Procedures

Equipment

Mapping and visual inspection flights were conducted on May 6, 2017, using the NTSB DJI Phantom 4 Professional small unmanned aircraft system (sUAS, commonly known as a drone). The drone is equipped with a dual GPS/GLONASS receiver which provides georeference information on all still photos. The drone is equipped with an FC6310 camera using the Sony Exmor 1” CMOS sensor, with a focal length of 8.8 mm. Still photo resolution is 20 megapixels in JPG or RAW format.

Procedures

CRW airport has an associated Class C airspace. The NTSB obtained an amended Certificate of Authorization or Waiver (eCOA) from the FAA to operate within the controlled airspace at and below 150 feet above ground level (agl). In accordance with the eCOA, a Notice to Airmen (NOTAM) was issued and continuous communications with the air traffic control tower were maintained.

The drone was flown in a series of overlapping grids and oblique orbits at 50 and 100 feet agl obtaining still photos to develop a 3D model and orthomosaic. Coverage area extended from just past the painted runway 5 number, along the impact area to the final resting location of the main wreckage. Additional flights were taken to obtain video approximating the view to the initial impact point. Total flight time was less than 1 hour.

Processing

Still imagery was processed using Pix4D photogrammetry software to provide orthomosaic mapping of the entire site. Relative accuracy (within the map) was accurate to approximately 1/2 inch (2x ground sample distance). Ground Control Points were not used, resulting in a positional (absolute) accuracy of approximately 17 inches. Sample measurements of witness marks were compared to traditional ground measuring and found to correlate with insignificant differences, largely due to the inherently inexact nature of marks such as gouges and scrape marks.

2.0 Imagery products

Approximately 800 high resolution photos and videos were gathered. Still photos and videos were provided to the IIC and investigative team on scene. Select still images and samples of processed products are included in this section and in the docket for this accident.

While on scene, an initial low resolution orthomosaic map of the accident site was developed and exported in Google Earth kmz format for the use of investigators and recovery personnel. A full-resolution orthomosaic kmz was developed after the on-scene phase and is included as Attachment 1. Select snapshots of the orthomosaic and source point cloud are included below.



Figure 1 - Snapshot of Orthomosaic

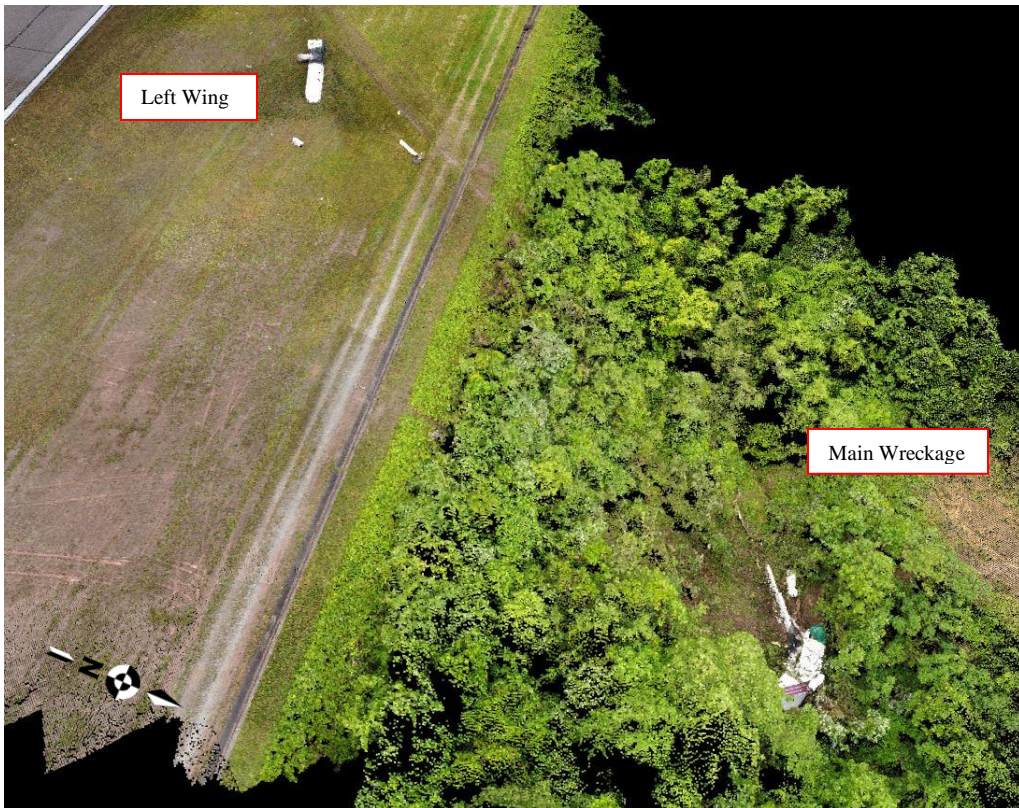


Figure 2 – Selection of Point Cloud



Figure 3 - Photo Left Wing and Witness Mark



Figure 4 - Photo overhead main wreckage



Figure 5 - View of approach end from approximate aircraft position at 150 feet agl

3.0 Attachments

Attachment 1 – Google Earth kmz export