National Transportation Safety Board
Office of Aviation Safety
Washington, DC 20594

CEN23MA034

UAS AERIAL IMAGERY FACTUAL REPORT

December 21, 2022

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A. ACCIDENT

Location:	Dallas, Texas
Date:	November 12, 2022
Time:	1322 central standard time 1922 UTC
Airplane 1:	Boeing B-17G, Flying Fortress, N7227C
Airplane 2:	Bell P-63F Kingcobra, N6763

B. PERSONNEL

Group Chair	Joshua Lindberg National Transportation Safety Board Dallas, Texas
Visual Observer	Michael Hodges National Transportation Safety Board Denver, Colorado

C. ACCIDENT SUMMARY

On November 12, 2022, about 1322 central standard time, a Boeing B-17G, N7227C and a Bell P63–F, N6763 collided in midair, at Dallas Executive Airport (KRBD), Dallas, Texas. A post impact explosion and subsequent fire ensued. The pilot and four crewmembers onboard the B-17 and the pilot of the P63 were all fatally injured. There were no ground injuries reported. Both airplanes were operated under the provisions of Title 14 *Code of Federal Regulations* Part 91 in the Wings Over Dallas Airshow. The wreckage of both airplanes came to rest on the southeast corner of airport property. All four corners of both airplanes were located within the debris field. Small debris from both airplanes was located to the east of airport property on and adjacent to highway 67 and the frontage roads.

D. DETAILS OF IMAGERY

1.0 Equipment

Flights to photo-document and map the area of the crash were conducted on November 13, 2023, using an NTSB DJI Phantom 4 Advanced small unmanned aircraft systems (sUAS, or drone). The drone is equipped with a dual GPS/GLONASS receiver which provides georeferenced 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, the camera is capable of video resolution of 4K HD up to 120 frames per second.

2.0 UAS Mission and Processing

The UAS mission consisted of the accident site and overall debris field, not including the debris that landed off airport property and was relocated by first responders. The covered an area of 0.08 sq. mi or 48.3755 acres.

Using Pix4D photogrammetry software, a full resolution point cloud was generated. An orthomosaic map was generated based on the point cloud. The orthomosiac map was loaded into Google Earth for measurements and visualizations, which was provided to the investigative team.

2.1 Aerial Imagery

Figure 1. Aerial view of accident site with the B-17G tail in the left foreground. A small portion of the tail has been covered with a black box due to the sensitive contents in the image (Source: NTSB).

Figure 2. Aerial view of B17-G initial impact area and debris field facing northwest (Source: NTSB).

Figure 3. Aerial view of accident site facing southeast (Source: NTSB).

Figure 4. Aerial view of P-63F main wreckage (Source: NTSB).

2.2 Orthomosaic Imagery Products

Figure 5. Overall view of the accident site with points of interest (Google Earth Overlay)

Figure 6. The full accident debris field was about 1,880 ft long northwest-southeast by about 410 ft wide northeast-southwest (Google Earth Overlay).

Figure 7. The full debris field was about 1,880 ft long northwest-southeast by about 410 ft wide northeast-southwest (Google Earth Overlay).

Figure 8. The southernmost debris area contained the aft fuselage and empennage of the B-17G that was lying upside down. It was located about 410 ft south of the corner of runway 31 (Google Earth Overlay).

Figure 9. The B-17G initial impact point was located about 410 ft northwest of the tail (Google Earth Overlay).

Figure 10. The B-17G central debris area was located about 690 ft northwest of the B-17G tail (Google Earth Overlay).

Figure 11. The main B-17G debris field measured about 525 ft long by about 225 ft wide (Google Earth Overlay).

Figure 12. The main B-17G debris field measured about 525 ft long by about 225 ft wide (Google Earth Overlay).

Figure 13. The P-63F propeller, gearbox, and nose landing gear separated from the forward fuselage during the collision and were found about 105 ft south of the P-63F fuselage.

Figure 14. The P-63F left and right wings separated from the fuselage during the collision and were located in the debris field. The right wing was lying on its upper surface and was located about 480 ft southeast of the P-63F fuselage (Google Earth Overlay).

Figure 15. The P-63F left and right wings separated from the fuselage during the collision and were located in the debris field. The left wing was lying on its lower surface and was located about 530 ft southeast of the P-63F fuselage (Google Earth Overlay).

Figure 16. The P-63F left and right wings were separated by about 150 ft (Google Earth Overlay).

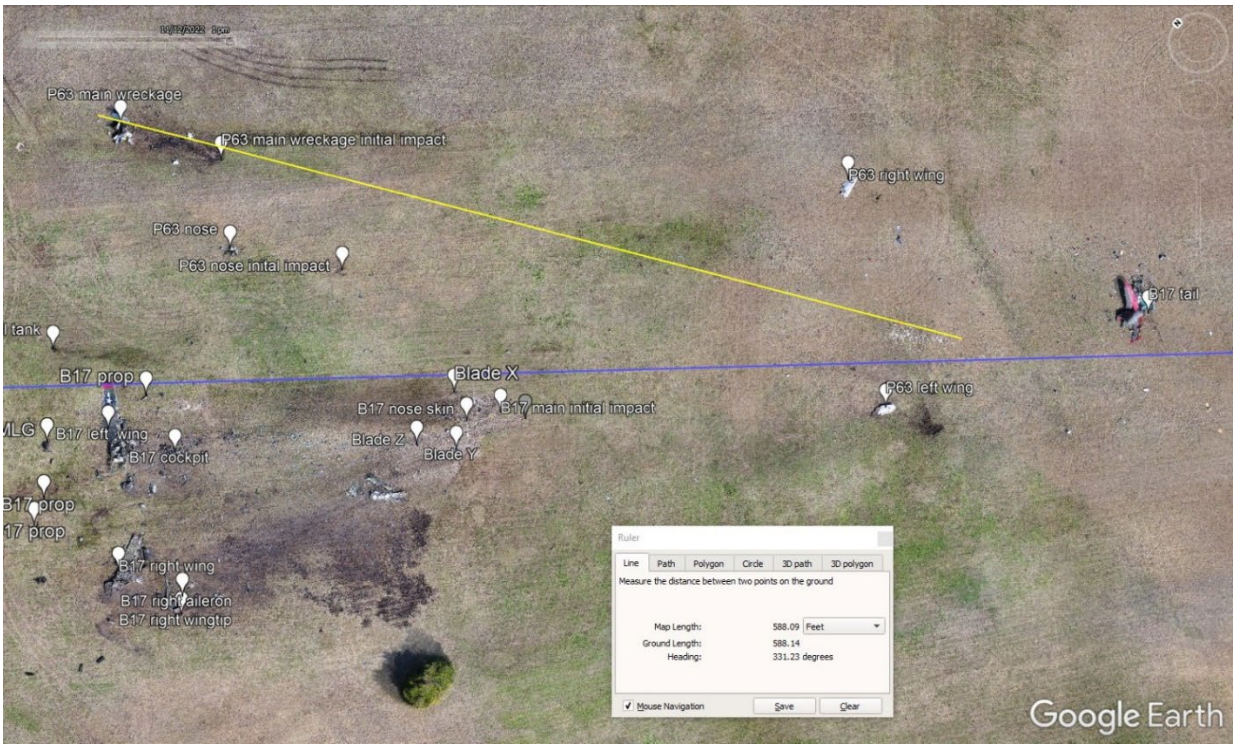

Figure 17. P-63F general debris path from the wings to the main wreckage ~600 ft (Google Earth Overlay).

Figure 18. B-17G initial impact to the engines ~500 ft (Google Earth Overlay).

Submitted by:
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