

National Transportation Safety Board

Office of Highway Safety

Washington, DC 20594



HWY24MH005

UNMANNED AIRCRAFT SYSTEM AERIAL IMAGERY

Specialist's Factual Report

TABLE OF CONTENTS

A. Crash	3
B. Unmanned Aircraft System Aerial Imagery Group.....	3
C. Crash Summary.....	3
D. Details of the Investigation.....	3
1.0 Equipment	3
2.0 Procedures.....	3
3.0 Processing	4

LIST OF FIGURES

Figure 1. Image of generated point cloud.....	4
Figure 2. Image of the generated three-dimensional point cloud depicting the area of impact.	5

1 **A. CRASH**

2 Location: Rushville, Schuyler County, Illinois
3 Date: March 11, 2024
4 Time: 11:29 am (CDT)

5 **B. UNMANNED AIRCRAFT SYSTEM AERIAL IMAGERY GROUP**

6 UAS RPIC Eric Gregson
7 National Transportation Safety Board
8
9 UAS Visual Observer Scott Parent
10 National Transportation Safety Board

11 **C. CRASH SUMMARY**

12 For a summary of the crash, refer to the *Crash Information and Summary Report*,
13 which can be found in the NTSB docket for this investigation.

14 **D. DETAILS OF THE INVESTIGATION**

15 **1.0 Equipment**

16 Mapping and imagery flights were conducted on March 13, 2024, using the
17 NTSB DJI Phantom 4 Professional V2. The sUAS¹ is equipped with a dual
18 GPS/GLONASS receiver which provides geo-referenced information encoded in all still
19 photographs. The sUAS is equipped with an FC6310 camera using the Sony Exmor 1-
20 inch CMOS sensor, with a focal length of 8.8 mm. Still photograph resolution is 20
21 megapixels in JPG or RAW format.

22 **2.0 Procedures**

23 Six missions were conducted utilizing the sUAS. The six missions captured
24 approximately 0.42 miles of roadway curve leading up to and beyond the area of
25 impact.

26
27 The crash was in the westbound lane United States Route 24. The GPS latitude
28 and longitude coordinates were 40°06.9581' N, -90°35.0361' W. The crash was in Class
29 G uncontrolled airspace with no active advisories or temporary flight restrictions in
30 place.² The nearest public airport was Schuy-Rush Airport, which was located at the

¹ sUAS - small Unmanned Aerial System

² FAA B4UFLy

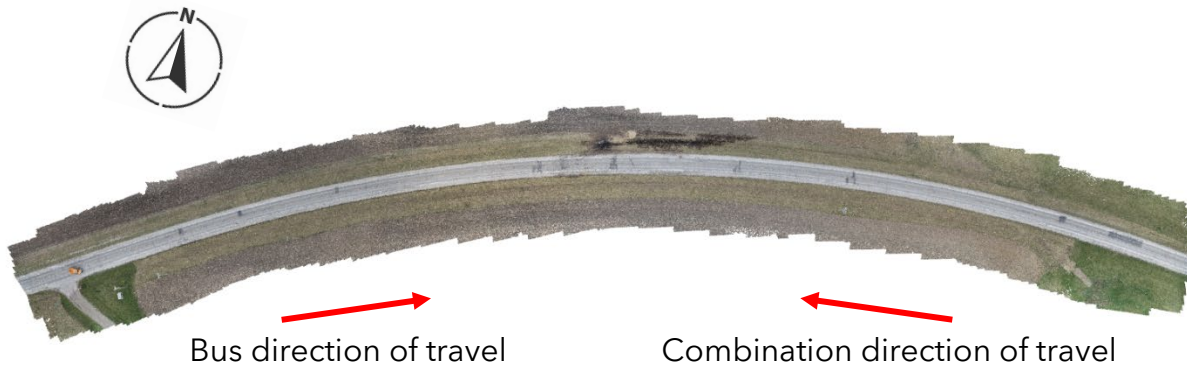
1 crash scene.³ There was no tower at the airport which had a grass runway. An additional
2 visual observed was utilized for aircraft potentially leaving or arriving at the airport
3 during the UAS operations.

4
5 There were powerlines located along the south side of the roadway, but no
6 significant terrain, environmental, or obstruction hazards. The flights were conducted
7 under Code of Federal Regulations Part 107.

8
9 To obtain aerial imagery for the use of creating an orthomosaic image of the
10 crash scene and surrounding roadway, the sUAS was flown over the collision site while
11 traffic control was provided by the Illinois Department of Transportation (IDOT). IDOT
12 closed the roadway to all vehicular traffic so no vehicular traffic was present underneath
13 the sUAS. On March 13, 2024, six flights at the scene were conducted utilizing Pix4D
14 Capture with a double grid pattern at approximately 75 feet above ground level (AGL).
15 A total of 1,044 aerial images were captured of the crash site. During all flights a visual
16 observer (VO) was used and the sUAS was not flown over moving vehicles.

17 3.0 Processing

18 The sUAS was used to capture 1,044 high resolution, georeferenced
19 photographs of the crash scene suitable for processing in the Pix4D photogrammetry
20 software.⁴ Figure 1 is a nadir view of the three-dimensional point cloud generated from
21 the images.
22



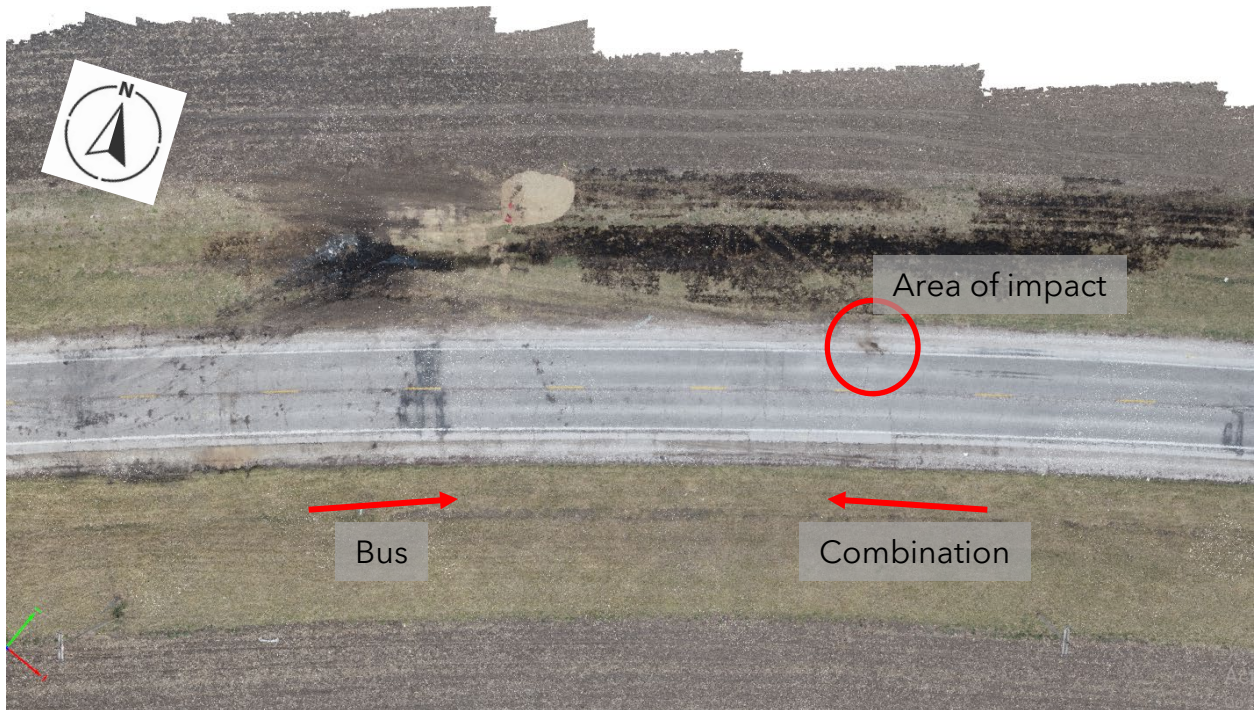
23  **Figure 1. Image of generated point cloud.**

24
25 Figure 2 is a close-up image of the generated three-dimensional point cloud with
26 depicting the area of impact along the westbound roadway edge.

³ <https://airnav.com>

⁴ Pix4DMapper is a photogrammetry software package designed to use overlapping photographic images to generate 3D point clouds. Additional outputs can be generated through additional processing, including 3D models and an 2D orthomosaic image.

1



2
3
4

Figure 2. Image of the generated three-dimensional point cloud depicting the area of impact.

5
6
7
8
9

Submitted by:
Eric Gregson
sUAS Aerial Imagery Specialist/RPIC