



Memorandum For Record

Timothy W. Monville
Sr. Air Safety Investigator
Eastern Region

Date: 7/29/2023
NTSB Accident Number: ERA21FA346

The Robertson Field Airport (4B8) was a public use airport equipped with a single 3,665 ft long by 75 ft wide asphalt runway. The elevation at the approach and departure ends of runway 02 were reported to be 188.6 ft and 201.6 ft, respectively. An approximate 20 ft width of grass was noted beyond the departure end of runway 02, followed by an approximate 20 to 25 ft elevation decrease past the airport boundary terrain.

Examination of the taxiway leading onto the approach end of runway 2, and entire length of runway 2 was performed multiple times by NTSB, FAA, Textron Aviation, and personnel from West Hartford Police Department (West Hartford PD). No tire remnants were found on or near the runway. In addition, two drones operated by two local law enforcement agencies flew over the runway and accident site areas and recorded still and moving images.

Scanning of the runway, area immediately beyond the end of the runway, and roadway north of the departure end of runway 2 was performed by personnel from West Hartford Police Department on September 3, 2021, using FARO equipment.

Additional locations along the runway were identified and the locations determined by a handheld global positioning system (GPS) receiver stored as a 3-digit number and included as an attachment to this report.

Using FARO equipment, a total of 56 scans of the runway surface, the grass north of the departure end of runway 02, and area north of the airport were performed (Figure 1)¹. Of the 56 total scans, 48 scans were performed of the entire length of runway 02; 19 of which were of the approximate 1st half of the runway, and the remaining 29 were performed of the approximate 2nd half of the runway. One additional scan was made of the grass area north of the departure end of the runway. Seven scans were performed of the area immediately north of the airport to include the area of the damaged power pole.

¹ Refer to Appendix A which is a List of all scan Locations.

Examination of the taxiway leading onto the approach end of runway 2 and also the approach end of the runway revealed no discernable tire marks associated with the accident airplane (Figure 2). The first discernable mark associated with the right main landing gear tire was located about 9 ft right of runway centerline and about 2,361 ft from the approach end of the runway (Figures 3 and 4).

The first discernable mark from the left main landing gear tire was located about 6 ft left of runway centerline and 2,482 ft from the approach end of the runway (Figure 5 From Faro Scan 28). The distance between the center of the marks were about 15 ft, consistent with the published width between the left and right main landing gear tires.

The marks from both main landing gear tires continued arching to the right, with the mark from the right main landing gear tire becoming darker at spot 365 or about 12 ft right of runway centerline and about 2,685 ft from the approach end of the runway. The mark from the left tire was on runway centerline at spot 366, or about 2,720 ft from the approach end of the runway (Figure 6). At spot 368, or about 2,744 ft from the approach end of runway 2, alternating light and dark marks from the left and right main landing gear tires were spaced 6 ft 6 inches apart.

The marks from both main landing gear tires continue and about 3,337 ft from the approach end of the runway 2, or about 328 ft before the departure end of the runway the drainage grooves in the tread of the right tire were still visible while the mark was still dark (Figure 10). The marks from both main landing gear tires continue to the end and right side of the runway where the mark from the left tire was lighter in color and still displayed drainage grooves in the tread while the mark from the right tire was solid black and no drainage grooves were visible (Figure 14). The marks from both tires continued off the runway onto a short width of grass, where the mark from the left main landing gear tire ends about 18 ft past the runway end, and the mark from the right main landing gear tire ends about 15 ft past the runway end (Figure 15).

Using the Faro Scan, the terrain elevation at the base of the road just past the departure end of the runway was determined to be between 20 and 25 ft lower than the elevation at the departure end of runway 2. Additionally, Faro Scan past the departure end of the runway revealed the impacted pole was located about 361 ft from the departure end of runway 2, the pole was broken about 27 ft above ground level, and the height of the broken pole was about 1.8 ft lower than the elevation at the departure end of runway 2 (Figure 17).



Figure 1: Google Earth Plot of all Faro Scan locations Along Runway and Past Departure End of the Runway.



Figure 2: NTSB Digital Photograph. Ground View From Approach End of Runway 2.



Figure 3: NTSB Digital Photograph. Yellow Bag Identifies Location of First Observed Tire Mark from Right Main Landing Gear Located 2,360.9 ft along and 9 ft right of runway centerline runway 2.



Figure 4: Faro Image From Scan Station 26 Located About 2,326 Ft From Approach End of Runway 2. Pin indicates 1st identified Location of the Tire Mark Made by the Right Main Landing Gear Tire 2,360.9 Ft and about 9 Ft Right of Runway Centerline.

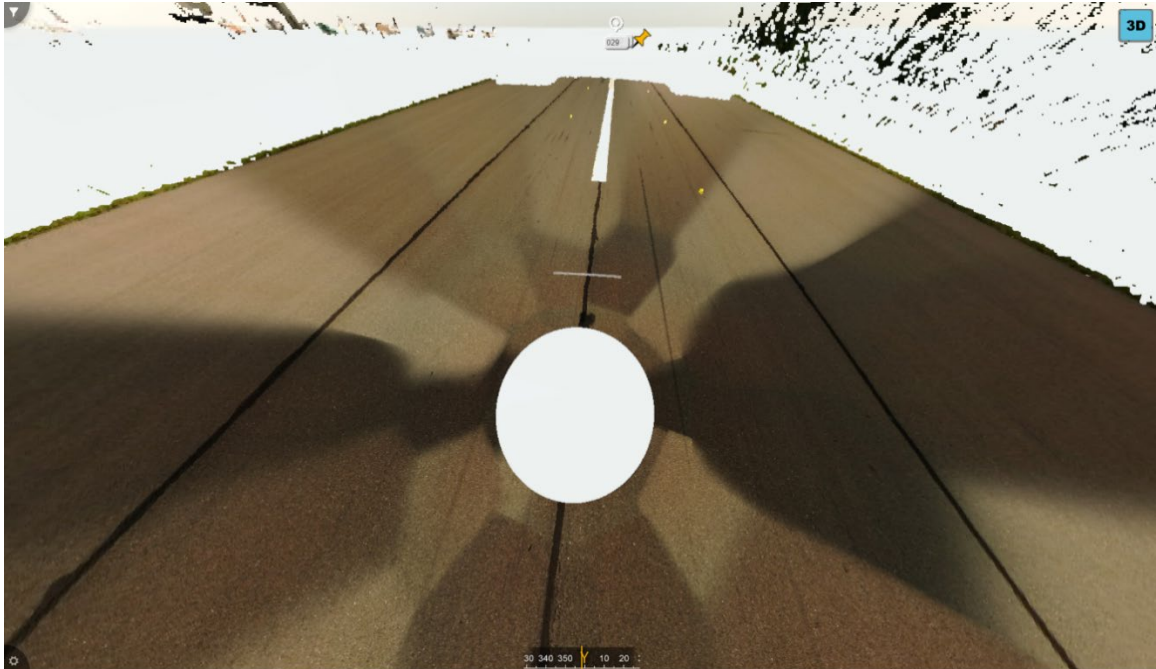


Figure 5: Faro Image From Scan Station 28 Located About 2,443 Ft From Approach End of Runway 2. Yellow Marker in Foreground Left of Runway Centerline indicates 1st identified Location of the Tire Mark Made by the Left Main Landing Gear Tire 2,482 Ft and about 6 Ft Left of Runway Centerline. Markers right of Runway Centerline Indicates Tire Marks from Right Main Landing Gear Tire. Note the Marks Slight Veering to the Right.



Figure 6: Faro Image From Scan Station 33 Located About 2,668 Ft From Approach End of Runway 2. Yellow Pin Marks Approximate Location of Spot 366, Which was About 2,720 Ft From the Approach End of Runway 2, And where the Left Main Landing Gear Crossed the Runway CenterLine. A Limitation of the Program Prevented Placement of the Pin on the Runway CenterLine. Note The Continued Deviation to the Right.

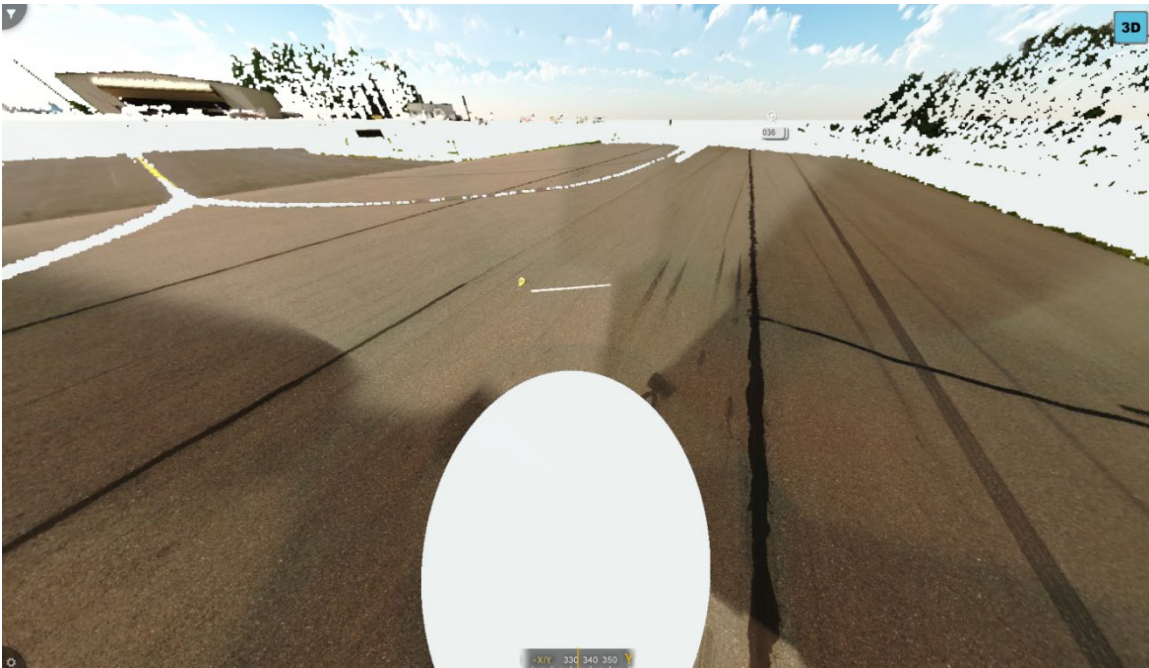


Figure 7: Faro Image From Scan Station 35 Located About 2,798 Ft From Approach End of Runway 2. Yellow Marker Depicts Mark From Left Main Landing Gear Tire. Note the Dark Mark From Right Main Landing Gear Tire and the Grooves Consistent with Tire Inflation. Note The Continued Slight Deviation to the Right.



Figure 8: Faro Image From Scan Station 36 Located About 2,855 Ft From Approach End of Runway 2. Yellow Pin Marker Depicts Mark From Left Main Landing Gear Tire. Note the Dark Mark From Right Main Landing Gear Tire and the Grooves Consistent with Tire Inflation. Note The Continued Slight Deviation to the Right.

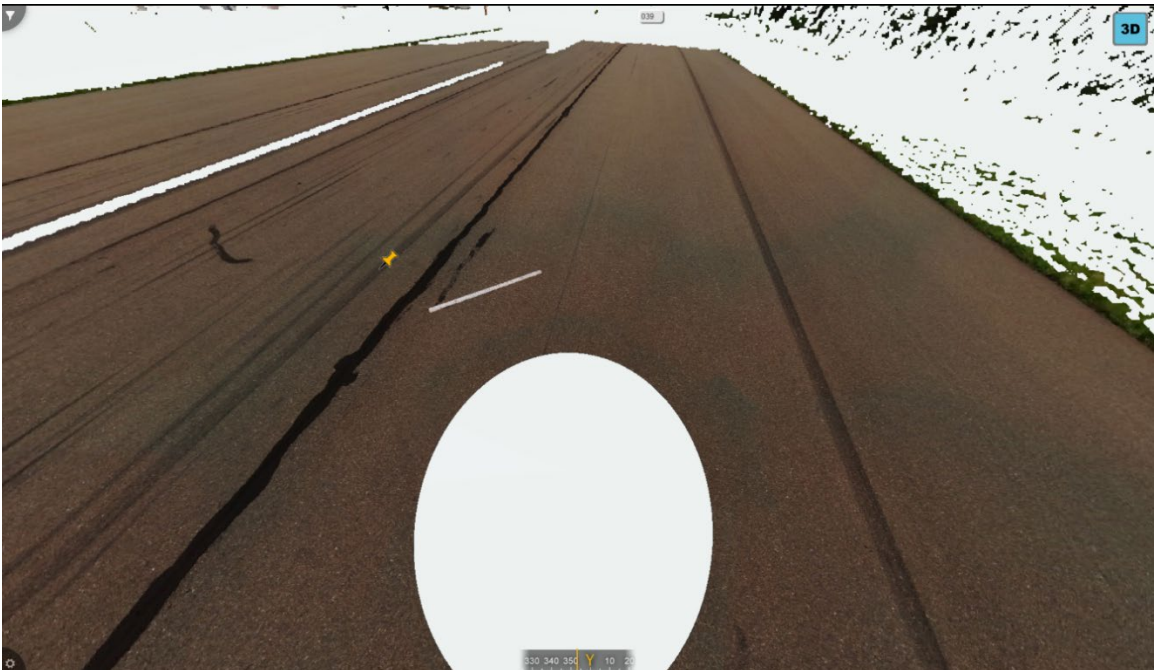


Figure 9: Faro Image From Scan Station 38 Located About 2,986 Ft From Approach End of Runway 2. Yellow Pin Marker Depicts Mark From Left Main Landing Gear Tire. Note the Dark Mark From Right Main Landing Gear Tire. Note The Continued Slight Deviation to the Right.



Figure 10: Faro Image From Scan Station 43 Located About 3,337 Ft From Approach End of Runway 2. Marks from Left and Right Main Landing Gear Tires with Grooves of both Noted.

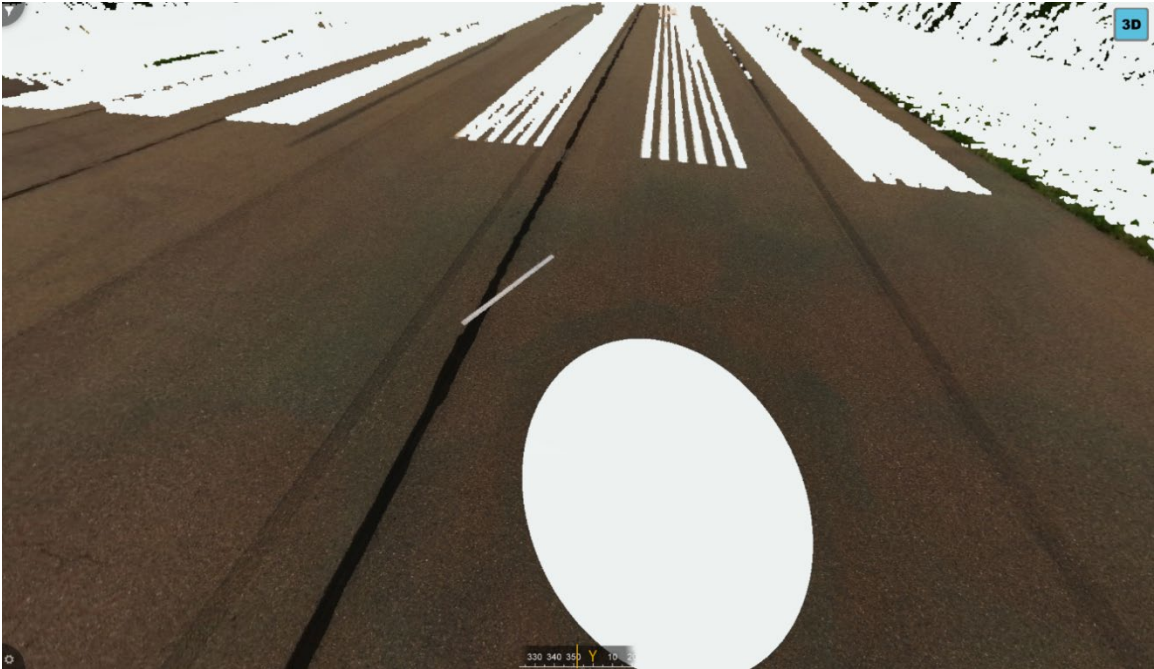


Figure 11: Faro Image From Scan Station 45 Located About 3,491 Ft From Approach End of Runway 2. Marks from Left and Right Main Landing Gear Tires Are Observed.

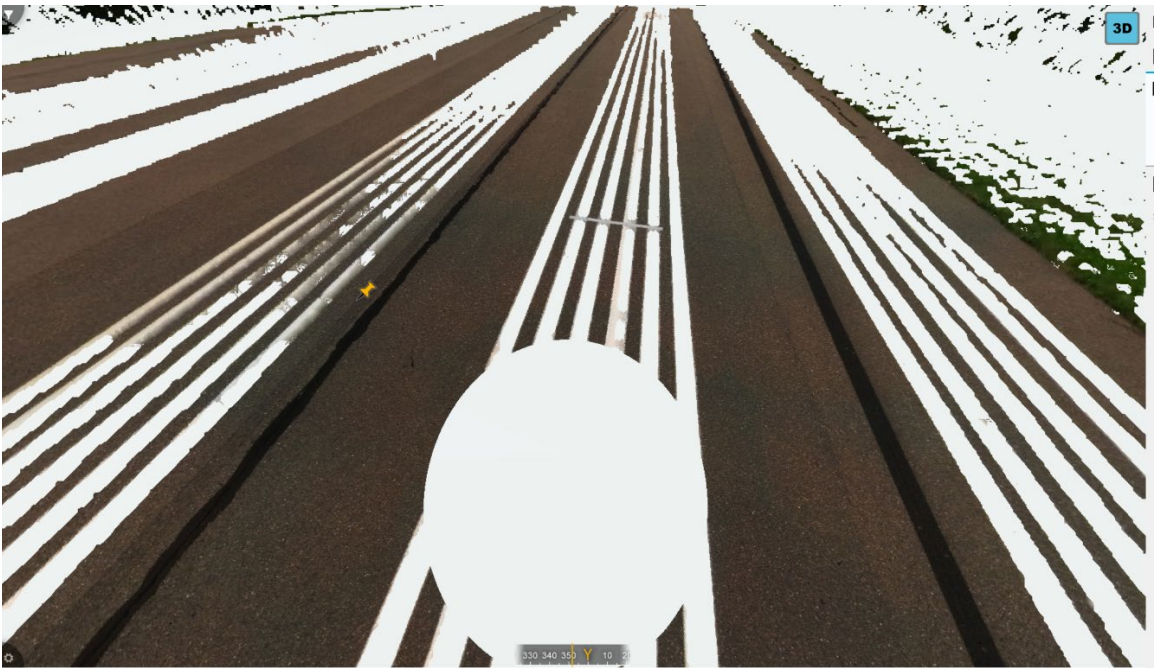


Figure 12: Faro Image From Scan Station 46 Located About 3,564 Ft From Approach End of Runway 2. Pin Marks Left Tire Mark, While Very Dark Mark From Right Tire is Noted Near Runway Striping.

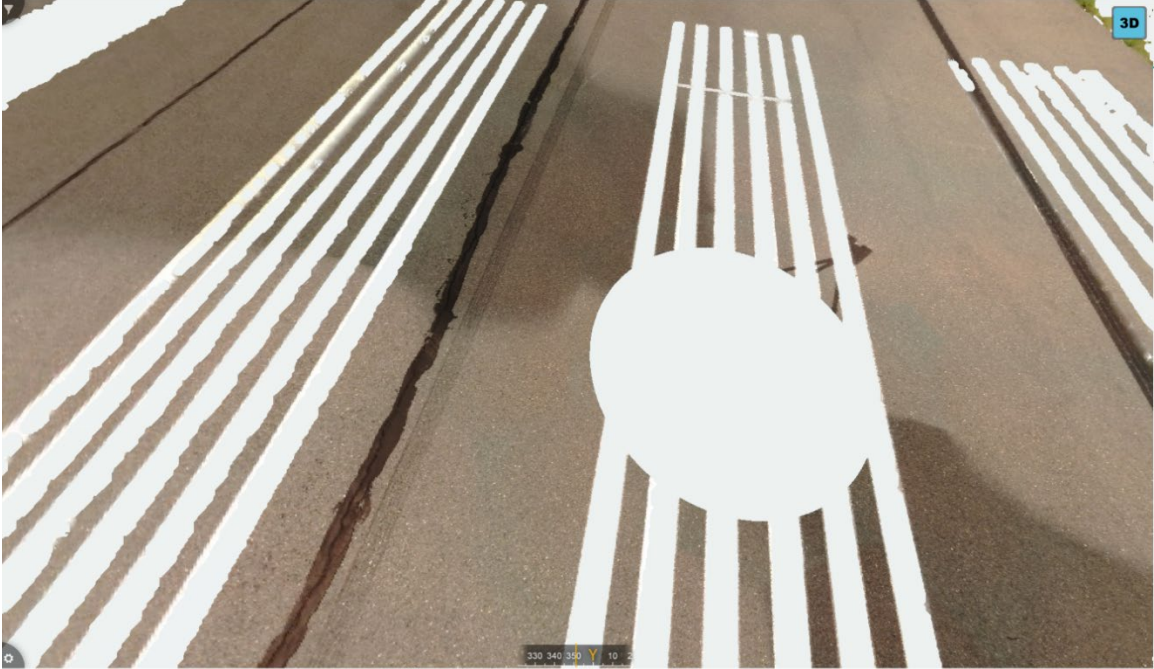


Figure 13: Faro Image From Scan Station 47 Located About 3,639 Ft From Approach End of Runway 2. Tire Mark From Both Main Landing Gear Tires with Grooves Noted for Both Consistent with Tire Inflation.

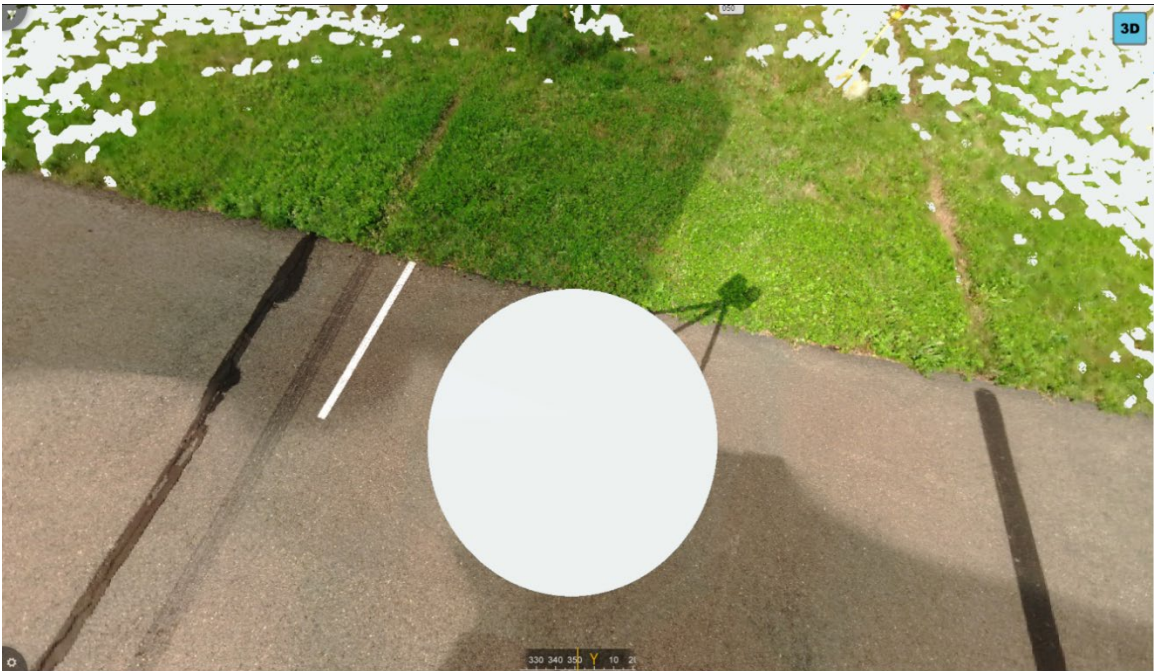


Figure 14: Faro Image From Scan Station 48 Located At Departure End of Runway 2. Note Light Tire Mark From Left Main Landing Gear While Very Dark Mark From the Right Main Landing Gear.



Figure 15: Faro Image From Scan Station 49 Located At Edge Of Airport Terrain Before Terrain Drop. Note marks from Both Main Landing Gear Tires in Grass.



Figure 16: Still Image From UAS. View Taken Past Departure End of Runway 2 Looking Towards the Approach End of Runway 2. Note the Elevation Change Past the Departure End of the Runway.

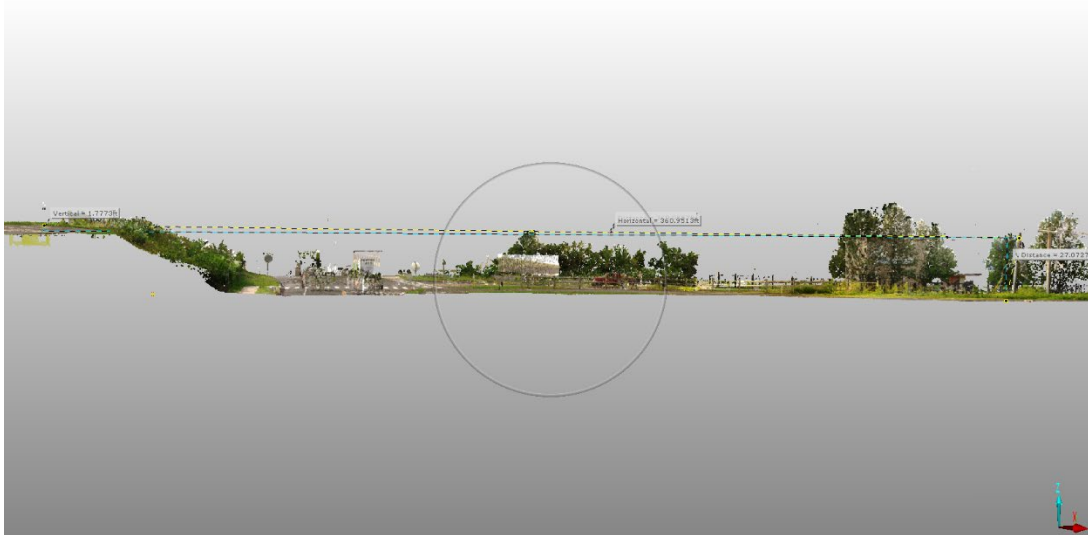


Figure 17: Faro Scan Image Documenting Terrain Elevation Drop, Distance from the End of the Runway to the Impacted Pole, and Elevation Difference From the Runway and Where the Pole Broke.

APPENDIX A

FARO SCAN DISTANCES¹

Scan 1:	About 27 ft from Approach End of Runway
Scan 2:	About 194 ft from Approach End of Runway
Scan 3:	About 288 ft from Approach End of Runway
Scan 4:	About 390 ft from Approach End of Runway
Scan 5:	About 457 ft from Approach End of Runway
Scan 6:	About 536 ft from Approach End of Runway
Scan 7:	About 652 ft from Approach End of Runway
Scan 8:	About 733 ft from Approach End of Runway
Scan 9:	About 859 ft from Approach End of Runway
Scan 10:	About 943 ft from Approach End of Runway
Scan 11:	About 1,035 ft from Approach End of Runway
Scan 12:	About 1,120 ft from Approach End of Runway
Scan 13:	About 1,213 ft from Approach End of Runway
Scan 14:	About 1,318 ft from Approach End of Runway
Scan 15:	About 1,417 ft from Approach End of Runway
Scan 16:	About 1,512 ft from Approach End of Runway
Scan 17:	About 1,584 ft from Approach End of Runway
Scan 18:	About 1,675 ft from Approach End of Runway
Scan 19:	About 1,772 ft from Approach End of Runway
Scan 20:	About 1,862 ft from Approach End of Runway
Scan 21:	About 1,948 ft from Approach End of Runway
Scan 22:	About 2,039 ft from Approach End of Runway
Scan 23:	About 2,134 ft from Approach End of Runway
Scan 24:	About 2,208 ft from Approach End of Runway
Scan 25:	About 2,297 ft from Approach End of Runway
Scan 26:	About 2,326 ft from Approach End of Runway

¹ The distances were measured in Google Earth.

APPENDIX A

Scan 27:	About 2,394 ft from Approach End of Runway
Scan 28:	About 2,443 ft from Approach End of Runway
Scan 29:	About 2,480 ft from Approach End of Runway
Scan 30:	About 2,539 ft from Approach End of Runway
Scan 31:	About 2,582 ft from Approach End of Runway
Scan 32:	About 2,630 ft from Approach End of Runway
Scan 33:	About 2,668 ft from Approach End of Runway
Scan 34:	About 2,737 ft from Approach End of Runway
Scan 35:	About 2,798 ft from Approach End of Runway
Scan 36:	About 2,855 ft from Approach End of Runway
Scan 37:	About 2,917 ft from Approach End of Runway
Scan 38:	About 2,986 ft from Approach End of Runway
Scan 39:	About 3,057 ft from Approach End of Runway
Scan 40:	About 3,128 ft from Approach End of Runway
Scan 41:	About 3,193 ft from Approach End of Runway
Scan 42:	About 3,264 ft from Approach End of Runway
Scan 43:	About 3,337 ft from Approach End of Runway
Scan 44:	About 3,421 ft from Approach End of Runway
Scan 45:	About 3,491 ft from Approach End of Runway
Scan 46:	About 3,564 ft from Approach End of Runway
Scan 47:	About 3,639 ft from Approach End of Runway
Scan 48:	At the Departure End of Runway
Scan 49:	About 31 ft Past Departure End of Runway
Scan 50 ² :	About 68 ft Past the Departure End of Runway
Scan 51:	About 128 ft Past the Departure End of Runway
Scan 52:	About 179 ft Past the Departure End of Runway
Scan 53:	About 260 ft Past the Departure End of Runway

² The measurements for Scans 50 thru 56 made in Google Earth include the elevation decrease past the end of the runway and are not straight line; therefore, they are approximate.

APPENDIX A

- Scan 54: About 337 ft Past the Departure End of Runway
- Scan 55: About 375 ft Past the Departure End of Runway
- Scan 56: About 373 ft Past the Departure End of Runway. Was performed west of Scan 55.

GPS points taken during the investigation of 560XLS 560-6026 N560AR Farmington, CT, 09-02-21

Date	GPS Number	Latitude	Longitude	Comment
09-03-21	358	41.684417	-72.865367	South end of Runway 02
	359	41.684367°	-72.865333°	South end of Runway 02 centerline
	360	41.694350°	-72.863983°	North end of Runway 02 skid marks
	361	41.690783°	-72.864517°	
	362	41.691083°	-72.864533°	
	363	41.691083°	-72.864533°	Double marked
	364	41.691483°	-72.864450°	
	365	41.691650°	-72.864367°	
	366	41.691767°	-72.864400°	Tire marks where left wheel crossed runway center line
	367	41.691817°	-72.864317°	Solid tire skid marks on runway
	368	41.691800°	-72.864333°	
	369	41.689383°	-72.865833°	Witness location not correct
		41.689430°	-72.865865°	Actual witness location Cliff Cayer
	370	41.690033°	-72.864667°	Where witness indicated he saw it still on the runway
	371	41.689717°	-72.866100°	Witness location not correct
		41.689552°	-72.865987°	Actual witness location Gary Alender
	372	41.689783°	-72.865200°	
	373	41.689741°	-72.864667°	
	374	41.695767°	-72.863800°	Second pole impact
	375	41.695400°	-72.863800°	First pole impact
	376	41.697600°	-72.863283°	First ground impact