

Umstead Park Plane Crash – October 20 & 21, 2019

Incidents Notes by Mike Legeros

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Introduction

This document presents information about the fire and EMS response to a private plane crash at Umstead State Park in Raleigh, NC, on October 20, 2019. The information was compiled by Mike Legeros, civilian historian of the Raleigh Fire Department, and over a period of five months. He welcomes corrections or additional information for future revisions. Contact him at www.legeros.com/mail.

Thank you to the participating agencies and their members and chief officers that contributed information. And, in particular, thanks to everyone for their patience with the author's many questions.

Agencies on Scene

Sunday

- Cary EMS
- Cary Fire
- Durham Highway Fire
- NC Emergency Mgmt.
- NC Highway Patrol
- NC Park Rangers
- Raleigh Fire
- Raleigh Police
- Raleigh Police SWAT
- RDU Crash-Fire-Rescue
- RDU Operations
- RDU Police
- Wake Co. Emergency Mgmt.
- Wake Co. EMS
- Wake Co. Fire Marshal
- Wake Co. Sheriff
- Wake New Hope Fire

Monday

- All of above
- Subtract Cary Fire
- Subtract Raleigh Police SWAT
- Add Wake Forest Fire
- Add Raleigh/Wake CCBI
- Add Wake County WC7
- Add NC Medical Examiner

Timeline

Sunday, October 20	
19:21	<p>From NTSB summary report: Piper PA-32-301, N534Z, was destroyed following a collision with terrain at Umstead State Park, while on approach to RDU airport. The private pilot and one passenger were fatally injured. Night, visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the flight. The flight originated at Columbus Airport (CSG) in Columbus, GA, about 16:05 and was destined for RDU.</p> <p>Reported weather conditions at RDU, at 19:51, included overcast clouds at 1,400 ft, greater than 10 miles visibility, and no precipitation. Sunset occurred at 18:31 and evening civil twilight ended at 18:57.</p>
	Air Traffic Control (ATC) notifies airport of possible plane down in Umstead State Park.

19:25	<p>RDU Communications dispatches an Alert 3 for airport Crash Fire Rescue (CFR). [RDU/EM]</p> <p>Alert codes:</p> <ul style="list-style-type: none"> • Alert 1 – Aircraft with minor difficulty, ARFF equipment stage at fire station. • Alert 2 – Aircraft with major difficulty, ARFF equipment stage at predesignated runway locations. • Alert 3 – Aircraft has crashed on airport property. • Alert 4 – Aircraft has crashed off airport property.
19:31	<p>Raleigh/Wake Emergency Communications Center dispatched First Alarm response for Wake County EMS System units: four ambulances, two district chiefs, one APP (Advance Practice Paramedic), and Truck 1.</p> <p>Dispatched were:</p> <ul style="list-style-type: none"> • Chief 102 (Deputy Director/Chief of Operations) • Chief 200 (Shift Commander) • District 5, 9 (District Chief) • EMS 40, 42, 43, 44 • Medic 92, 94 (APP) • Truck 1 (Incident support unit)
continued	<p>Chief 200 (Shift Commander) requested Evac 1 (ambulance bus) in place of Truck 1.</p> <p>Durham EMS was also dispatched, at the request of EMS 102. They were cancelled en route. RFD Car 20 heard the dispatch and spoke with EMS 102, letting him know that the missing plane was a two-person aircraft, and additional EMS resources were likely not needed. Durham EMS was cancelled. [RFD]</p> <p>Within a few minutes, EMS command gained awareness that the downed plane was likely a small plane with few souls on board. Thus they held with their assignment.</p> <p>EMS 102 staffed the Unified Command Post, Chief 200 assumed Medical Branch Director, and EVAC 1 assumed accountability on arrival.</p> <p>Source: WCEMS</p>
19:33:43	<p>Raleigh/Wake Emergency Communications Center dispatched Raleigh FD units as as aircraft emergency for</p> <ul style="list-style-type: none"> • Engine 23, 24 • Ladder 9 • Squad 14 (squad, rescue pumper) • Battalion 4, 3 (Battalion Chiefs) • Haz-Mat 1, 2, 3, 5 (haz-mat assignment) <p>Source: RFD</p>

	<p>Also responding are:</p> <ul style="list-style-type: none"> • Car 20 (Division Chief) • Car 2 (Asst. Chief of Operations) <p>Haz-mat units:</p> <ul style="list-style-type: none"> • HM1 is staffed by E2 and HM2 is staffed by E29. • HM3 is a recon unit staffed by E8 and responds also with its UTV trailer. (And first responds to Station 14 and one member gets the mini-pumper and their ATV trailer, and adds that unit to the response. Those units are normally staffed by Squad 14.) • HM5 is a spill-control unit staffed by E27 and also responds with its foam trailer. <p>Note: Alternate dispatch time for Raleigh units of 19:31:28 [where did I get that]?</p>
19:33:43	Cary EMS District 5 dispatched. Marks en route 19:35:39.
19:35	<p>RDU CFR units depart airport property, to begin searching for downed aircraft. CFR 1, CFR 2, CFR 3 respond. [RDU/EM]</p> <p>CFR 1 is a mini-pumper. CFR 2 and CFR 3 are ARFF crash trucks.</p> <p>They respond to Graylyn Drive and Ebenezer Church Road. Distance is 4.8 road miles from airport fire station.</p> <p>Airport operations are also suspended for a short period, while some of the CFR units are out of quarters/off airport property. [News]</p>
19:35	CFR 12 (brush truck) and RDU Operations inspect [begin inspection of?] Runway 14/32 perimeter and General Aviation Ramp. Nothing is found. [RDU/WP]
	<p>RDU CFR arrives and establishes command post on Ebenezer Church Road at Graylyn Drive.</p> <p>CFR units on scene are:</p> <ul style="list-style-type: none"> • CFR 1 (mini pumper) • CFR 2 (ARFF crash truck) • CFR 10 (on-duty Captain / Senior Officer on duty that day) • Car 1 (Fire Chief, arrived later).
19:3_ to 19:4_	<p>RDU CFR 10 requests four county brush trucks, based on the Tower report that the plane was down in Umstead State Park. [DHFD]</p> <p>Durham Highway Brush 16 responds, along with:</p> <p>?</p> <p>?</p> <p>?</p> <p>[Were four brush trucks even dispatched? Or did DHFD add themselves to the call, independently? Believe the latter.]</p>

19:3_ to 19:4_	<p>Durham Highway Fire Chief David McNulty, in Hershey, PA, for a conference, contacts his on-duty Captain Tyler Knickerbocker, who is a certified ARFF firefighter, and requests him to respond as the acting DHFD on-duty chief.</p> <p>DHFD Car 16 responds.</p> <p>Chief McNulty is then contacted by Will Patterson, RDU-CFR Division Chief and part-time DHFD FF, who is en-route off-duty. He requests that Chief McNulty request the Highway Patrol helicopter, and the UTV from DHFD.</p> <p>Chief McNulty then speaks with Wake County FM staff Darrell Alford, who was also out of town, but had coordinate the response of EM1, WC1, and requested the State Patrol helicopter.</p> <p>At that time, the DHFD response consisted of Car 16 with Captain Knickerbocker, Brush 16 with two FFs, and UTV 16 (pick-up truck pulling UTV) with two FFs, including another ARFF-certified FF in addition to Knickerbocker.</p> <p>Source: DHFD</p>
19:41:06	<p>First Raleigh FD unit arrives, Ladder 9. Upon arrival, reports to command post operated by RDU CFR. [RFD]</p> <p>Their personnel is [later?] combined with other units to create Search Team 4, and instructed stand by at the Graylyn Drive entry gate to the park. [RFD]</p>
19:41:16	RFD Squad 14 arrives.
19:42:27	RFD Engine 24 arrives.
19:44:18 [*]	<p>Battalion 4 arrives, assumes command. Unified command post established at corner of Graylyn Drive and Ebenezer Church Road, in parking lot of church, with fire, EMS, law enforcement, emergency management, and airport units and officials. [RFD]</p> <p>Once all agencies arrive, they begin formulating a plan that begins with establishing ground search teams, and requesting the State Highway Patrol helicopter to begin an overhead night search. [RFD]</p>
19:43:41 [*]	<p>Battalion 3 arrives, just seconds behind Battalion 4. He's directed by CFR 10 to enter park with him and establish a forward command post at the crash site. [RFD]</p> <p>[*] Note discrepancies between recorded arrival times of B3 and B4, that record the former arriving before the latter. This can be attributed to such factors as different locations that each reported their arrival (front gate, access road, visitor's center, etc.)</p>
19:46:47	RFD Engine 17 arrives.
19:48:06	RFD Engine 23 arrives.
19:50	RFD Car 20 (Division Chief + aide) arrives.
19:5_ to 20:0_	<p>DHFD units arrive:</p> <ul style="list-style-type: none"> • Brush 16 • Car 16 (on-duty Captain)

19:4_ to 19:5_	EMS units are arriving by this time, including: <ul style="list-style-type: none"> • District 5 at 19:53:39
time?	At the Raleigh-Wake Emergency Communications Center, the initial dispatcher is replaced by Joel Mullen, who remains the sold ECC contact through the incident [night only?]. [RFD].
	State Park Ranger arrives, to unlock park gate. This happens about five minutes after Battalion 3 and CFR 10 arrive at the gate, to enter the park. [RFD]
	Vehicles enter the park: CFR 1, CFR 10, Battalion 3, Brush 16. They head to suspected crash site, at junction of Graylyn MUT and Reedy Creek MUT. Crash site not found. [RFD] They're met by a ranger in a pick-up truck, who has come from the lake to the south. No crash site spotted. [RFD] CFR 10 returns to command post. Remaining units drive west to the western end of Reedy Creek MUT, then turn around. They drive east and return to the MUT junction, the start south, to recheck that area. Halfway or so to the lake area, they're informed by Battalion 4 that foot searches will be needed, so the units turn around, drive north, and return to the MUT junction. [RFD]
	Haz-Mat 2 arrives and assists Battalion 4 with accountability until arrival of Car 20, and the Car 20 aide assumes the role of accountability. [RFD]
19:56	Cary FD notified to respond. Their run card consists of: <ul style="list-style-type: none"> • Engine 1, Engine 4 • Ladder 1 • Rescue 2 • Brush 4 with UTV trailer • Battalion 1, Battalion 3 [placed in service, with Battalion 2 remaining in town] • Car 1, Car 2 Battalion 1 reports to command post on Ebenezer Church Road. Battalion 3 coordinates search efforts and accountability from Cary side of park. Source: CFD
19:5_ to 20:0_	Command consolidates with Cary FD units operating on the other side of the park. [RFD]
20:06	Forward command changed to search crew [leader?]. [RFD] RFD Car 2 (Operations Chief) arrives.
20:08:54	Air 1 added.
20:12:23	RFD Haz-Mat 5 arrives.
20:13:25	Mini 3 added. Staffed by HM3 [staffed by Engine 8], which went to Station 14, and responded with mini-pumper + UTV trailer.

20:18:41	RFD Haz-Mat 3 + UTV arrives.
20:19	CFR 3 returns to airport. ARFF Index upgraded to Index C and ATC notified. Was previously downgraded to ARFF Index B at 20:05. [RDU/EM]
20:25:15	RFD Haz-Mat 1 returned to service. They were cancelled prior to arrival. [RFD]
20:26:42	RFD Mini 3 arrives.
20:29:25	RFD Air 1 arrives. Driver/operator is reassigned to HM3. [RFD]
20:30	RDU EOC activated. Located in AOC building. Staffed with Cori Smith, Director of EM; Bill Sandifer, Senior VP of Operations; Duane Legan- VP of Operations, John Graves Director of Operations, Police Chief Steele Myers, CFR Deputy Chief Will Patterson, and RDU media. [RDU/EM]
20:36, approx.	First photo at command/staging by Legeros
20:40-20:55, approx.	Cary EMS Cart 5 arrives. [CEMS]
	RDU Operations provides approval for State Highway Patrol helicopter to respond. It performs night search, using spotlight and infrared camera. Flight time is over 90 minutes. Nothing found. [RFD] Helicopter also refuels during the operation, returning to their hangar on Tryon Road in Raleigh. [RDU/CFR] Questions: Times for notification, start, suspend for fueling, resume from fueling, stop, etc.?
	RDU Operations brings laptop computers to command post, and shares information from control tower and other sources. They state that the plane lost contact about two miles from Runway 32. Later updated to an estimate of 1.5 miles from Runway 32, but no definitive location beyond the aircraft was attempting to line up with Runway 32. [RFD]
	Command receives cell phone numbers for both souls on board and attempts to contact. No answer. [RFD]
	Cary (police?) bring cell phone signal search equipment to scene and attempts to locate the signal from the personal cell phones of those on board. The attempts to “ping” their phones are unsuccessful. [MJL]

22:00, around	<p>While attempting to “ping” the cell phones of the aircraft occupants, command gets a report of a reading on the aircraft beacon, near the end of Runway 32.</p> <p>RFD Squad 7 and RPD SWAT members went into that area and were unable to locate any sign of the aircraft. Based on the location of the found aircraft the following morning, this was likely an electronic anomaly. [RFD]</p>
22:17:30	Rescue 1 added.
22:23:09	Battalion 5 added.
22:24:33	Squad 7 added.
22:31:12	RFD Rescue 1 arrives.
22:33:11	RFD Ladder 9 cleared.
22:35:31	RFD Battalion 5 arrives.
22:41:46	RFD Squad 7 arrives.
22:49:59	RFD Engine 23 cleared.
22:50:11	RFD Haz-Mat 5 cleared.
22:50:16	RFD Haz-Mat 2 cleared.
22:51:10	RFD Engine 24 cleared.
22:55	CFR 2 returns to airport. ARFF Index upgraded to Index D. [RDU/EM]
	<p>Walking search teams deployed, with six search teams:</p> <ul style="list-style-type: none"> • Team 1 – Nine personnel - B3 (1), RDU 102 (2), Sq14 (3), DHFD brush truck (2), EMS DC (2) • Team 2 – Cary FD – Personnel from E1, E4, L1 • Team 3 – ??? • Team 4 – HM3 • Team 5 – R1, B5 • Team 6 – Cary EMS Car 5, District 5; EMS 40; Raleigh FD. <p>Teams were deployed for numerous line searches, along with park rangers, who were walking trails including alongside the lakes in the park.</p> <p>EMS units were assigned to various entrances of the park, and attached to the search teams with firefighters.</p> <p>Several night-shift EMS units were special-called to relieve day-shift units and personnel during the operation.</p> <p>EMS Cart 5 was added to the incident, to add an additional search team.</p> <p>Source: RFD, WCEMS</p>

	<p>Team 1 is led by RFD Battalion 3, Chief Wilder, who has extensive experience orienteering in woods at night (from hunting). He uses a hunting app on his smart phone to create a search area that's centered on the runway approach, with his nine people in a line, separated by about 45 feet between each person, with hand lights. They start from a point a bit west of the MUT junction. [RFD]</p>
	<p>Team 6 is led by Cary EMS District 5, along with Cary EMS Cart 5, EMS 40, and Raleigh FD personnel. They depart from the Graelyn Gate. At the Company Mill Spur, RFD and EMS 40 personnel leave Cart 5 walk the spur to the Campsite Lapihio and back down to the Reedy Creek trail.</p> <p>Recalls District 5: Cart 5 worked northwest to cover the Reedy Creek Trail to search Camp Lapihio and Camp Crabtree. Once that area was searched, Cart 5 searched Sycamore Lake and its cabins. After that, Cart 5 left that area and searched Group Camp Road to the Big Lake. When the search was called off, Cart 5 picked up Raleigh FD and EMS 40 personnel and took them back to the Graelyn Gate. [CEMS]</p>
	<p>Raleigh PD SWAT personnel arrive with a large number of members, equipped with night vision cameras. They began a line search from the end of Runway 32, in a perpendicular line centered with the runway, heading east into the woods. [RFD]</p>
	<p>Question – Which of these were as search teams vs. assisted at command post (or both?)</p> <p>Units and companies that assisted in the search:</p> <ul style="list-style-type: none"> • Engine 8 (as HM3 and Mini 1) • Engine 17 • Engine 27 (as HM2) • Engine 24 • Ladder 3 • Ladder 6 • Squad 14 • Squad 7 • Rescue 1 • Battalion 3 • Battalion 4 • Battalion 5 • Car 20 • Car 2 • Cary Battalion 3 <p>Plus:</p> <ul style="list-style-type: none"> • RDU CFR • Cary Fire • Cary EMS • Wake County EMS • Wake County FM (WC1) • Wake County EM • Raleigh PD • Raleigh PD SWAT • Wake County SO • NC Highway Patrol • NC State Parks
23:07	Medic 94 cleared.
Monday, October 21	
00:55	EMS Chief 200 cleared.

	<p>Around 1:30 a.m., and following the ground searches conducted thus far, the members of the unified command post reached a consensus that the aircraft could not be found until daylight. They make the decision to suspend the searches. [RFD]</p> <p>Recalls Car 20, before the search was suspended, command had considered and attempted every possible means of locating the craft. They had used the Highway Patrol helicopter with FLIR (infrared camera). They had searched the landing path, as well as last known location based on radar, last known location based on visual from cameras, and last known location based on transponder. Additionally, they had considered every other possible scenario before reaching the decision. [RFD]</p>
01:05	EMS 42 cleared.
01:10	EMS 44 cleared.
01:23:43	RFD Bat 3 cleared.
01:30	RDU EOC deactivated. [Time from RDU/EM]
01:40	Medic 92 cleared.
01:43	District 5 cleared.
01:50	Search suspended. [Time from WCEMS]
01:51	EMS Chief 102 cleared.
01:51:59	RFD Squad 14 cleared.
01:52	District 9 cleared.
01:53	EMS 40 cleared.
01:57	EMS 43 cleared.
02:03:28	RFD Engine 17 cleared.
02:15	Land and air search suspended. [Time from RFD]
02:15	RDU EOC deactivated. [Time from RDU/WP]
	Command post is relocated to 8801 Glenwood Avenue, the visitor center, to begin search operations after daylight. [RFD]
	Later at relocated command post, Battalion 3 receives copies of a park map, with search grid established along the likely location of the flight path. Maps are created and copied by RDU CFR members. [RFD]
02:18:57	RFD Battalion 4 cleared.
02:22:12	RFD Rescue 1 cleared.

02:34	All Cary FD units returned to service. [CFD]
02:35:47	RFD Battalion 5 cleared
02:56:43	RFD Squad 7 cleared
03:04:05	RFD Air 1, Mini 3, Haz-Mat 3 cleared.
07:26	Sunrise.
07:30	Unified command reactivated at/by this time. [RFD]
07:38:43	Battalion 4 arrives.
	<p>General notes</p> <p>Park is closed to visitors. Park Rangers control access from Glenwood Avenue.</p> <p>Media stages outside park entrance, along Glenwood Avenue.</p> <p>Visitor's Center building (command post location) has poor radio and cell phone reception, so communications often require standing outside the building.</p> <p>Fire units on scene, after daylight:</p> <ul style="list-style-type: none"> • RFD E5, E11, Sq 14 with mini-pumper + UTV, B5 (Operations Command), B3 (Incident Command) • New Hope pick-up truck + UTV • Durham Highway pick-up truck +UTV <p>EMS units on scene, after daylight:</p> <ul style="list-style-type: none"> • EMS 10, District 2, Truck 1 <p>Incident initially under command of RFD.</p> <p>Other agencies: RPD, RDU PD, WSO, SHP, Parks, Wake EMS, Wake EM.</p>
	RFD Sq14, New Hope, and Durham Highway deploy UTV vehicles, for use.
	RFD R1 stages equipment for UTV transport: Hurst etools, battery powered saws, cribbing, miscellaneous hand tools.
07:59:33	Engine 5 arrives.
08:00	Search operations resume. [RFD]
08:03:57	Battalion 5 arrives.
08:12:05	Mini 3 staffed by Squad 14 + ATV arrives.
08:13:58	Rescue 1 arrives.
08:31:59	Engine 11 arrives.

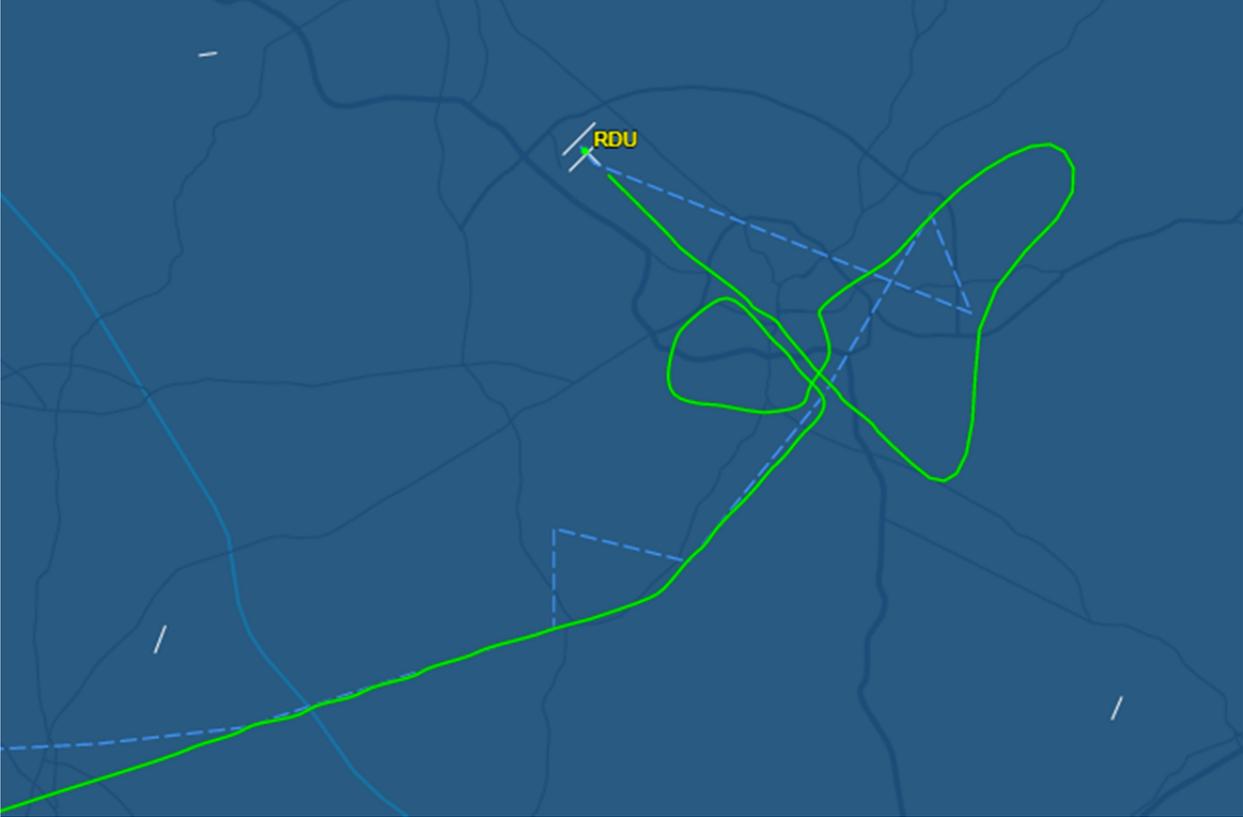
09:10	<p>Wake Forest FD drone unit (Car 6) arrives at command post.</p> <p>They came up with a search plan for the drone, based on likely crash site calculated using flight information, as well as pilot's personal knowledge and experience of likely flight conditions.</p> <p>Car 6 was provided with a park maintenance for trail guidance. They drove Car 6 to the proposed landing zone for drone flight operations. They faced two limitations, however. First was a dense tree canopy that would limit effectiveness for a visual sighting. Second the dense trees would limit the flight distance. Drone operations would be limited.</p> <p>Since the Highway Patrol helicopter was already in the area, and in communication with the drone pilot, and the low-level operation of the helicopter, they agreed to hold drone launching until after the helicopter left the search area.</p> <p>Corrected arrival time from Legeros photo timestamp of 9:10, instead of 8:42 from WFFD.</p> <p>Source: WFFD.</p>
	<p>Holly Springs FD was also requested, for their drone. After receiving their request, the started the process to receive authorization for flying in the controlled airspace of the airport. The process involved contacting a third party to have their drone "unlocked" to operate around the airport.</p> <p>As this process was underway, the aircraft was located. They were no longer need. They estimate about thirty minutes elapsed during that time. [HSFD]</p>
09:39	<p>Single search team deployed from Visitor's Center to search start point. Transported via UTV vehicles. [RFD]</p>
	<p>Car 2 relocates to RDU during search, then returns after crash site is found. [RFD]</p>
09:50	<p>Wake Forest drone is still on the ground, due to the helicopter overhead. So the three-person drone team began a ground search of the area they were planning to search by air. [WFFD]</p> <p>As they discovered, their launch/landing zone was about 500 feet from the crash site. As they were walking toward it, the site was discovered by Raleigh fire personnel. [WFFD]</p>
09:54	<p>Cary FD Brush 4 + UTV trailer responds. Command was in contact with Cary FD Car 2, and requested both assets. [CFD]</p>
09:59	<p>Ground search starts. Single line of 30 to 40 people, RFD, RPD, WSO, SHP, Parks, RDU CFR, DHFD. Spaced about 50 feet about. Search path is perpendicular to plane's approach path and centered at the point of last known radio contact. Sq14 personnel + rescue tools spread along left flank, R1 personnel + rescue tools spread along right flank. [RFD]</p>
	<p>Each agency keeps own accountability.</p>
10:02	<p>Crash site located by RFD Engine 5 member, just three minutes after search starts. Fuselage is on the ground. [RFD]</p> <p>Crash site N 35.85423, W 078.75758. Debris field starts N 35.85354, W 078.75705. [RDU/EM]</p>

10:02	Upon discovery of crash site, DHFD personnel respond to crash site as quick response/recovery team via ATV. [CFR/WP] SHP, RDU Police Chief Steele Myers, and NC Park Rangers respond with DHFD. [CFR/WP]
	NTSB summary report notes: “The airplane crashed in a thickly-wooded area within the confines of the 5,579-acre William B. Umstead State Park. The wreckage path was about 400 ft long and about 50 ft wide, oriented on a heading of 320°. The main wreckage was located about 1.2 miles southeast of the runway 32 threshold. The initial point of impact was a 100-ft-tall pine tree, and a large section of the right wing remained lodged near the top of the tree. There was no fire. The engine was found separated from the airframe and the propeller assembly was separated from the engine. Flight control continuity was confirmed from the cockpit area to the flight control surfaces. All aircraft components and structure were accounted for at the accident site. Location of crash site is: “35.854167, -78.757778 (est)”
	Upon discovery of crash site, the right flank RFD personnel including R1 responds to crash site. Left flank RFD personnel including Sq14 instructed to move to trail, and await instructions. [RFD]
	RFD assesses crash site for immediate actions, such medical rescue. None needed. [RFD]
10:12	Cary FD Brush 4 returned service, prior to arriving at the command post, due to aircraft being found. [CFD]
10:12	DHFD and RFD assist law officers with securing crash site. [RDU/WP]
	Scene turned over to Wake SO, which has jurisdiction once fire-rescue operations concluded. Scene is now a law-enforcement scene. [RFD]
	RFD personnel assist with securing scene, and marking debris field, which measured ~300 feet by ~50 in a linear path, with debris scattered intermittently. [RFD]
	RFD personnel then relocate to command post. [RFD]
	During this period, FAA conducts interview with RFD member(s) who located crash site. [RFD]
~11:00	Debriefing of fire personnel begins at command post. [RFD]
~11:30	Debriefing completed. [RFD]
	All fire units demobilized except for R1, B4, B5, Durham Highway, and New Hope. [RFD] 11:40:03 – Engine 5 back in service 12:03:18 – Engine 11 back in service. 12:21:57 – Mini 3 back in service.
	Lunch provided. [RFD]
12:47:26	RFD B5 clears after lunch.
13:45	FAA, NTSB, CCBI, OCME, and WC-7 (county body recovery unit) arrive [or have arrived by this time?]. [RDU/WP]

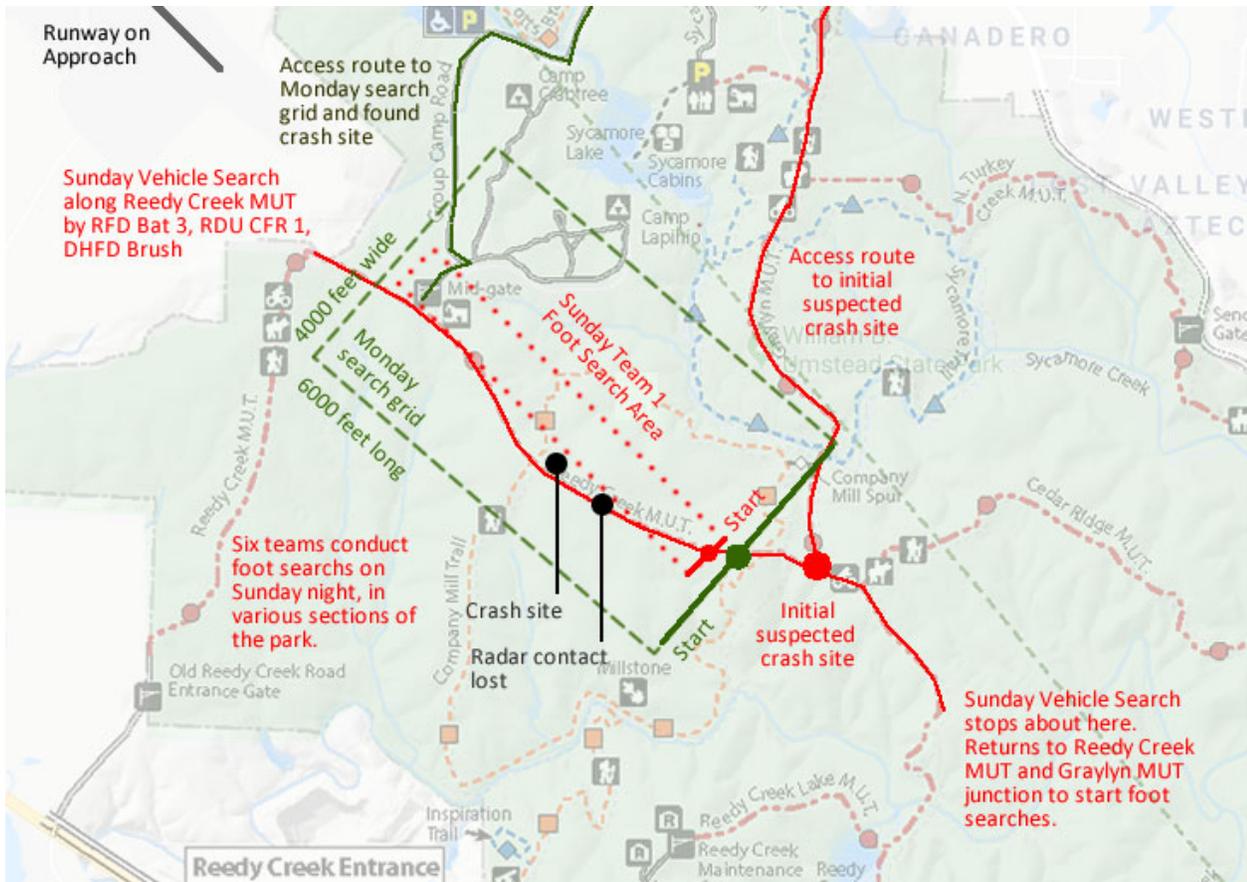
~15:00	Extrication started. RFD Rescue 1 had pre-staged extrication equipment, which is brought via UTV. Extrication ultimately performed without any cutting of airframe. One person extricated.
15:00	DHFD assisted with extrication and removal of victims. DHFD ATV used. [RDU/WP]
~15:30	Extrication completed. [RFD]
	RFD R1 and DHFD personnel assist county body recovery unit (WC7) with removal of both bodies to forward staging area.
15:45	Victims extricated and removed from crash site. [RDU/WP]
	Remaining RFD units clear scene. 16:14:37 – Battalion 4 in service. 16:35:55 – Rescue 1 back in service.
16:42	RDU Operations informed that scene has been cleared by CCBI, with bodies removed by CCBI. Scene now secured by Park Rangers. [RDU/EM]
16:42	RDU EOC terminated. [RDU/EM]

Maps and Graphics

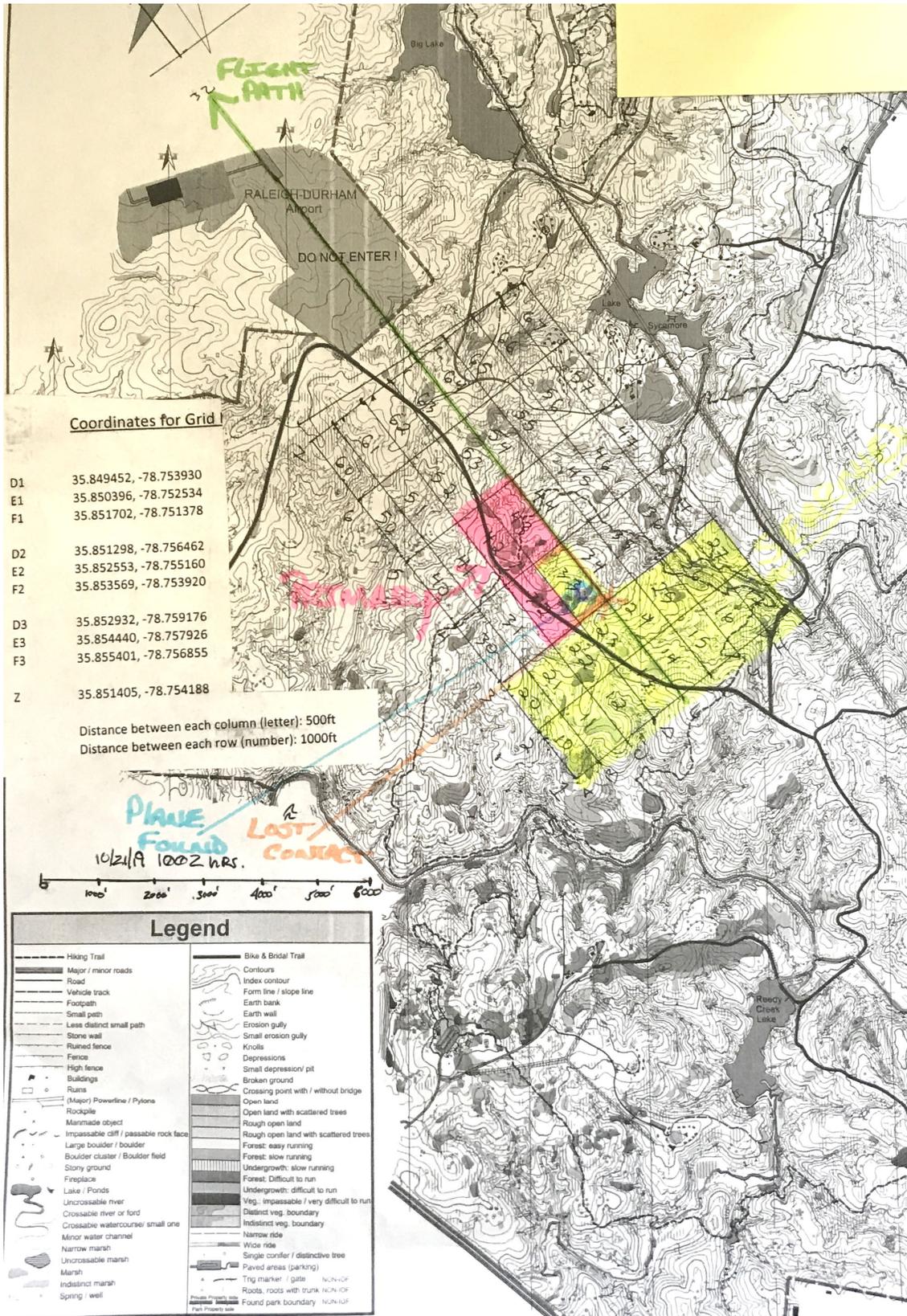
Aircraft Path

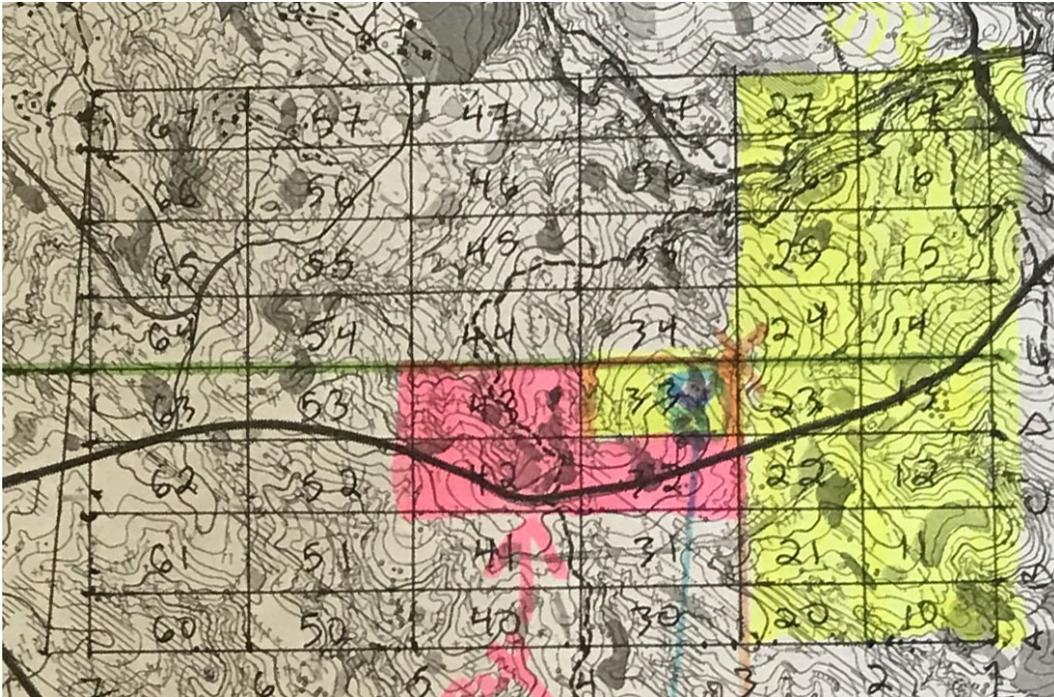


Source: <https://flightaware.com/live/flight/N534Z>



Search Map





Photos



Raleigh FD and Wake County EMS photographer Mike Legeros took pictures at the command post and staging areas on the night of the incident and the following morning.

See <https://legeros.smugmug.com/Fire-Photos/2019/2019-10-umstead-crash>

Sources

Narratives from responding agencies. See Appendix:

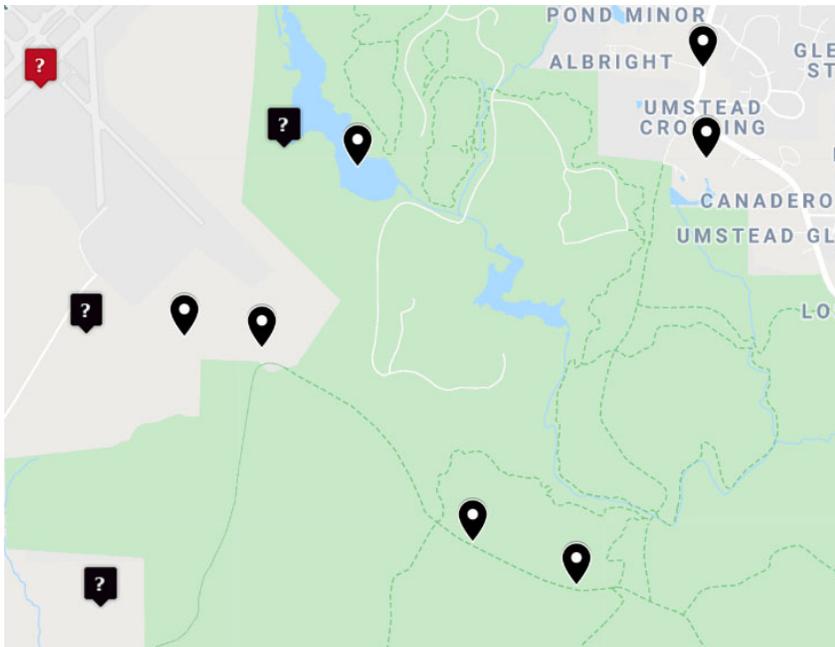
- Raleigh FD
- Cary FD
- Durham Highway FD
- Raleigh-Durham Airport Authority
- Wake Forest FD
- Wake County EMS
- Cary EMS

Other sources:

- FlightAware.com
- NTSB summary report, retrieved from <https://app.nts.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20191021X13706&AKey=1&RType=HTML&IType=FA>

Historical Perspective

See interactive map of plane crashes around Umstead Park and Raleigh-Durham International Airport at <https://www.google.com/maps/d/viewer?mid=1X6CJjh6nA4EgMwK3lu6FItsqzX9jncc&usp=sharing>



Appendix – Narratives

Raleigh FD - Battalion 3 - Expanded

KW: RFD B3 arrived at a very large and full staging area. RDU Captain Matt Schultz approached me and asked me to enter the park with him to establish a "forward" IC post at the crash site. I contacted RFD Battalion 4 by cell phone. RFD B4 had arrived at staging just prior to B3 and I told him of these plans.

[Bat 4 was about ten seconds ahead of Bat 3.]

[Bat 3 approached the scene Ebenezer Church Road to the south, and parked his vehicle to the left of the intersection, on Graylyn Drive.]

KW: Batt 4 was taking Incident Command and I was going to report back on the needs at the crash site.

[Captain Schultz was acting (Deputy?) Chief that night on RDU CFR.]

[Bat 3 also remembers CFR 1 at the scene, the mini-pumper.]

[After about five minutes at the park gate, a person arrived (Ranger?) with a key, and unlocked the gate.]

[Four vehicles drove into the park, CFR 10 (SUV), CFR 1 (mini-pumper), Bat 3, DHFD brush truck.]

[Units proceeded to suspected crash location, at intersection of Reedy Creek MUT, Graylyn MUT, and Cedar Ridge MUT. Travel time was about ten minutes or so, as they were driving slow, and looking as they drove.]

[Upon arriving at the MUT junction, they met a Ranger in a vehicle (pick-up truck). The Ranger had driven as far as the lake, and found nothing.]

KW: After arriving at the area believed to be the crash site, the crash could not be immediately located. Captain Schultz drove back to the Command post located at the staging area and asked me to drive to both ends of Reedy Creek Trail to do a cursory search. I did this and reported my findings to IC, nothing found.

[CFR 10 returned to the command post.]

[Bat 3 was now the lead vehicle. He turned off all his lights, except parking lights, to better spot any lights from a crash site. This also reduced the speed that they could travel.]

[Units then drove the length of Reedy Creek MUT to the west end, where it turns south. They turned around, and drove back to their starting point at MUT junction. Each trip took 15 or so minutes.]

[Passing a stationed Ranger, the units proceeded south on the Graylyn MUT, toward the lake. They stopped about halfway to the lake, informed by Command that that they wanted to start a foot search. The units turned around and returned to the MUT junction.]

[Units regrouped at the MUT junction. Huddled everyone together.]

[The MUT junction was also a spot that had good cell service. Bat 3 did a lot of communication with command using phone, to keep the radio channels open.]

KW: Once it was determined the crash was not visible from the park access roads IC assigned RFD B3 to Search Team 1 and said I would be receiving a map via text message. On the map was a hand drawn line from the end of the 32 runway to a distance approximately 2 miles out. and it also marked the 1 and 1.5 mile distances.

[Bat 3, CFR 10, and DHFD brush truck relocated about 1000 feet west, on the Reedy Creek MUT, to stage their vehicles and start the foot search. That location was centered about 1.5 miles from the end of the runway, that the plane was approaching.]

[While assembling for the foot search, Bat 3 observed Cary FD pass on the MUT, with ATV and vehicles. And just before starting the foot search, Squad 14 personnel arrived on an ATV.]

[Bat 3 has extensive experience with walking in the woods, and using phone-based orienteering apps. He pulled up a hunting mapping application, and began using the app to create a search plan for their team. They'd travel in a line, with nine people, Bat 3 as the anchor, spaced about 45 feet apart. Bat 3 was centered on a line parallel to the runway. The goal was to keep a nine-person search line moving through the terrain with a width of approximately 150 yards.]

KW: Using an application on my phone I was able to draw a waypoint at the end of the 32 runway. then a line in the direction of 140 degrees south until that line intersected Reedy Creek Trail where I also created a waypoint. Search Team 1 then assembled at the Reedy Creek Trail waypoint I had created. (Search Team 1 was made up of 9 personnel: RFD B3 with 1 personnel, RDU 102 with 2 personnel, RFD SQ14 with 3 personnel and Durham Highway Brush Truck with 2 personnel, EMS DC Brandon Utley.)

KW: Search Team 1 entered the wood line with RFD B3 at the center following the aforementioned line on a heading of 320 degrees North. The other 8 members were divided with 4 searchers on each side of RFD B3. We fanned out approximately 75 yards on each side using flashlights to search the ground and canopy. We covered 1,980 yards. We ended our search 258 yards short of the eastern side of the tree line located at the end of the 32 runway. At that point we intercepted an RPD search team, walking toward us from a starting point at the end of the 32 runway. At this time IC had also called for Search Team 1 to exit and rehab.

[Bat 3 alternated between his hunting app and a compass app, to maintain his course as anchor for the search team. There was some weaving, as a natural part of walking along an invisible line, and partly because the hunting app only updated his position every 10 to 30 seconds. But any veering off-course was minimal.]

[Bat 3 used his flashlight to look left and right as he walked, then stopping to look up at the tree canopy. He then checked his GPS position on the hunting app, and then used the compass on his phone to locate a visual landmark ahead, to walk toward. Rinse and repeat, every 20 or 40 feet.]

KW: RFD B3 walking a known straight line (center search position) to the end of the 32 runway ensured searching personnel on both the left and right flanks did not veer off course as they navigated the rough sloping terrain and around obstacles. (With approximately 500 yards to reach our targeted search destination both the Durham Highway personnel exited the tree line for rehab.)

[During their searching they encountered a team of Wake SO personnel on foot, with about 15 members. Believes they were searching the south side/end of the Reedy Creek MUT.]

[Their searching ended after they met an RPD search team with 13 members who were coming from the other direction. Their members had night vision helmets, that they were using on and off.]

[Bat 3 had a face-to-face conversation with one officer, to ensure that the terrain ahead of Search Team 1 had already been searched by the RPD team. He also briefed the officer on what Search Team 1 had done. Search Team 1 then ended their searching and exited the search area, and returned to the command post, per orders from Command.]

[Bat 3 notes that though the forest was a mature forest with a high canopy, the topography was varied, with lots of hills and valleys, and obstructions for line of sight. He recalls that during the foot search, at times he could only see one or no light, of the searcher to his left or right.]

[Bat 3 recalls conducting foot searches for about four hours, not including a 20 minute break for rehab. They received water from Wake EMS while at rehab, from a team of medics that was passing by.]

[After the crash site was located the next day, Bat 3 determined that their search line had passed within 125 yards to the northeast of the crash site.]

[Later Bat 3 determined that Search Team 1 had searched approximately 57 acres on foot.]

[Had they continued their foot search, Bat 3 had planned to shift the search area to the north and east, as they had received information from the pilot of a second plane, who was following the plane that crashed. The second pilot believed that the downed craft had likely turned/veered to the north and east of the runway's centerline approach. The second pilot had overheard the control tower give the pilot that heading, to which the pilot turned just before he crashed. This was later determined as incorrect. The crash site was south and west of the runway's centerline, by a few hundred feet.]

KW: Searchers used flashlights, thermal image camera and the RDU personnel had an aviation emergency beacon locator.

Raleigh FD

Day	Unit	Disp	Arrive	Clear	Narrative
10/20	A1	22:17:30	22:35:31	02:35:47	Arrived and reassigned to HAZMAT 3
10/20	B3	19:33:43	19:44:18	01:23:43	RFD B3 arrived to a very large and full staging area. RDU Captain Matt Schultz approached me and asked me to enter the park with him to establish a "forward" IC post at the crash site. I contacted RFD Battalion 4 by cell phone. RFD B4 had arrived at staging just prior to B3 and I told him of these plans. Batt 4 was taking Incident Command and I was going to report back on the needs at the crash site. After arriving at the area believed to be the crash site, the crash could not be immediately located. Captain Schultz drove back to the Command post located at the staging area and asked me to drive to both ends of Reedy Creek Trail to do a cursory search. I did this and reported my findings to IC, nothing found.

Day	Unit	Disp	Arrive	Clear	Narrative
					<p>Once it was determined the crash was not visible from the park access roads IC assigned RFD B3 to Search Team 1 and said I would be receiving a map via text message. On the map was a hand drawn line from the end of the 32 runway to a distance approximately 2 miles out. and it also marked the 1 and 1.5 mile distances.</p> <p>Using an application on my phone I was able to draw a waypoint at the end of the 32 runway. then a line in the direction of 140 degrees south until that line intersected Reedy Creek Trail where I also created a waypoint. Search Team 1 then assembled at the Reedy Creek Trail waypoint I had created. (Search Team 1 was made up of 9 personnel: RFD B3 with 1 personnel, RDU 102 with 2 personnel, RFD SQ14 with 3 personnel and Durham Highway Brush Truck with 2 personnel, EMS DC Brandon Utley.)</p> <p>Search Team 1 entered the wood line with RFD B3 at the center following the aforementioned line on a heading of 320 degrees North. The other 8 members were divided with 4 searchers on each side of RFD B3. We fanned out approximately 75 yards on each side using flashlights to search the ground and canopy. We covered 1,980 yards. We ended our search 258 yards short of the eastern side of the tree line located at the end of the 32 runway. At that point we intercepted an RPD search team, walking toward us from a starting point at the end of the 32 runway. At this time IC had also called for Search Team 1 to exit and rehab.</p> <p>RFD B3 walking a known straight line (center search position) to the end of the 32 runway ensured searching personnel on both the left and right flanks did not veer off course as they navigated the rough sloping terrain and around obstacles. (With approximately 500 yards to reach our targeted search destination both the Durham Highway personnel exited the tree line for rehab,)</p> <p>Searchers used flashlights, thermal image camera and the RDU personnel had an aviation emergency beacon locator.</p>
10/20	B4	19:33:43	19:43:41	02:18:57	<p>Battalion 4 arrived on scene and set up and assumed command . This incident would require a unified command with multiple agencies dispatched for a small private plane reported down in Umstead park. Unified command consisted of responding agency reps from:</p> <ul style="list-style-type: none"> • Raleigh Fire Department • Raleigh PD • RPD SWAT • Wake County EMS • WC1

Day	Unit	Disp	Arrive	Clear	Narrative
					<ul style="list-style-type: none"> • Wake County Emergency management • RDU CFR • RDU Admin Staff • Wake County Sheriff Office • NC State Park Rangers • Cary Fire Department • Durham Hwy FD • New Hope FD • NC State Highway Patrol <p>The command post was established at the corner of Graylyn Drive and Ebenezer Church Road at Battalion 4 vehicle. Once all agencies had arrived, we began to formulate a plan beginning with establishing search teams and requesting the SHP helicopter to begin an overhead night search. Helicopter search was conducted with nothing found while several search teams were on established paths entering off of Graylyn Road entrance and the Reedy Creek Road entrance. Additionally, RDU CFR companies also checked the perimeter of the runway 32 area inside fencing.</p> <p>During height of incident, we had 6 search teams searching on land based on information we received from RDU representatives on last known coordinates of the plane. At 0215 hours, we suspended the land and air search with no sign of plane or people found and moved command post to 8801 Glenwood Avenue (Umstead Park visitor center) to begin daylight search.</p> <p>Command was moved from Graylyn Road and Ebenezer Church Road to the visitor center at 8801 Glenwood Avenue in Umstead Park.</p>
10/20	B5	22:23:09	22:35:31	02:35:47	Assisted with land search
10/20	E17	19:33:43	19:46:47	02:03:28	E-17 crew assisted with ground search.
10/20	E23	19:33:43	19:48:06	22:49:59	Eng 23 arrived on scene and was told to wait for deployment. Eng 23 waited until we were returned to service. Eng 23 never deployed.
10/20	E24	19:33:43	19:42:27	22:51:10	E24 arrived and reported to staging area on Graylyn Dr. along with other RFD units. E24 stood by for assignment until released by Command. In service.
10/20	HM1	19:33:43	--	20:25:15	Cancelled
10/20	HM2	19:33:43	20:26:36	22:50:16	HZM 2 arrived on scene in staging area. HZM 2 helped Batt 4 with accountability until arrival of CAR 20 with his Aide. Batt 4 return HZM 2 to service. HZM 2 in service.

Day	Unit	Disp	Arrive	Clear	Narrative
10/20	HM3	19:33:43	20:18:41	03:04:05	We took Hazmat 3 and the trailer that contained the ATV. We proceeded to Station 14 and deployed Mini 3 and hooked to their trailer with their ATV. We met Sq14 on Ebenezer Church Rd and they took Mini 3 to Trenton and Reedy Creek for search. We went to command post and was assigned search team 4 to search Company Mill Spur trail. We came out on Reedy Creek Trail at the 1.5 mile mark. We then searched to the left of Reedy Creek Trail 300 yards wide for 1 mile and was ordered out by command.
10/20	HM5	19:33:43	20:12:23	22:50:11	Stood by with the foam unit and to assist with the search.
10/20	L9	19:33:43	19:41:06	22:33:11	Ladder 9 responded to an air craft emergency at Umstead Park. Upon arrival we met with RDU incident command to gather information. We were paired with other units to create search team 4 and requested to stand by at the Graylyn Dr. entry gate. SHP air units were deployed to attempt to locate a downed aircraft. After standing by for this task, command returned Ladder 9 to service. No search activities were completed by our personnel.
10/20	M3	20:13:25	20:26:42	03:04:05	RFMP3 arrived on scene with UTV for use for search. Personnel were assigned to operate with search team 3. See RFSQ14 narrative for additional.
10/20	R1	22:17:30	22:31:12	02:22:12	Rescue 1 arrived at command post and were assigned as search group 5. R1 along with Batt. 5 conducted a land search along the landing approach path heading NW towards the end of the landing strip/ RDU property line. We began our search at the Company Mill Trail entrance at Graylyn M.U.T. We followed the Company Mill Trail until the hard left and continued at a 320 degree heading off the trail until we reached Group Camp Road Then we were assigned by command to head toward the left side of the runway by the Nation Guard property. Nothing was found. R1 was returned to service after search was called off by command.
10/20	Sq14	19:33:43	19:41:16	01:51:59	RFSQ14 arrived on scene and staged until command assigned personnel as search team 3 utilizing RFSQ14, RFMP3, and UTV. Personnel proceeded to Reedy creek road and inserted at Trenton Woods. RFSQ14 personnel began searching Umstead Park from main trails utilizing UTV and TIC until being advised to report to Reedy Creek Trl. and Company Mill Trail. RFSQ14 was then assigned to link with search team one and perform a line search following the glide path at a 320 degree setting provided by RDU CFR. Personnel (Approx. 8 personnel) covered approx. one and one half miles following the path determined by command. No signs of plane found.

Day	Unit	Disp	Arrive	Clear	Narrative
					Upon completing task and encountering and briefing another search group on the area covered, RFSQ14 reported to command post and was released to return to service.
10/20	SQ7	22:24:33	22:41:46	02:56:43	Assisted in a ground search to locate a down plane.
10/21	B4	07:32:49	07:38:43	16:14:37	Met with BC Siebel, and briefed on the night before's search activities. Assumed Command. Performed a debriefing with all agencies on site while waiting for RFD units to arrive. Obtained maps of search area grid patterns used the night before. Coordinated drone responses from Wake Forest and Holly Springs. Upon arrival of all RFD units, performed a briefing on search to be performed. Search teams to include RFD, Wake Co Sheriff Dept, and Park Rangers. Coordinated RPD horse response to assist with search. Coordinated gator patrol of accessible trains for search. Search began at 0957 hours. Plane was located at 1003 hours. Received report of two souls on board. Coordinated site security with NC SHP. Assisted with updating ME office, WC-7, and FAA upon arrival. Rescue 1 was assigned to perform body recovery from the plane. remained in Command until incident was terminated.
10/21	B5	08:03:57	08:32:08	12:47:26	B5 arrived on scene at the Command Post. B5 met with B4, who was command, and assumed the role of Operations. B5 gathered personnel and formulated a plan to search a predetermined grid. The decision was made to do a line search from Grids A to I on a bearing of 320°. R1 Officer was search team leader. Shortly after the search started, the plane was located. All personnel moved away from the site and secured the site for investigation. All units were brought back to the Command Post at the visitor's center for a debriefing and hot wash of the incident. Units were returned to service after they processed thru rehab. B5 returned to service after the command was downsized and the incident was turned over to the proper agencies. B5 in service.
10/21	E11	07:47:36	08:31:59	12:03:18	Engine 11 was dispatched to 8801 Glenwood Ave. at Umstead Park as part of a land search team looking for an aircraft that went down at 1930hrs on 10/20/2019. The original search was began at the time of that the aircraft was reported to be down. That search was suspended at 0300hrs 10/21/2019. Engine 11 arrived on location with Raleigh Rescue 1, Raleigh Engine 5, and multiple other agencies from the surrounding area. A briefing was held to provide information from the previous search, including the last known coordinates of the aircraft when contact was lost.

Day	Unit	Disp	Arrive	Clear	Narrative
					Personnel were transported into the area by Park Service personnel where contact was lost, and the search was to begin this morning. Rescue 1 Officer was ground search leader, and he assigned Engine 11's crew to team up with his crew and Park Rangers to begin searching the right hand side of the main road leading into the area, and coinciding map grids. Search had been underway for approximately 30-40 minutes, search crews had walked approximately 1000 feet, when Firefighter Paul Parker, and Lieutenant Russ Leaptrott from Engine 11 spotted the downed aircraft, and made contact with the wreckage. It was determined by search personnel, that both occupants of the aircraft were deceased. All coordinates from the debris field, and location of the wreckage were time stamped with GPS, and fire personnel extracted from the area, and scene was turned over to NCHP, Wake County Sheriffs Dept. RDU Airport Authority. Once Engine 11 personnel were debriefed at the command post, Engine 11 was cleared to return to service.
10/21	E5	07:56:24	07:59:33	11:40:03	<p>Engine 5 arrived at Umstead Park to assist with search for a missing plane.</p> <p>Once briefed, Engine 5's crew was assigned search with other units on scene. We deployed our assets to the beginning of the search area and began a line search on a heading of 320 degrees. The wreckage was located and coordinated marked and relayed to Command through Operations.</p> <p>After debrief, Engine 5 returned to service.</p>
10/21	R1	07:39:07	08:13:58	16:35:55	<p>Arrived at Search for missing plane</p> <p>Once briefed, Rescue 1 Officer was assigned Search Team Leader. We deployed our assets to the beginning of the search area and began a line search on a heading of 320 degrees. The wreckage was located and coordinated marked and relayed to Command through Operations.</p> <p>After debrief, Rescue was reassigned to extricate and remove victims (See patient care reports)</p> <p>Once completed Rescue 1 was demobilized and returned to quarters</p>
10/21	Sq14	07:54:44	08:12:05	12:21:57	Squad 14 responded with Mini 3 and the Polaris to search for a plane crash. Upon arrival to command post Mini 3 crew were assigned to land search. proceeded to entry point and spread out for a line search on the left side of the road. After plane was located, returned to entry point and were released by command.

RDU Airport

Information provided by RDU Emergency Management

Date	Time	Action
10/20	1925	Central toned out the Alert 3
10/20	1935	CFR #1, #2, and #3 departed airport property to begin searching for the aircraft
10/20	1945	Operations completed the inspection of all airport services and returned the airfield to Command
10/20	2005	The airport downgraded to ARFF Index B. ATC advised
10/20	2019	CFR #3 returned to the airport. ARFF Index upgraded to Index C. ATC advised
10/20	2030	EOC activated
10/20	2115	Operations confirmed the REILs and PAPIs on RWY 14/32 are operational.
10/20	2255	CFR #2 returned to the airport. ARFF Index upgraded to Index D
10/20	0130	EOC de-activated. All search and rescue operations were stopped pending sunrise. The aircraft had not been located
10/21	0730	Unified Command located Visitor Center in Umstead Park.
10/21	0800	Search effort in Umstead Park by local response agencies resumed.
10/21	0842	Call on Ops Duty cell from Wake Forest Fire, Steve Rhode 919-800-1362 who will be piloting drones this morning for search of aircraft over Umstead Park. Operations Supervisor, Don Atkinson 919-840-7523 advised to call back before conducting drone operation, so we can coordinate with FAA ATCT closure of runway 14/32 for safety purposes.
10/21	1002	Command advised aircraft wreckage found approximately 1 - 1/2 miles from approach runway 14/32 in Umstead Park. Confirmed 2 SOB, DOA upon arrival.
10/21	1017	Don Atkinson notified NTSB Eastern District Duty Officer, Heidi Kemner 202-412-2331 and provided accident information requested. She advised the investigator will be driving from Atlanta, GA. No name or phone number provided at this time for investigator.
10/21	1030	John Graves contacted Heidi Kemner and left a voicemail for her to contact him regarding CCBI's request to remove the bodies.
10/21	1100	1100 – John Graves arrives at command post located at the State Park visitor's center.
10/21	1105	Raleigh Fire provided Don Atkinson with following GPS coordinates to pass along to NTSB: Crash site N 35.85423, W 078.75758, Debris field starts N 35.85354, W 078.75705.

Date	Time	Action
10/21	1124	Heidi Kemner returned John Graves' call and granted approval to allow CCBI permission to remove the bodies from the crash site by CCBI. NTSB gave permission to CCBI to remove the two bodies prior to their arrival. Don Atkinson passed this information on to Command.
10/21	1125	FAA Airport Certification Safety Inspector notified by Director of Operations, John Graves with crash information.
10/21	1128	Don Atkinson notified FSDO and left a voicemail, but never received call back.
10/21	1300	Notified that NTSB was now coming in from Virginia instead of Atlanta - Ralph Hicks 404-558-6254
10/21	1335	Runway 14/32 inspected and reopened by Operations
10/21	1435	Don Atkinson received call from Florida Air Recovery coming from Jacksonville for aircraft wreckage removal. Currently passing through Savannah GA. Gave State Highway Patrol Sgt. Kurt Mills 919-583-2561 for planning/staging coordination upon arrival.
10/21	1610	Charles Loving from FAA contacted John Graves inquiring rather the REILS and PAPI's were operational prior the accident. Informed inspected prior to and after and they were both operational.
10/21	1642	Operations advised from Durham Highway Fire Captain, Will Patterson, the scene has been cleared by CCBI with bodies removed. Scene now being secured by Umstead Park rangers.

Cary Fire

From Battalion Chief Michael Martin:

Good morning, Mike!

Providing some additional information for your report, although you captured the gist of CFD's participation in the crash.

10/20/19

Engine 1

Ladder 1

Rescue 2

Engine 4

Brush 4 with UTV

Battalion 1

Battalion 3 was placed in service (Battalion 2 remained available in town)

Car 1

Car 2

CFD units were notified to respond to Umstead at 19:56:39.

Battalion 1 was the CFD Chief to report to the ICP. Battalion 3 coordinated grid search efforts and accountability for the incident from the Cary-side of Umstead Park.

According to our report, CFD units were Search Group #2.

All CFD engines/ladders that responded assisted with the grid search operations established by the ICP.

All CFD units returned to service at 02:34:09 on 10/21/19.

10/21/19

The ICP was in contact with CFD Car 2 and requested that CFD Brush 4 respond with the UTV. Brush 4 was en route at 09:54:19 and returned to service prior to reaching the ICP at 10:12:39 as the crash was located.

Please let us know if there is any additional information that you may need.

Cary EMS

From Division Chief Chasidy Kearns:

On the night of October 20, I was on District 5 and was part of the initial dispatch to the aircraft down. Once on scene, I deployed Cary Cart 5 to the scene, staffed by AEMT Brian Adams. Cart 5, DC5, EMS 40, and RFD became search team 6. We departed from the Graelyn Gate. At the Company Mill Spur RFD and EMS 40, left cart 5 and walked the spur to the Campsite Lapihio and back down to the Reedy Creek trail. Cart 5 worked NW to cover the Reedy creek trail to search Camp Lapihio and Camp Crabtree. Once that area was searched Cart 5 searched Sycamore Lake and its cabins. Then left that area and searched Group Camp Rd to the Big Lake. When the search was called off Cart 5 picked up RFD and EMS 40 crews and took them back to the Graelyn Gate where everyone dispersed for the night. My times are listed below. Let me know if you need anything further.

10/20/19

Dispatched 19:33:43

En route 19:35:39

On scene 19:53:39

10/21/19

Cleared 01:43:36

Thanks,
Chasidy

Durham Highway Fire

From Fire Chief David McNulty:

The first that we heard of the incident was when DHFD Brush 16 was dispatched for a reported aircraft down at Orton and Ebenezer Church Roads. This was a slightly confusing since this is within the County and it only pulled a single Brush truck, which is not our run order for aircraft emergencies. Come to find out the new CAD is pulling from the mid line of intersections and that intersection is split between City and County. DHFD was dispatched because Command, CFR Captain Schultz, requested four county brush trucks based on tower indication that the plane was actually down in Umstead. Side note, the dispatch location is adjacent to Umstead Forest Drive where we had an aircraft crash into a house some years ago. I spoke with my on-duty Captain, Tyler Knickerbocker, who is one of the DHFD staff we have certified as an ARFF firefighter and asked him to respond as the acting DHFD on-duty chief as well.

I was in Hershey, PA for a conference at the time for a work conference, but received a call from BJ Patterson, CFR Division Chief and DHFD part-timer, who was en-route off duty so he requested me to ask for Highway Patrol's helicopter and the UTV from DHFD. Following this I spoke with Darrell Alford who was also out of town but coordinated and had EM1, WC1 dispatched, and requested the SHP helicopter. It is my understanding that the helicopter had some clearance issues with RDU's tower so there may have been some delay in adding it to the search.

At this point the DHFD force consisted of Car 16 with Captain Knickerbocker, Brush 16 with two firefighters, and UTV 16 with two FFs including another ARFF certified firefighter in addition to Knickerbocker.

There were delays in fire getting fire [units] into the woods from the Raleigh side [as] SHP personnel were complaining to firefighters as they entered the park; however, we were getting reports from one of my volunteer captains who is an Acting Captain on Rescue 2 in Cary that they were in the woods working the reedy creek trail from the Cary side of the park. At some point the Raleigh side of the park approved fire to enter and firefighters began working between the Reedy Creek Trail and the power lines in somewhat of a grid. The search was called early in the morning and we we're asked to return the next day.

The following morning, our part-timer who happened to be a CFR Division Chief (BJ Patterson) and one volunteer went to the scene to assist in the second day's search efforts. Once the plane was found we again assisted with the UTV and were out there for the majority of the day.

Wake County EMS

From Deputy Director and Chief of Operations Seth Komansky:

Aircraft Down – Umstead State Park

10/20/19 1931hrs.

EMS was dispatched for a report of an aircraft down in Umstead State Park after notification of an alert from RDU airport. Initial dispatch for this incident type is a first alarm response (4 ambulances, 2 DCs, 1 APP, Truck 1). This complement was EMS43, EMS42, EMS49, EMS40, DC5, DC9, Medic94, and Truck 1. Chief 200, the EMS shift commander, made the call to special call EVAC1, the multi-patient transport bus, instead of using Truck1, the major operations support unit. Chief 102, Deputy Director and Chief of Operations, was also added to the call.

Within the first few minutes we gained awareness that this was likely a small plane with few souls on board, which gauged the decision to hold with the assignment. A unified command post was set up at the Graylyn Baptist Church at the corner of Graylyn Dr. and Ebenezer Church Rd. with Wake County EMS, Raleigh FD, RDU CFR, RDU OPS, Wake County Fire Services/Emergency Management, Cary FD, Durham Highway FD, RPD, WCSO, RPD, and NC State Parks. EMS units were assigned to various entrances of the park and attached to search teams with the FDs. Several night shift units were special called to relieve day shift units and personnel during the operation. EMS Cart 5 was added to the assignment to add an additional search team. Chief 102 staffed the unified command post, Chief 200 assumed medical branch director, and EVAC1 assumed accountability on arrival. Search was suspended at 0150hrs on 10/21.

Crews met on 10/21/2019 at 0730hrs at the main building of Umstead State Park on the Glenwood Avenue entrance to continue searching. EMS10, DC2, and Truck 1 assisted with these searches. The plane was found shortly after searches began at day break. EMS units assisted on scene as needed during the recovery.

From Assistant Chief Community Outreach Jeff Hammerstein:

This is all I could find for units and dispatched/cleared times.

Unit	Dispatched	Cleared
C102	19:30	1:51
C200	19:30	12:55
DC5	19:30	1:43
DC9	19:30	1:52
EMS 40	19:30	1:53
EMS 42	19:30	1:05
EMS 43	19:30	1:57
EMS 44	19:30	1:10
M92	19:30	1:40
M94	19:30	23:07

Wake Forest Fire – Drone Operations

From Chief Pilot Steve Rhode:

Hi Mike,

Here is my timeline and observations as a lesson learned.

Background: Here at Wake Forest we are developing a full aviation program with assistance from airplane and drone tools. I am a qualified airplane pilot and fly for WFFD out of RDU where the airplane lives.

Operation: I was not called in till the morning of the 21st. I then spoke to my contacts in the RDU tower and operations. I'm very familiar with the instrument approach the pilot went missing on so that aviation experience gave me an idea on where to begin a drone search for the downed aircraft.

Given the track of the aircraft and possible scenarios, the most like site of the crash was about 1.3 miles from the end of Runway 32 either aligned with the runway or just to the left of course. That approach is particularly problematic visually since the woods and small hill before the end of 32 can trick you. But given the low weather, the night of the crash at 1,400 feet above ground level the pilot would not have broken out until well down the RWY 32 approach. Given what had been reported to me by the tower and operations it seemed likely this was going to be controlled flight into ground on the final approach. At the final approach fix the minimum altitude is 2,400 and the pilot was at 1,300.

After arriving at the CP at 08:42 on the 21st we came up with a search plan for the drone given the proposed likely crash site calculated using the information above.

The park gave us a maintenance person who could guide us down the trails and we drove Car 6 to the proposed landing zone for drone flight operations. We faced two issues. The first was the tree canopy was so dense that unless the aircraft was suspended in the canopy there was a poor chance of getting a visual sighting. The second was that the flight distance of the drone is negatively impacted by such dense trees anyway. Drone operations would have been limited.

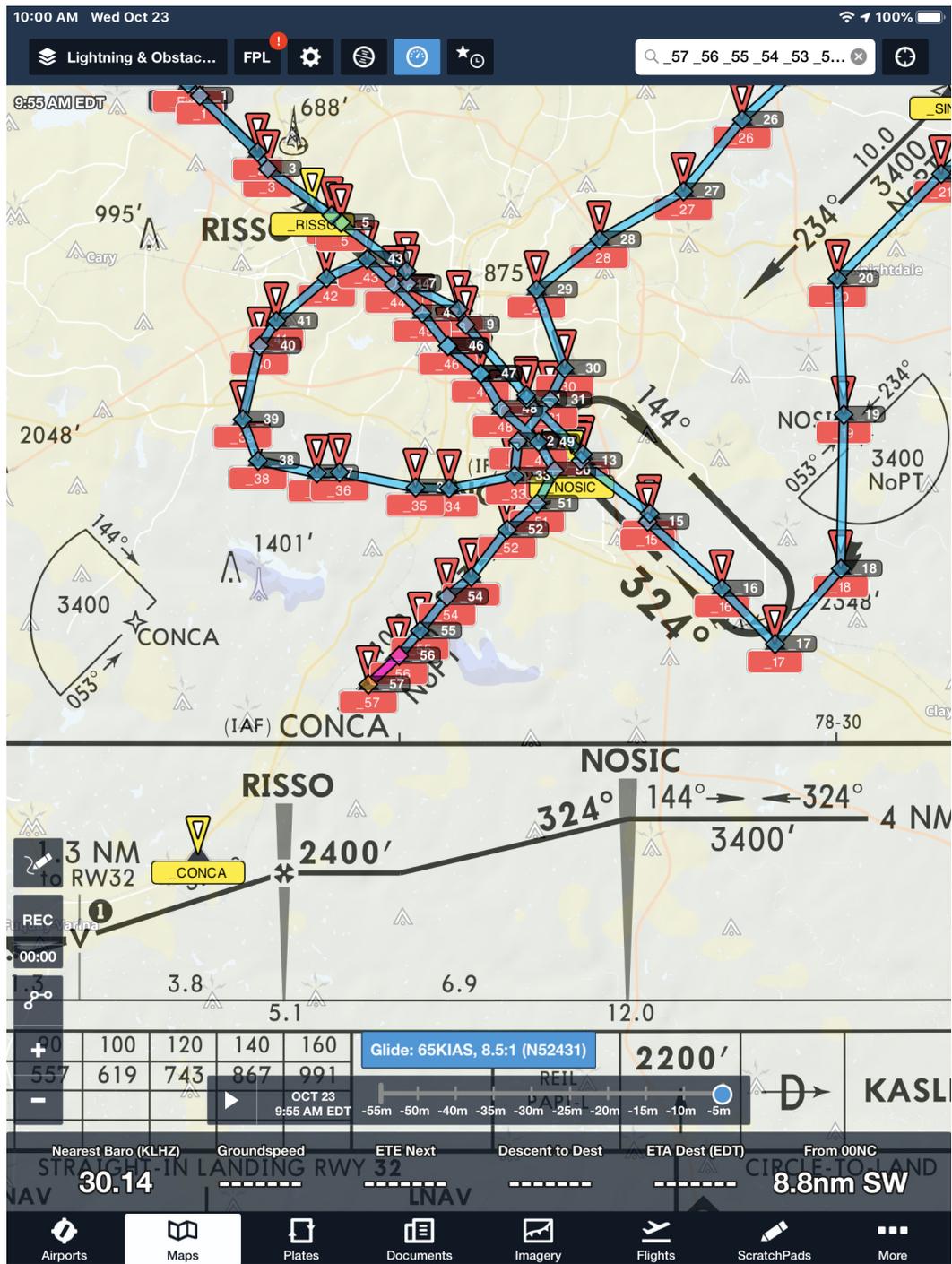
The SHP helicopter arrived in the area before we launched and I was in communication with the pilot over the radio. Given the low-level operation of the helicopter, we agreed not to launch the drone until the helicopter departed the search area.

The tree canopy was exceptionally dense and while the SHP helicopter had been on station the night before for a 90-minute search it would have been surprising if they would have found anything through that canopy. And because of the density of the tree canopy I had little confidence, we would have been able to see much with the drone.

At about 09:50 we were stuck on the ground because of the helicopter above so the three of us began a ground search of the area we were going to search from the air. It turned out we had established our landing zone for the initial search about 500 feet from the site of the crash so right as E5 located the site we were walking towards it. You could not see the crash more than 50 feet away. We located the exact site by spotting E5 crew and the SHP helicopter hovered above.

On the 23rd I flew the approach path given the recorded flight data from the crashed aircraft. With me was a controller from RDU tower. Given the replication of the flight path and the comments made by the pilot, I strongly suspect when the pilot reported the airport beacon in sight he was actually seeing the cell tower and lights from the State Fair through the undercast. It is just my opinion based on the horizontal and vertical data I plotted from the actual flight path but it certainly appears as if when he came around for the last approach that he began his descent near the initial approach fix and not the final approach fix. This would coincide with the location of the impact.

My plot, data I used, and the correct approach path is below.



Time (EDT)	Latitude	Longitude	Course	kts	mph	feet	Rate	
Sun 07:01:14 PM	35.8122	-78.5581	↗ 60°	114	131	4,500	97 ↑	
Sun 07:02:15 PM	35.8344	-78.5356	↗ 39°	108	124	4,600		
Sun 07:03:19 PM	35.8553	-78.5078	↗ 47°	105	121	4,500		
Sun 07:04:20 PM	35.8742	-78.4789	↗ 51°	109	125	4,600	49 ↑	
Sun 07:05:22 PM	35.8864	-78.4317	→ 72°	119	137	4,600	-96 ↓	
Sun 07:06:25 PM	35.8481	-78.4164	↓ 162°	170	196	4,400	-339 ↓	
Sun 07:07:26 PM	35.8175	-78.4594	↙ 229°	158	182	3,900	-246 ↓	
Sun 07:08:27 PM	35.7850	-78.4992	↙ 225°	166	191	3,900	-47 ↓	
Sun 07:09:33 PM	35.7428	-78.4969	↓ 178°	167	192	3,800	50 ↑	
Sun 07:10:26 PM	35.6950	-78.4981	↓ 181°	148	170	4,000	211 ↑	
Sun 07:11:27 PM	35.6717	-78.5233	↙ 221°	102	117	4,200		
Sun 07:12:28 PM	35.6889	-78.5436	↖ 316°	92	106	4,000	-347 ↓	
Sun 07:13:28 PM	35.7097	-78.5719	← 312°	106	122	3,500	-493 ↓	
Sun 07:13:41 PM	35.7122	-78.5711	↑ 14°	101	116	3,400	-194 ↓	
Sun 07:14:30 PM	35.7286	-78.5975	← 307°	98	113	3,300	-98 ↓	
Sun 07:14:42 PM	35.7306	-78.5967	↑ 19°	101	116	3,300	-190 ↓	
Sun 07:15:33 PM	35.7478	-78.6181	← 315°	91	105	3,100	-375 ↓	
Sun 07:15:46 PM	35.7489	-78.6183	↑ 350°	98	113	2,900	-814 ↓	
Sun 07:16:32 PM	35.7708	-78.6414	↖ 320°	102	117	2,300	-787 ↓	
Sun 07:16:47 PM	35.7756	-78.6442	↖ 335°	98	113	2,100	-492 ↓	
Sun 07:17:33 PM	35.7836	-78.6636	← 297°	92	106	1,800	-393 ↓	
Sun 07:17:48 PM	35.7875	-78.6642	↑ 353°	101	116	1,700	-500 ↓	
Sun 07:18:33 PM	35.8025	-78.6892	← 307°	111	128	1,300	-381 ↓	
Sun 07:18:51 PM	35.8047	-78.6928	← 307°	97	112	1,300	-98 ↓	
Sun 07:19:34 PM	35.8192	-78.7172	← 306°	112	129	1,200	-295 ↓	
Sun 07:19:52 PM	35.8244	-78.7211	↖ 329°	102	117	1,000	-200 ↓	
Sun 07:20:34 PM	35.8419	-78.7433	← 314°	114	131	1,000	-190 ↓	
Sun 07:20:55 PM	35.8456	-78.7478	← 315°	106	122	800	-281 ↓	
Sun 07:21:00 PM	Arrival (KRDU) @ Sunday 07:21:00 PM EDT							
Sun 07:21:38 PM	35.8628	-78.7692	← 315°	106	122	700	-140 ↓	

Start fixing

Suggestion: I wish I could have been dispatched the night before and at the RDU EOC for the 20:30 briefing. I feel given my aviation experience and position as a WFFD member that that combination of knowledge may have been useful.

Observation: It cannot be understated how critical it is for air assets and ground teams to work together in a coordinated operation and not in disparate operations. No drone, helicopter, or airplane alone has the highest chance of success. Teamwork in the air and ground and an informed plan provides the best opportunity for a successful outcome. In order to get a complete picture of the situation, a blending of observations from the air and ground are necessary. Each provides a portion of the overall context on which great decisions can be made.

Mike, I applaud your effort to draw together the various teams to get a combined look at the event.

Here in Wake County, we have incredible public safety team members. I'm impressed by their skill, professionalism, and knowledge every single day. As more of an outsider looking in it is my observation having responded to drone searches with various entities around the state that what we miss at times is the coordination of the right assets in the right configuration. And I completely agree, that is easier said than done.

Mike, if you would like to go for a flight and let me take you up in the airplane I can give you a top-down look at the scene of the crash.

Steve