

NATIONAL TRANSPORTATION SAFETY BOARD
Office of Aviation Safety
Washington, DC 20594

SURVIVAL FACTORS SPECIALIST'S FACTUAL REPORT

August 31, 2020

I. ACCIDENT

Airplane : Velocity XL-5 [N735D]
Location : Kissimmee, FL
Date : August 21, 2019
Time : 0852 eastern daylight time (EDT)¹
NTSB # : ERA19LA253

II. SURVIVAL FACTORS SPECIALIST

Specialist : Jason T. Fedok
National Transportation Safety Board
Washington, DC

III. SUMMARY

On August 21, 2019, about 0852 eastern daylight time, an experimental amateur-built Velocity XL-5, N735D, was substantially damaged during a forced landing to a field in Kissimmee, Florida, after a complete loss of electrical and engine power. The commercial pilot/builder and the passenger were seriously injured. The airplane was registered to and operated by the pilot as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

IV. DETAILS OF THE INVESTIGATION

1.0 Accident Summary

The pilot reported that he departed from Kissimmee Gateway Airport (ISM) and about 0840 and was destined for the Sebastian Municipal Airport (X26), Sebastian, Florida. Shortly after takeoff, at an altitude of 2,000 ft, the engine and electrical system failed simultaneously. The pilot tried several times to restart the engine, but it did not restart. He feathered the propeller and made a forced landing to an open field. The airplane flipped over during landing resulting in substantial damage to the airframe and both wings.

¹ All times are reported in local time unless otherwise noted.



Photo 1. Aerial photograph of the accident airplane. (Courtesy: WKMG Sky 6)

The pilot reported that he and his wife were both wearing their three-point shoulder harness/lap belts, but the inboard structural attachment for his lap belt broke off during impact and he was thrown into the back seat during impact. He reported that he struck his wife's seatback while he was being thrown backwards and broke it in a backwards direction. The cabin remained intact.

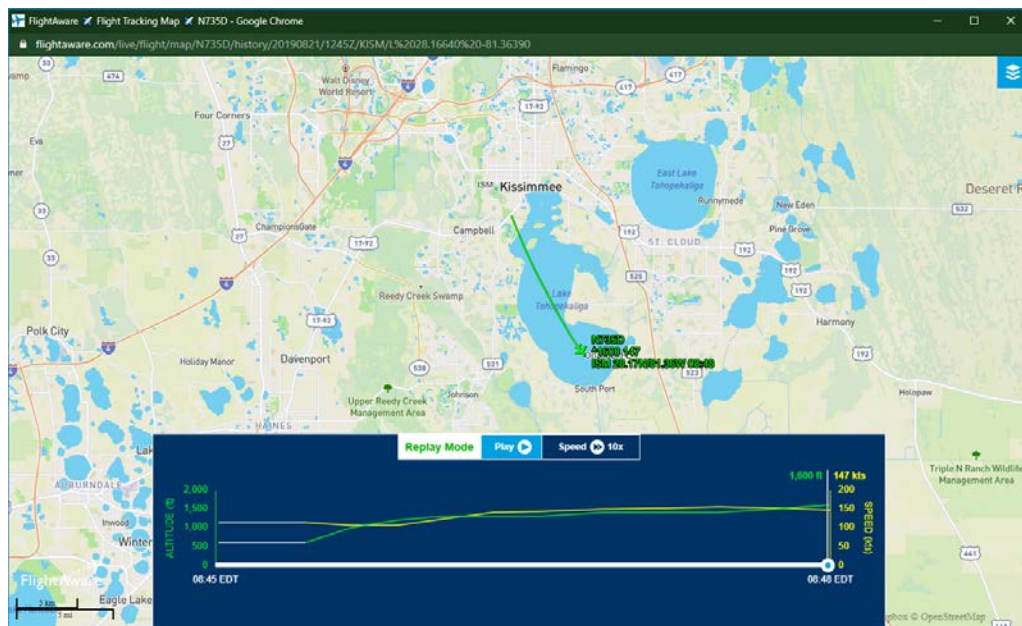


Figure 1. Screenshot from FlightAware.com of the accident flight's ground track.

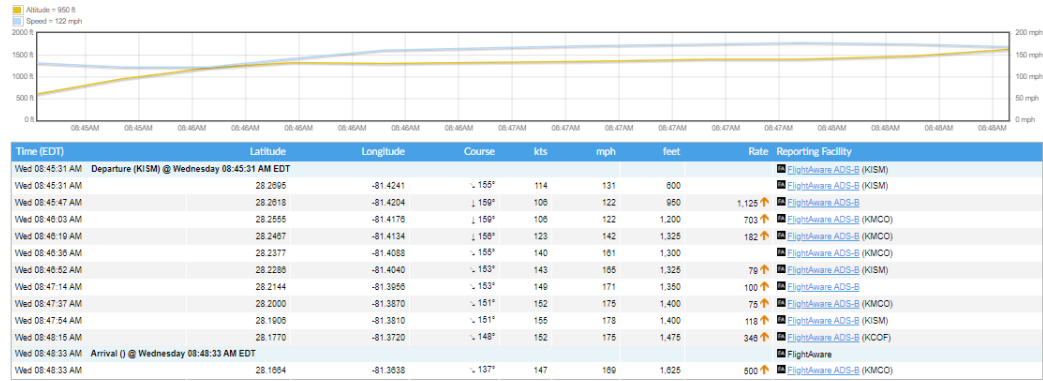


Figure 2. Screenshot from FlightAware.com of track log available for the accident flight.

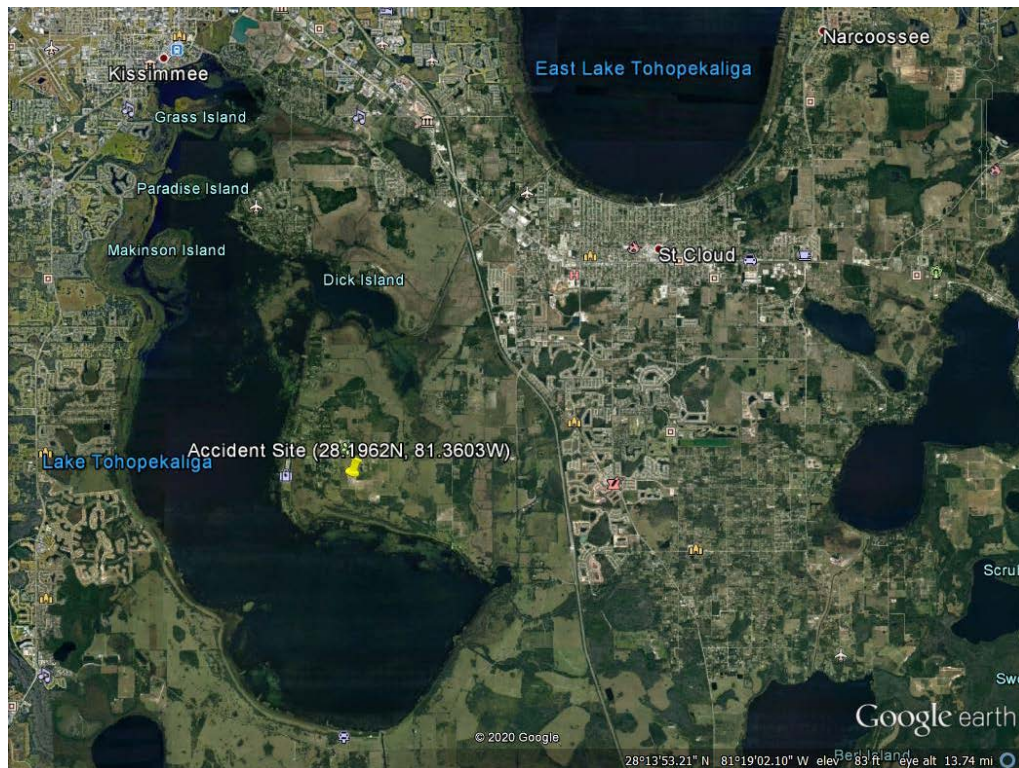


Figure 3. Google Earth image of the accident location.

2.0 Emergency Response

The airplane was equipped with an Federal Aviation Administration (FAA) TSO C-126 MHz 406 MHz emergency locator transmitter (ELT), which was registered to the pilot.² The beacon was an Artex model 345, which transmitted on both 406 MHz and

² Because TSO-C126 beacons can be individually identified and transmit digitally, owners are required to register the beacon in the Nation Oceanic and Atmospheric Administration's ELT database. The information provided in the registration includes data fields such as airplane type, color, tail number, owner's name, and owner's address. There were also data fields for up to four phone numbers for the owner, and four additional data fields for phone numbers for additional emergency contacts.

121.5 MHZ and had a built-in GPS navigational interface. The beacon (Hex ID: 2DC88 59332 FFBFF) activated during the accident and the Air Force Rescue Coordination Center (AFRCC) detected the beacon at 0852Z at 28 11.7N 081 21.5W. These coordinates were 0.13 nautical miles southeast of the accident site.

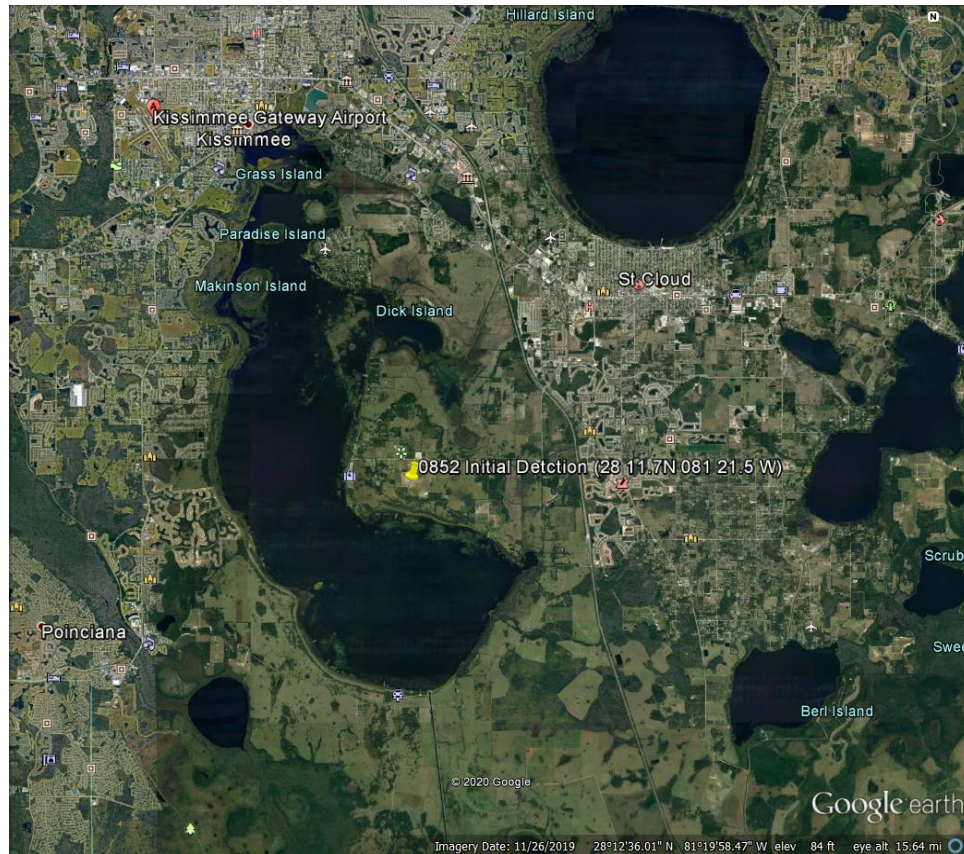


Figure 4. Locations of ISM and initial beacon detection at 0852.

The AFRCC incident log for the event indicated that the AFRCC controller working the alert performed a search for the beacon in the agency's Incident History Database (IHDB) at 0859 and identified that the beacon ID had been involved with one non-distress incident in 2017. The controller also called the primary contact phone number (the pilot's cell phone) and left a message at about 0900. The pilot reported an incoming phone call from AFRCC logged on his phone at 0858, but his cell phone was under the airplane due to impact forces and he did not have access to it. There was no log entry indicating that the additional emergency contact numbers that the pilot provided with the beacon's registration (wife and daughter) were called.

After leaving a voicemail message for the pilot, the AFRCC controller working the alert searched for the airplane's N-number at flightaware.com at 0901 and learned that the airplane had "landed at ISM a day ago." He contacted FAA's southwest flight service station (FSS) (identified as FTW in this report) and requested a ramp check at ISM to see if the airplane was still at the airport and also contacted the airport owner at 0909 and provided him with airplane and beacon information. FTW called the AFRCC

controller back at 0924 and reported that no ELTs were heard on the field but added that ATL (Atlanta Center) had also called them and “reported a signal and someone is out looking for it.” At 0943 ISM called AFRCC back and reported that the airplane had left the field about an hour prior. The AFRCC controller then immediately called the FAA’s air traffic control facility Jacksonville Center (JAX) to open an incident with them.

About 15 minutes later (1001) FTW called AFRCC and reported information from the ISM owner, that “the aircraft is flying without a flight plan.” The AFRCC log contained an entry for a 1054 satellite detection of the beacon at 28 11.6N 081 21.7W, about 0.2 nautical miles south-southwest of the accident site and 0.2 nautical miles southwest of the initial 0852 detection. No further entries were made in the AFRCC log until 1217 and 1218 where the controller closed the incident with both JAX and FTW, respectively. A log entry at 1317 indicated that the controller called the Osceola County Sheriff’s Office (OCSO) and “transferred all of the data of the registration and requested a call back on the result of a wellness check.”

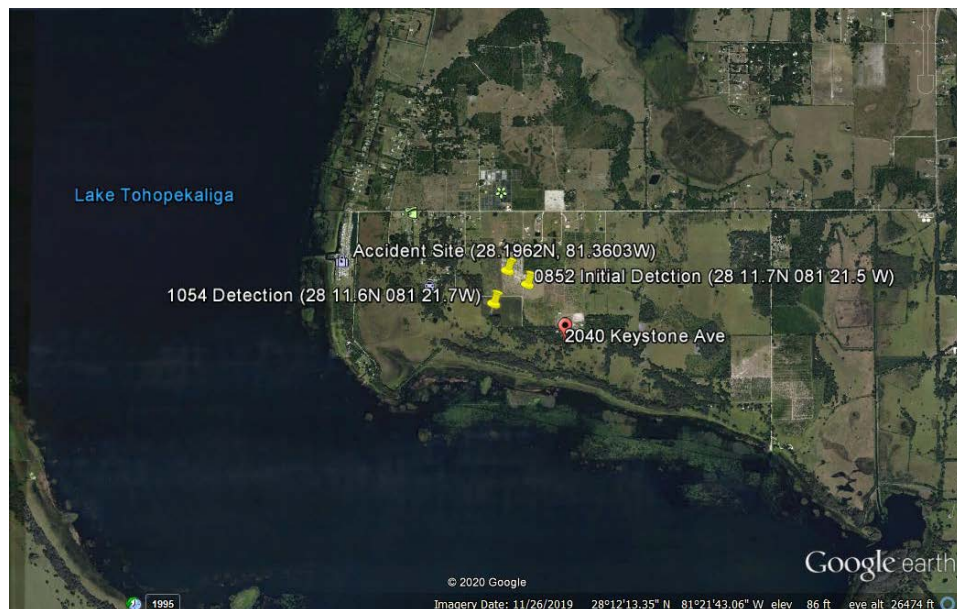


Figure 5. Locations of the accident site and ELT detections at 0852 and 1054.

The initial (and subsequent) phone conversations between the AFRCC controller and OCSO dispatchers were recorded by OCSO. Digital copies of the conversation were provided to the NTSB for use in the investigation. OCSO computer aided dispatch (CAD) records indicated that the initial call from AFRCC about the ELT signal occurred at about 1237. The AFRCC controller stated he “trying to see if we can get a county sheriff to go out to some coordinates. We have an ELT signal, emergency beacon, that’s plotting in your county and it’s coming from an aircraft that’s been in the same spot for about an hour. And so we’re trying to see if we can get someone out there to see if it’s not a plane crash or anything.” He provided the location coordinates as “two eight space one one dot eight north, zero eight one dot I’m sorry zero eight one space two two dot eight west... it’s plotting right in the middle of Lake Tohopekaliga.” The OCSO dispatcher asked if it was east or west because there were two Lake Tohopekaligas in Osceola County. The

AFRCC controller replied it was on the east side of the lake... the big one, the very big one that's looks like a kidney shape.... almost connected to the city of Kissimmee." The OCSO dispatcher said "that might be west" and she would plot the coordinates and asked him to "hold on."

The OCSO dispatcher returned to the line about 15 seconds later and said "zero two eight point one one eight and zero eight one point two two eight, correct?"³ The AFRCC controller stated, "yes, ma'am. And for the north one there's no zero in the front. So it's just two eight space eleven dot eight north and then..." The OCSO dispatcher cut him off and stated "that's plotting for me off of Lake Gentry... not even on the lake but off onto to the land." The AFRCC controller expressed confusion and stated "I'm sorry... Gentry? I don't even know where that is." The OCSO dispatcher informed him "it's east of Lake Toho... I will have them check both areas."

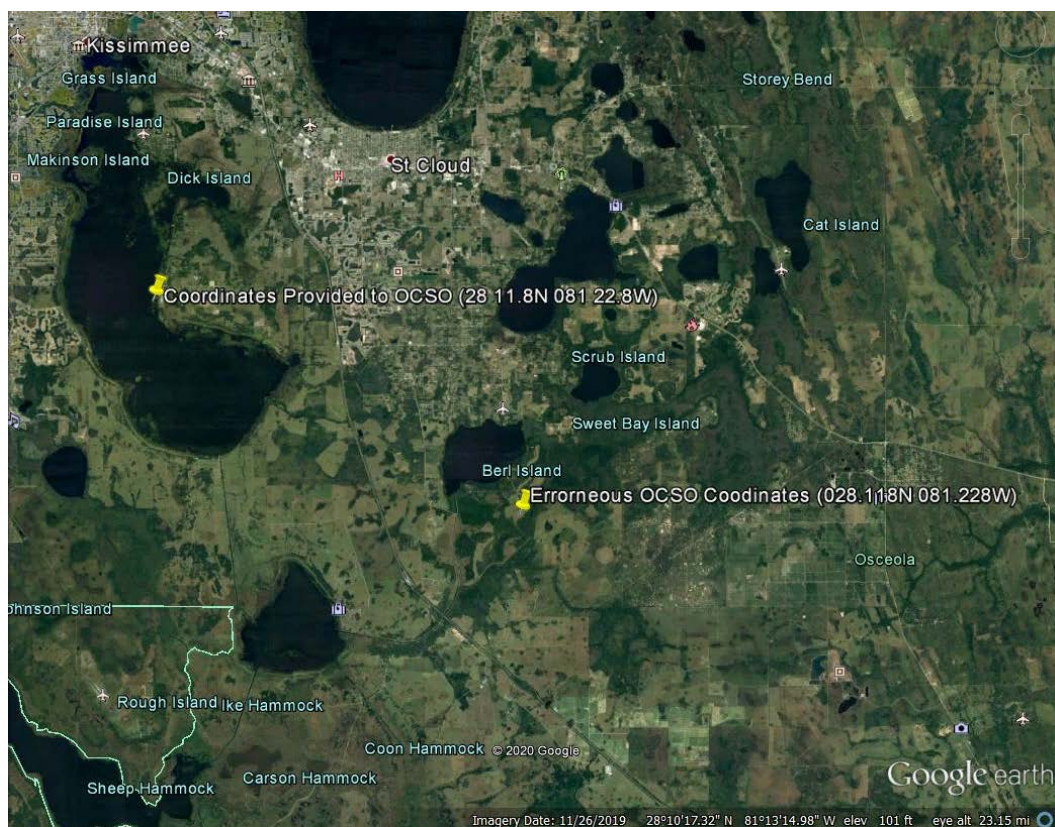


Figure 6. Google Earth image showing the coordinates provided to OCSO by AFRCC and the erroneous coordinates plotted by the OCSO dispatcher.

The AFRCC controller persisted in attempting to rectify the confusion and asked if the dispatcher knew where the city of St. Cloud was. When she replied in the affirmative, he stated "it's the big lake right next to that one, on the west side of it... by

³ This readback of the coordinates provided by the AFRCC controller contained an error. Rather than 28 11.8N 081 22.8W, the OCSO dispatcher provided 28.118N 081.228W, which was not recognized or corrected by the AFRCC controller. These erroneous coordinates plot about 9 nautical miles SE of the original coordinates, just SE of Lake Gentry, FL (see figure 6).

Duck [sic] Island and Makinson Island and Paradise Island and Grass Island... the lake that's connected with those." The OCSO dispatcher stated, "I'll have them check both areas." The AFRCC controller replied "okay" and the dispatcher asked "and you think it's a plane crash?" The AFRCC controller stated "it might be, yes, ma'am. There's a beacon distress signal that's been going off for about an hour at that same location." As the OCSO dispatcher typed information into her computer the AFRCC controller continued to attempt to refine the location. When he was unable to find a major street near the coordinates he stated "there's what looks to be a boat company, it's called Wild Willy's Airboat Tours... it's plotting right next to that establishment."

At several times throughout the call the OCSO dispatcher placed the AFRCC controller on brief holds while she communicated (or attempted to communicate) with others in the dispatch center. After the AFRCC controller mentioned Wild Willy's Airboat Tours as a possible search location there was an approximately 20-second-long pause [dead air] in the conversation. When the OCSO controller returned to the line she was audibly frustrated and speaking to a coworker stating "He's saying it's showing on their end... nobody wants to listen to me." After another brief pause the AFRCC controller offered "I can give you another set of coordinates that might be better." The OCSO dispatcher stated "no, I'm just going to put it in the call. That way they're responsible for it." She then stated to a coworker, "I'm putting it all in the call because nobody can hear me... so look at the call."

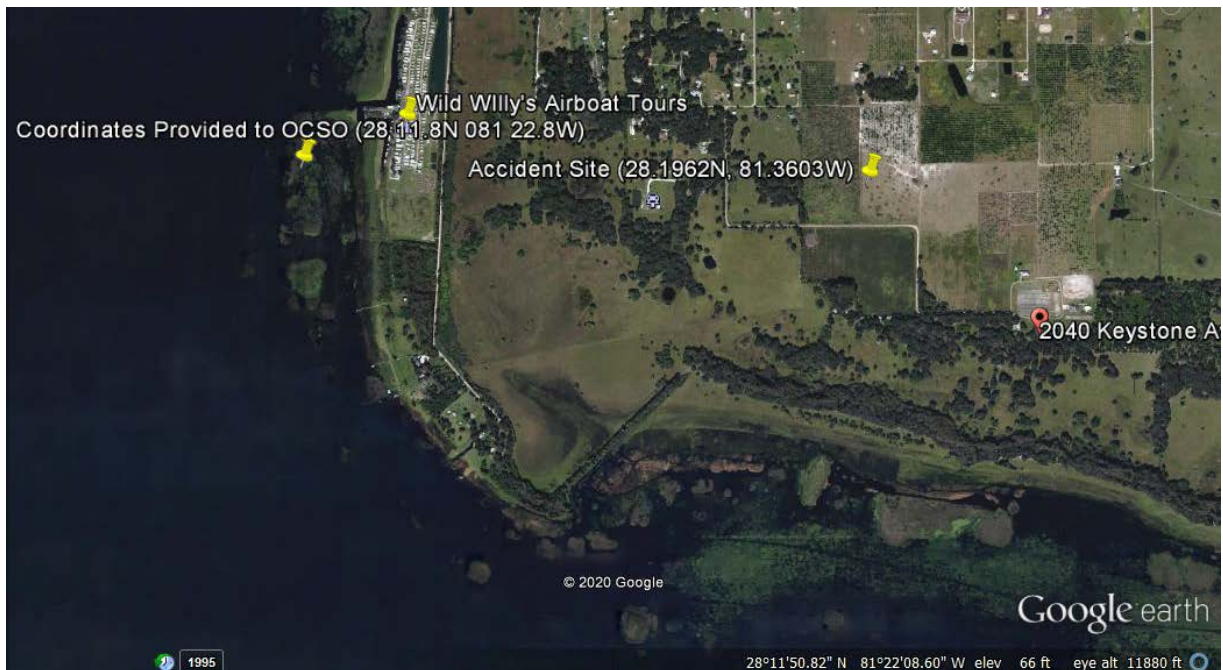


Figure 7. Locations of AFRCC coordinates provided to OCSO, Wild Willy's Airboat Tours, and the accident site.

The phone call ended after the AFRCC controller provided the registration number, airplane type, color, and the owner's name. The OCSO dispatcher stated that

they “have several units and sergeants working on it.” The nine-minute call ended about 1246.

OCSO immediately began tasking units with a ground search, and provided them with the street address of Wild Willy’s Airboat Tours. Additionally, by the time the phone call had ended, OCSO command staff had already notified an OCSO Aviation Unit helicopter (STAR3) about the need for an aerial search. Manned with a pilot and a tactical flight officer (TFO), STAR3 arrived in the area just south of Lake Gentry about 1306. The TFO’s incident report stated, in part:

“We searched the last known coordinates that we were advised the Air Force received from the single engine 2016 Velocity XL-RG-5. The area was clear of any aircraft or debris, and we continued checking a larger area around the last known location. While searching, I utilized a flight tracking service on my cell phone and was able to see that the last known location according to the website’s data was in the south portion of Lake Tohopekaliga. The flight data also showed the aircraft in a descent and the airspeed climbing. We flew to the southeast side of Lake Tohopekaliga and tuned our aviation radio to the emergency guard channel (121.500), which is the aviation channel that emergency beacons are transmitted. I also turned on the radio directional receiver onboard the helicopter and tuned it to 121.500. We immediately began receiving the ELT. The directional receiver showed that the beacon was coming from the southeastern side of the lake. We then located the aircraft in an open field to the north of 2040 Keystone Ave. The aircraft was laying upside down and had extensive damage. There also was a path on the ground where it appeared that the pilot tried to land the aircraft before it flipped over.”

The OCSO CAD report indicated that the accident airplane was located by STAR3 about 1317, approximately 4 hours and 25 minutes after the accident. Once the helicopter provided the location and directions, OCSO and Osceola County Fire Rescue (OCFR) ground units (who were already in the vicinity of Wild Willy’s Airboat Tours) began arriving on scene within minutes. The TFO’s incident report continued:

“We then landed the helicopter about 200 yards from the aircraft and I exited and approached the aircraft (FAA registration N735D). As I came around the left wing, a male was laying on his back outside of the plane and moaning. He was covered with a white sheet from his torso down, and completely wet. I made contact with the male, who advised he was the pilot, and began assessing his injuries. He told me that he had a dislocated hip and possibly a broken leg as well as internal injuries. He advised that his wife was also onboard and was still stuck in the aircraft. He stated that ... she had two broken legs. I observed a female to be laying with her chest and head outside of a broken out window with the aircraft laying on top of her. I could see that she was conscious and looking at me. It appeared she was in shock and was unable to communicate with me. I

asked her where her pain was but she could not answer me. I also asked her to blink twice if she was able to breathe freely. She gave two very distinct blinks. I advised her that she should not move and breathe as calmly as she could to avoid any further injury until paramedics could arrive... I advised dispatch to get [medical helicopter] AirCare en-route to the scene due to the obvious traumatic injuries the two had sustained⁴... once [ground] paramedics arrived on scene, AirCare was also arriving. I then assisted OCFR with securing the landing zone for both AirCare helicopters. [The pilot] was loaded onto AirCare 1 and flown to Osceola Regional Hospital (ORH) as a trauma alert. [The passenger] was successfully extricated from the aircraft and also flown to ORH on AirCare 3 as a trauma alert.”

An OCSO dispatcher called the AFRCC controller back about 1330 and told him that they had located the airplane. The AFRCC controller asked what had happened and the dispatcher told him “it crashed, we’ve got it inverted about a mile away from where you said you were getting the beacon from” and that there were two survivors who were trauma alerts. She added that the airplane was located via an OCSO helicopter that landed nearby and rendered aid. The AFRCC controller replied “Wow. Oh my gosh. Ok. Dang. I guess I wasn’t on time then, as far as, like trying to locate them. Holy crap. Ok, so it was a confirmed crash?” The dispatcher confirmed it was an actual crash and asked “you guys said you had the beacon going off for an hour?” The AFRCC controller replied “yes, ma’am. It was actually going off longer than that... the emergency signal went off when they took off from the airport... I think it was India Sierra Mike that they left. And we were waiting for them to land because they were just flying around and then all of the sudden we kept getting the ELT signal but it just wasn’t moving and so, after about an hour, that’s when we kinda was like okay something’s wrong.” The dispatcher asked what time the airplane took off and, after a brief pause, the AFRCC controller stated “ok, the first alert was at 1623 Zulu time... and the last alert that we got was, it’s still going off actually, one minute ago.” The AFRCC controller asked if the airplane was attempting to land and the OCSO dispatcher said that she did not know. The AFRCC controller asked about the location and the dispatcher said it was in a field at a farm at 2040 Keystone Avenue in St. Cloud, FL.

3.0 AFRCC Incident Review

The AFRCC director of operations reviewed the incident log as well as the OCSO audio recordings “in detail with our team here” and provided his resultant assessment to the NTSB.⁵ He considered “the root cause for any confusion and perceived delay” to be the phone call between AFRCC and FTW where it was noted in the log that the “aircraft was flying without a flight plan.” He explained that the statement could have meant two

⁴ The OCSO CAD report indicated that the TFO made the request for AirCare at 1321, about two minutes after arriving at the airplane.

⁵ The controller was an airman in his first phase of training at AFRCC. He was subsequently deployed overseas by the USAF and his instructor had left the USAF prior to the director of operations’ email of April 22, 2020.

things to the controller: 1) the airplane did not file a flight plan today and we can't determine its whereabouts—could be in the hangar, could be out flying OR 2.) the airplane is currently in the air and is currently not on a filed flight plan.

He added that the beacon location received from NOAA SARSAT did not “correlate to a specific, persistent spot but were sometimes miles apart, some are spilt or ‘blown’ solutions where the satellite can’t decide where the beacon is & provides two locations simultaneously. This is consistent with an aircraft with an ELT active while in flight, especially a low altitude, low speed light aircraft. Typically, mishap aircraft have a very tight, persistent set of cords.” He thought that the airplane’s inverted position may have contributed to scattering the ELT signal.

He summarized the controller’s actions and stated that he “got a beacon, followed procedure, did his ramp checks, and got word from the FSS that the aircraft was flying without a flight plan while the beacon plots were scattershot and not encoded. All of those details would lead a controller (especially one in training) to decide that the [aircraft] was still in flight. He closed with [FTW] Hub and JAX because he decided that the [aircraft] was in flight and could close the incident himself.”

He noted that the controller did not save every single satellite beacon detection in the log which he said was “not uncommon.” It was not noted in the log, but he believed that at some point before 1237Z [the AFRCC controller] was directed to call OCSO because of information from another source or at the direction of his instructor. He thought it may have been due to beacon detection locations over the previous hour becoming more consistent.

The director of operations also stated that the controller was in “his first phase of training on a busy summer day. Our records show that we prosecuted 38 other incidents that day—busy enough for experienced crews, more so with training underway.” He could not explain why the controller misspoke about how long the beacon had been going off during his initial call with OCSO. He speculated that it might have been because the coordinates “resolved on a certain spot for about an hour---but yes, I agree that is a confusing and inaccurate statement.”

When asked about the timing of the initial call to a local law enforcement agency, the director of operations stated that per the memorandum of understanding between AFRCC of Florida, the AFRCC was the responsible agency for missing aircraft. “A call to local law enforcement is not required, although may certainly be warranted depending on the situation. At 1637Z, other outside factors drove [the controller] to call Osceola County due to the beacon location.” He agreed that the controller was surprised that this was an actual mishap but believed “he was given a perfect set of circumstances to erroneously believe that this was an aircraft currently in flight, possibly not up on a radio, flying around with an inadvertently activated ELT; a situation that we see on a regular basis.”

The director of operations concluded by stating, “we will certainly use this incident as a training aid and discussion point on how to handle these types of cases in the future. One of the challenges at the AFRCC is that there is no training simulator and no real substitute for trainees that very well may get an actual distress call on Day 1, Shift 1, Hour 1 of their career.”

Jason Fedok
Survival Factors Investigator