

**From:** [Glynn, John - TOIG](#)  
**To:** [Folkerts Michael](#)  
**Cc:** [James Bair](#)  
**Subject:** My thoughts on the Trike crash at Ft. Atkinson  
**Date:** Sunday, September 24, 2017 2:03:52 PM

---

Mike, thank you for the opportunity to participate in the investigation of the trike crash at Ft. Atkinson on 9/11/17. I am glad that Jim Bair was also available to investigate as well.

When I first arrived, Chip the airplane flight instructor was on site and introduced himself. Chip wanted to explain from his point of view the event as he witnessed it. I requested Chip to take me to exactly where he witnessed the event and describe what he saw from that spot.

Chip witnessed the trike pilot make a good landing in very mild conditions, a nearly calm evening, and taxi up to the group present in front of the hanger from where he would eventually witness the crash. I attached a photo and created a red dot to show where Chip told me he witnessed the crash. Some notes from Chip:

The pilot was familiar with the airport. The pilot would not typically land on the area where the skydivers would land. Shown in the photo as a round circular mown grass area. Recently the pilot used a mower to mow an area to land on parallel to the main paved runway. The pilot would typically use the paved runway for take offs and the grass for landing. Chip also made a point to make sure I understood that the pilot was not a "showboat", he would not make very low fast passes or steep turns but flew conservatively.

The pilot picked up the passenger who just recently soloed an airplane. Together some circuits in the pattern were made, possibly three "touch and go's" without the touching, over the runway, staying about a foot off the runway and not landing before going around again in the pattern. Chip was not sure of how long they were gone but apparently they may have left the pattern for a while prior to the last attempt and resulting crash. Upon returning a unstable approach was observed, Chip assumed that possibly the passenger was attempting the approach. A application of full power was applied and maintained, in an apparent go around. The left turn was steeply banked and the trike passed over the quonset hut and behind the barn from his vantage point. That would put the trike very low (less than 150 - 200 feet) and the turn progressed left and then eventually down behind the trees out of sight and then crashing into the river. Chip was unable to see the crash but heard the "tremendous" impact. Of note: Chip described from the addition of full power it was 5 seconds until impact. Chip described as One thousand one, one thousand two, one thousand three, one thousand four, and then the crash sound. From the aerial view photo I attached, I drew an estimated flight path represented by a yellow line. Not sure if the pilot was trying to land on the paved runway, skydiving landing area, or the grass adjacent to the runway but given the short time 5 seconds, and the low altitude, by the line of sight and building he passed over, I believe the decision to go around was early. What was unusual was the steep turn at low altitude and the ability to not climb. An 80 horsepower trike with that wing and passenger load may climb at a fairly steep angle very easily unless in a steep bank at a high angle of attack.

I inspected the wreckage next. I listed some things checked and why I checked below:

- This Q2 model wing had a manufacturer recommended modification to the wing tips. It appears to have been performed. The sail tension at the leading edge is maintained by a strap sewn into the wing material and over the main leading edge tube. I attached photos of both wing tips where you can see the wing tip webbing straps were re-sewn from the original configuration from the factory. Both wing tip straps were intact and not torn or separated. This is significant because a world class pilot flying this wing model had a wing tip strap sewing come loose and it created such a turn that he was barely able to control to a safe landing. This apparently was not a cause for the sharp left turn in this case as the wing tip straps were intact.

I inspected the entire trailing edge of the sail. Trikes are unique in that they are open cockpit aircraft that have pusher propellers behind the occupants. One thing pilots need to brief passengers on is the need to remove anything from pockets that could fall out and go through the propeller. I especially mention cell phones as everyone seems to have one and normally everyone wants to take a photo or video with one while riding as a passenger. The strong wind makes phones hard to hold and they must be secured or safetied with some short cord or allowed to be used for a photo. Damage to the propeller may occur but in addition, the propeller is in line with the wing material. If an object is dropped and goes through the prop it may be ejected from the propeller through the trailing edge of the wing. If the material on the wing is damaged severely enough it may cause control issues. The only damage to the wing near the trailing edge was more into the body of the wing and was caused by the propeller, which was still protruding through the wing apparently from the impact. I saw no evidence of sail damage that would result into

control issues in my opinion.

I examined all the lower flying wires. The wires on the bottom of the wing carry the inflight positive loads. There was a service recommendation to inspect this models wing cable attachments for potential broken strands. I found all to look to be satisfactory and all were intact without any broken strands. One starboard rear flying wire that runs from the rear of the wing keel, to the bottom starboard side of the control bar, was broken. This cable appeared to be broken by contact with the propeller as one side of the cable was wrapped around the propeller hub. This damaged seemed consistent with a full power impact and not something that happened in the air. I do not believe that any flying wires contributed to control issues.

I tested the sail material using the factory recommended Bettsometer. The trailing edge sail body, trailing edge Kevlar reinforced area, the lower sail double surface sail area, and the upper sail double surface area all passed the required 1360 grams of force in both chord-wise and span-wise directions. I tested the wing tip strap cord and it met the 1360 grams of force as well. The leading edge had a sail patch added to help smooth out some sail delamination on the port wing. This was not torn and the patch appeared to be well attached to the material underneath. On the starboard wing there was some area that had significant delamination of the mylar sail material apparently from impact. The area under the delaminated areas felt to have adhesive on them. On the starboard wing there were areas that did not have the mylar film on the surface and the area did not feel sticky. On those areas the sail only went to 1100 grams of force on the Bettsometer when tested but I only tested the outermost layer of the sail and it was not torn so I do not believe the leading edge was causing any control issues. This sail material should pass the 1360 grams of force but did not but I do not believe contributed to control issues as it was not torn.

The engine was submerged after the accident and when the spark plugs were pulled the engine still had thumb compression on all cylinders. I believe the engine had full power until impact given the witness Chip description and the damage to the propeller.

I do not see any reason on the trike for control issues due to the aircraft airworthiness.

An unusual observation was made regarding the training bars. These bars are designed for instructor use in the back seat. Both bars had significant bends to the left, especially where the bottom of the bars are connected to the base tube. I do not envision a circumstance where these bars both could undergo such significant bending unless possibly the passenger was holding onto the bars from the rear seat in the event of the crash.

Given that the trike appeared to be airworthy I believe another explanation exists for the contributing to the crash. In order to not climb and from the flight path as witnessed by the airplane flight instructor present, the aircraft must have been in a significant bank, and at a high angle of attack. In this circumstance it would be both difficult to climb and roll level unless the angle of attack was reduced by pulling in on the controls, lowering the nose and then rolling level. If the controls were pushed out and a high angle of attack was maintained, the bank could steepen and in time the nose can drop below the horizon causing the aircraft to rapidly to descend into a dive at high bank angle until impact. It could happen fast as described by the witness Chip. If the passenger was holding onto the controls, or trying to lower the nose like in an airplane by pushing, it would be extremely difficult for the pilot to lower the nose, roll level and climb.

Flying in an open cockpit trike is unique, the control motions are opposite an airplane, and the dash of the trike is not able to be used as a horizon reference as it is in a conventional airplane. These are things that airplane pilots need to have transition training for. After training trikes are very simple easy to fly aircraft but they do have unique flying characteristics that require proper training. Speedy recovery from steep descending turns is now a requirement in the weight shift training program. These are not spins but potential disorienting circumstances that require some specific training.

I will send the photos separately. Thank you, John Glynn

John Glynn

