

AIRBORNE PUBLIC SAFETY ASSOCIATION



The

Safety

Wire

November 2018

WIRE STRIKES have been a constant threat to public safety aviation since the beginning of the profession. We have lost at least 16 people in public safety aviation since 1994. The latest US Helicopter Safety Team (USHST) report listed strikes with wires and objects as one of the top three causes of rotorcraft fatalities (IIMC and loss of control were the other two). Sadly, it seems as if this old enemy has claimed the life of another law enforcement pilot. While few details are known about the circumstances that took the life of officer David Hall and his passenger on November 16th, and we will let the accident investigators take their time to piece together the tragic puzzle, what we can do now is pause to look at ourselves and ask when was the last time we refreshed our wire strike knowledge or conducted wire strike training within our own agency.

Wire strike training is for everyone who will be riding in the aircraft. It is for rotorcraft, fixed-wing and even UAS crew members. It involves learning what to look for, where to look for it, and how to 'see' it. Early in any wire awareness training, we learn that the key is understanding how to look for the sign of wires, not necessarily the wires themselves. To demonstrate this, find a set of wires and orbit around them at your patrol altitude. You will see they are visible at some angles and usually disappear at others, even though you know they are there. According to the FAA, over 60% of

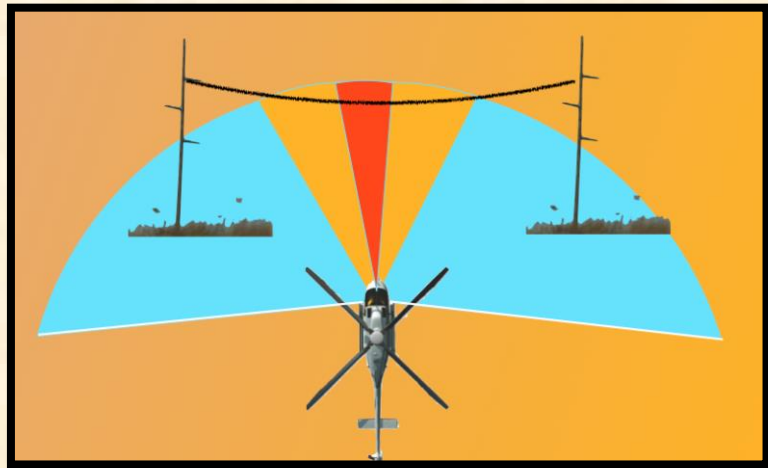


pilots who hit a wire knew they were there. And over 80% of the time it occurred in day, VFR conditions.

Altitude plays a significant role. The FAA found that over 70% of strikes were below 100 feet AGL. A joint study with NASA led to a recommendation that operations be conducted at 750 feet AGL or above unless the mission specifically required lower altitudes, such as firefighting or hoisting operations.

In the November issue of the Safety Wire, we looked at the importance of conducting a slow, methodical scan that holds the eye still for 2-4 seconds at a time. This technique is just as useful in looking for the sign of wires as it is when searching for a hiding suspect.

We need to take this slow, methodical search beyond 30 degrees to either side of the nose of the aircraft. Often the wire in front of us cannot be seen, but the sign (poles, cuts in foliage, etc.) can be seen off to the side.



And what should we be looking for? Here is a list that grew from input given by participants in a class we delivered on the subject at our various educational events:

1. Every house has a wire
2. Every road has a wire
3. Every turn has a support wire
4. The amount of wire 'sag' will vary with temperature or if the wire is energized
5. Cross at the poles
6. There is often a small static wire at the top strung between the poles
7. All towers have guy wires that go out as far as the tower is tall
8. Construction sites may have temporary wires
9. Transformers on poles will be aligned with the direction of the line
10. Nature does not create straight lines

Do you have anything to add to our list?



AWARENESS IS GOOD, BUT WITHOUT SKILLS AND ABILITY TIED TO THAT AWARENESS, ALL YOU HAVE IS ANXIETY.

*~ TONY BLAUER
BLAUER TACTICAL SYSTEMS*

SAFETY SURVEY

It's that time of year again! As always, we are requesting your assistance in helping us collect accurate information about safety-related issues in public safety aviation. This information helps direct APSA's safety and education programs as well as our outreach efforts to improve our industry. Your input is completely anonymous. There is no other source of accurate safety information for our profession. So, if you are a mechanic, administrator, TFO, manned or unmanned pilot, etc., please take a few minutes to fill out the survey. The survey will close on December 1st.

[CLICK HERE TO START SURVEY](#)

RESOURCES

Transportation Safety Board of Canada -
Watchlist Call to Action

<http://www.bst-tsb.gc.ca/eng/medias-media/communiques/autres-other/2018/20181029.asp>

Human Factors Newsletter

<https://nebula.wsimg.com/7dabdb8be496dff01b21dc33f7c1945f?AccessKeyId=9ADBA739B30D22098056&disposition=0&alloworigin=1>



NTSB Presentation on CFIT

https://www.nts.gov/news/speeches/RSumwalt/Documents/Sumwalt_140811.pdf

SMS ANNUAL REPORT

It's that time of year again. Remember that without the Assurance part of your SMS process, you are missing out on one of the major benefits of a modern program. Look back at where you started the year, what goals and objectives were set, what hazards or incidents were reported and what your operation did about it all. You'll find that some plans worked great and others did not, and that is ok! Figure out what influenced the success of your operation, either way, and use that information to set the path for 2019. Include any safety data you have collected, such as a summary of FRAT scores. Put the best stuff on page 1...unfortunately few will flip to page 2.



Now would be a good time to send out a new safety survey so you can include that information as well. Hopefully, this is not your first year doing a survey and you can compare to previous years.

If you are looking for an outline to follow for the report, one is included in the SMS Installation Guide on the APSA website's safety page. You can also email me and I will send you a copy.

**IT IS EASY TO DESIGN A FORCE-ON-FORCE SCENARIO THAT MAKES EVERY
TRAINEE LOOK LIKE AN IDIOT, BUT ALL THAT PROVES IS THAT THE TRAINERS ARE
JERKS.**

*~ LT COL DAVE GROSSMAN
ON COMBAT*

REALITY CHECK...

Note: The following reports are taken directly from the reporting source and edited for length. The grammatical format and writing style of the reporting source has been retained. My comments are added in **red** where appropriate. The goal of publishing these reports is to learn from these tragic events and not to pass judgment on the persons involved.

Aircraft: Cessna 182T
Injuries: 2 Uninjured
NTSB#: CEN15IA079

https://www.nts.gov/ layouts/ntsb.aviation/brief.aspx?ev_id=20141217X25544&key=1

The pilot was conducting a postmaintenance test flight. He reported that the airplane was about 900ft above ground level in the crosswind turn after takeoff when it “began to pitch steeply toward the ground.” The airplane lost about 200 to 300ft of altitude. He pulled hard aft on the yoke to keep the nose level, and he confirmed that the autopilot was not engaged. He called for the pilot-certificated passenger to assist him in pulling aft on the yoke, which required “extreme back pressure.” The pilot maneuvered the airplane to land on the longest and widest runway available. During the flight, the pilot incrementally added nose-up elevator trim in an effort to relieve the nose-down pressure; however, this had no effect. The manual elevator trim wheel indicated that the trim was in the full nose-up trim position. The pilot turned the airplane onto the base leg and was still unable to relieve the “extremely strong” nose-down tendency. He remembered that maintenance had been performed on the elevator trim system and thought that there might be some kind of control-reversal problem. While on the base leg of the approach, he decided to apply nose-down trim using the electric trim on the control yoke. The nose-down control forces lessened, and he immediately realized that there was a control reversal. The pilot proceeded to make a normal approach and landed without incident.

The examination of the airplane’s elevator trim system revealed that moving the elevator trim wheel to the full nose-down position resulted in the elevator trim tab moving to the down position, which would place the airplane in a nose-up configuration and indicated that the elevator trim control was reversed. The airframe and powerplant mechanic who had performed the maintenance on the airplane, which included replacing the elevator trim actuator, inadvertently misrigged the elevator control cables. The airplane’s maintenance manual instructed mechanics to “make sure that the trim tab moves in the correct direction when it is operated by the trim wheel” and contained a note stating that “nose down trim corresponds to the tab UP position.” The mechanic did not ensure that the trim tabs moved in the correct direction during his postmaintenance inspection after he installed the elevator trim actuator.

Aircraft: AS350 B3
Injuries: 3 fatal
NTSB#: WPR10FA371

https://www.nts.gov/about/employment/ layouts/ntsb.aviation/brief2.aspx?ev_id=20100728X92614&ntsbno=WPR10FA371&akey=1

The single-engine helicopter was operating near its maximum gross weight and was on a repositioning flight back to its home base. About 6 minutes into the flight,

cruising at 800 feet above ground level (agl), the helicopter experienced a complete loss of engine power. Witnesses observed the helicopter, which had been flying steadily in a southeast direction, suddenly descend rapidly into a densely populated residential area. The witnesses reported that, as the helicopter neared the ground, its descent became increasingly vertical. Examination of the accident site revealed that the helicopter was in a level attitude with little forward speed when it impacted a 5-foot-high concrete wall, which penetrated the fuselage and ruptured the fuel tank. A postimpact fire consumed the cabin and main fuselage of the helicopter.

An open roadway intersection was located about 300 feet beyond the accident site, in line with the helicopter's flight path. It is likely that the pilot was attempting to make an autorotative approach to the open area; however, he was unable to reach it because he had to maneuver the helicopter over a row of 40-foot-tall power lines that crossed the helicopter's flight path near the accident site. This maneuver depleted the rotor rpm, which, as reported by the witnesses, caused the helicopter's descent to become near vertical before it impacted the concrete wall, which was across the street from the power lines.

The pilot had no training flights during the 317 days since his most recent 14 Code of Federal Regulations Part 135 check flight. The lack of recent autorotation training/practice, although not required, may have negatively impacted the pilot's ability to maintain proficiency in engine failure emergency procedures and autorotations.

External examination of the engine at the accident site revealed that the fuel inlet union that connected to the fuel injection manifold and provided fuel from the hydromechanical unit to the combustion section had become detached from the boss on the compressor case. The two attachment bolts and associated nuts were not present on the union flange nor were they located within the helicopter wreckage debris. Separation of the fuel inlet union from the fuel injection manifold interrupted the supply of fuel to the engine and resulted in a loss of engine power.

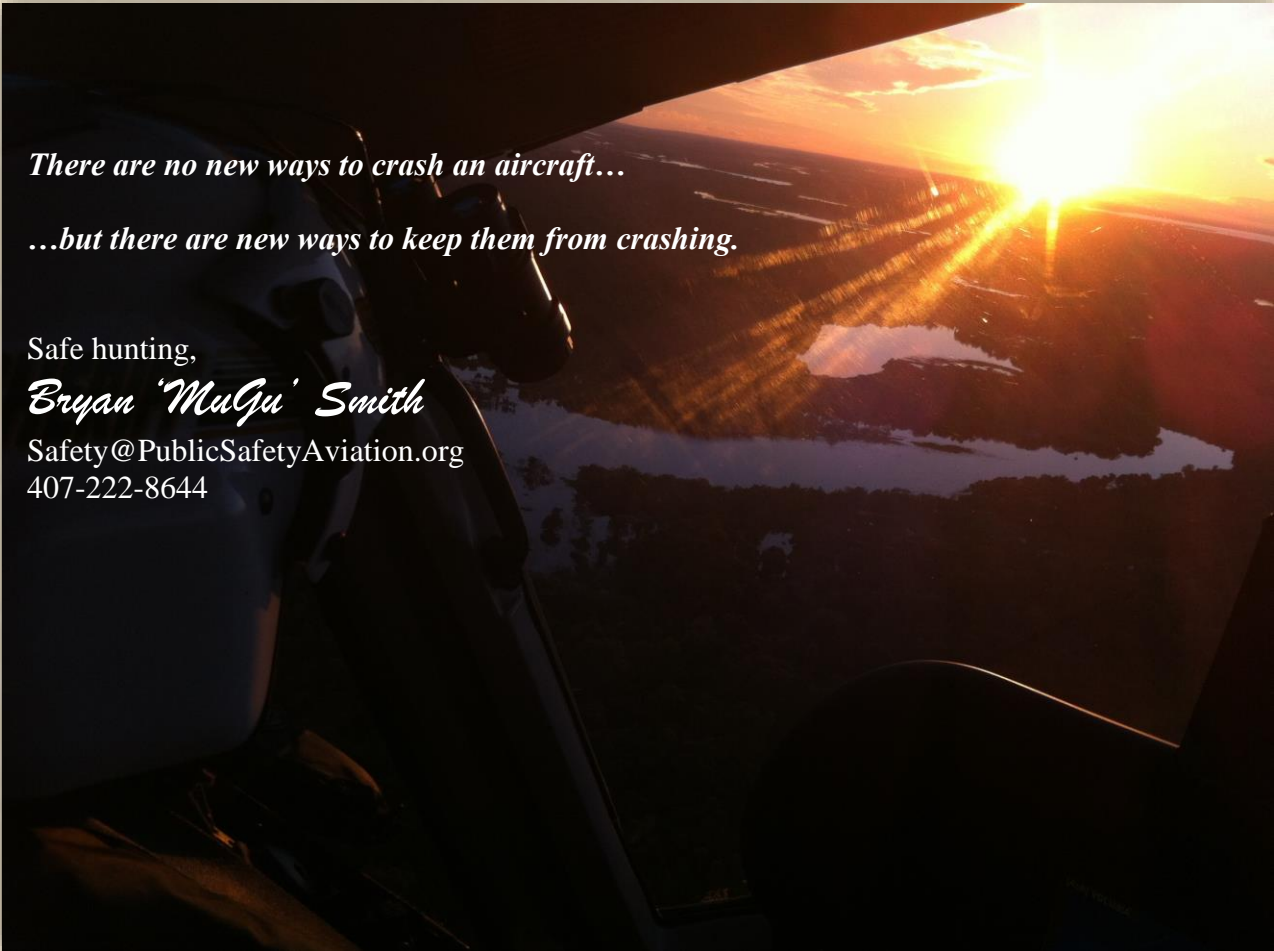
The helicopter's engine had undergone maintenance over several days preceding the accident. Another engine with the identical problem was also undergoing the same maintenance procedure at the time. A repair station technician was contracted to complete the maintenance on both engines. The operator's mechanics and the repair station technician disassembled the accident engine and set it aside. They then performed the required maintenance on the other engine, before returning to complete the work on the accident engine. The repair station technician was serving as both mechanic and inspector, and he inspected his own work. There were no procedures established by the operator or the repair station to ensure that the work performed by the technician was independently inspected. Further, although 14 Code of Federal Regulations 135.429, applicable to Part 135 operators using aircraft with 10 or more passenger seats, states, in part, "No person may perform a required inspection if that person performed the item of work required to be inspected," there

is no equivalent requirement for aircraft, such as the accident helicopter, with 9 or fewer passenger seats. An independent inspection of the work performed by the technician may have detected the improperly installed fuel inlet union.

The duty pilot performed a 7.5-minute abbreviated post maintenance check flight the evening before the accident. A full maintenance check flight conducted in accordance with the manufacturer's flight manual should, under normal conditions, take 30 to 45 minutes to complete. Had a full check flight been performed, it is likely that the union would have detached from the boss during the check flight. Because the helicopter would not have been operating near its maximum gross weight and the check flight would have been conducted over an open area, the pilot would have had greater opportunities for a successful autorotative landing.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows:

The repair station technician did not properly install the fuel inlet union during reassembly of the engine; the operator's maintenance personnel did not adequately inspect the technician's work; and the pilot who performed the post maintenance check flight did not follow the helicopter manufacturer's procedures. Also causal were the lack of requirements by the Federal Aviation Administration, the operator, and the repair station for an independent inspection of the work performed by the technician.



There are no new ways to crash an aircraft...

...but there are new ways to keep them from crashing.

Safe hunting,

Bryan 'MaGi' Smith

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