AIRBORNE LAW ENFORCEMENT ASSOCIATION

The Safety Wire

August 2017

Wire Strikes

remain a significant hazard for public safety aviation. Advancements in camera systems and tactics have allowed us to operate at higher altitudes for most 'patrol' related operations such as suspect or missing person searches. Still, we find ourselves operating down where the wires linger in wait for unsuspecting aircraft. In addition to the unplanned emergency or precautionary landing, our industry also requires routine offsite landings as a matter of normal business. We may also conduct firefighting, hoist, long line, fast rope or other operations that involve low altitude flight. Many operate in mountainous terrain where wires may be strung across valleys or ridgelines.

Preflight planning is critical when operating in either familiar or unfamiliar environments. Accident statistics have shown that more than half the time (63%) the pilot knew the wire was there beforehand. We also need to know what to look for, and equally importantly, *how* to look. Below is a list that every crewmember should be familiar with. However, to actually see the items on this list, we need to remember that these items will frequently be off to the side of our flight path, leaving only the

wire itself in front of us. It is not likely that we will see a wire, especially in low light or dark conditions, even when wearing NVGs. If the ‘sign’ of the wire off to the side, we have to scan that area, and hold our eyes in that area for 2-4 seconds if we hope to actually recognize it. That scan should go at least 45 degrees off to each side of the flight path. When practicing this skill, it is recommended that you actually count, “1 Mississippi, 2 Mississippi….). Generally, the effective scan range needed to find sign of wires is further than we usually take it, and slower than we usually make it.

In your training for pilots and other aircrew members, find a set of wires and do an orbit around them. Note how they are visible at some angles but not others. Look at the same wires from higher altitudes to reinforce the importance of doing both a high and a low recon before working down in the wire environment. Actively look for wires and support structures during training so you can practice ‘seeing’ the actual objects in different terrain, lighting, weather, etc.

Below is the current list from the ALEA Wire Strike Prevention presentation. If you have additional items not on the list, please send them to me. The presentation is also available on the website under: Resources – ALEA Online Course Presentations – On-Demand Events.

- ✓ Every house has a wire
- ✓ Every road has a wire
- ✓ Every turn has a support wire extending opposite the direction of the turn
- ✓ The amount of wire ‘sag’ will vary with temperature and if it is energized
- ✓ Cross at the poles during takeoff, landing or low level ops
- ✓ There is often a small static wire at the top of the poles with little or no sag
- ✓ All towers have guy wires. The guy wires extend out as far as the tower is tall.
- ✓ Do not cross over a tower, the top obstruction light may be inoperative

- ✓ Construction sites may have temporary wires
- ✓ Transformers on poles will be aligned with the direction of the line
- ✓ Nature does not create straight lines

In Memoriam

This month, our family of public safety aviators mourns the loss of Virginia State Troopers H. Jay Cullen and Berke Bates. It will likely be many months before we know the cause of the crash. What we know now is that we have lost two of our own. Our thoughts and prayers are with them, their families and friends.

Please go to the Virginia State Police website and read more about them:
http://www.vsp.state.va.us

"The bravest are surely those who have the clearest vision of what is before them, glory and danger alike,
and yet, notwithstanding, go out to meet it."

~ Thucydides

Resources

HAI Doc Rotor's safety tip of the week – Human Error
https://www.youtube.com/watch?v=zg5XmHo25Eo

FAA Safety Briefing on medication:
https://www.faa.gov/news/safety_briefing/2017/media/SE_Topic_17_07.pdf

NASA ASRS Newsletter on windshear:
https://asrs.arc.nasa.gov/publications/callback/cb_450.html

Study on effects of UAS mid-air collision:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/628092/small-remotely-piloted-aircraft-systems-drones-mid-air-collision-study.pdf

ALEA Online Meetings

The schedule for upcoming ALEA online meetings is as follows.
If you would like to join, send an email to: safety@alea.org

UAS:
Wednesday, September 13, 2017
1:00 PM – 2:00 PM EDT (1700 UTC)

Maintenance:
Tuesday, September 19, 2017
1:00 PM - 2:00 PM EDT (1700 UTC)

Safety Officers:
Tuesday, September 26, 2017
1:00 PM - 2:00 PM EDT (1700 UTC)

"Great pilots are not born, A man may possess good eyesight, sensitive hands, and perfect coordination, but the end result is only fashioned by steady coaching, much practice, and experience."

~ James Edgar Johnson
Air Vice-Marshal - RAF

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: BoeingE75
Injuries: 1 Fatal
NTSB#: WPR14FA182

https://app.ntsb.gov/pdfgenerator/ReportGeneratorFile.ashx?EventID=20140504X90153&AKey=1&RType=Final&IType=FA

The highly experienced air show pilot was attempting to cut, with the vertical stabilizer of his biplane, a ribbon that was suspended about 20 feet above and across the runway. He was performing the maneuver on the third day of an open house at a United States Air Force (USAF) base and had successfully accomplished the maneuver on the two previous days, as well as at many previous air shows. After the pilot rolled the airplane inverted for the pass, witnesses observed it descend smoothly to the runway and slide to a stop. As the airplane came to a stop, a fire erupted, and the airplane was completely engulfed in flames within about 90 seconds of the fire's start. The first fire suppression vehicle did not reach the airplane until more than 4 minutes after the fire began, and the fire was extinguished soon thereafter.

The investigation did not identify any preimpact mechanical deficiencies or failures of the airplane or any adverse weather conditions that contributed to the abnormal runway contact. Toxicology analysis detected therapeutic amounts of diphenhydramine, an over-the-counter sedating antihistamine, in the pilot's blood, which likely impaired his ability to safely complete the maneuver and resulted in the abnormal runway contact.

The pilot was found lying on the upper panel of the cockpit canopy, and the canopy was found unlatched but in its closed position, indicating that when the airplane came to a stop, the pilot was likely conscious and attempted to exit the airplane; however, he was unsuccessful. The investigation was unable to determine when the pilot released his harness restraint system. If he released his harness before

attempting to open the canopy, he would have fallen onto the canopy, which would have significantly increased the difficulty of opening the canopy. Even if the pilot did not release his harness before attempting to open the canopy, airframe damage and the canopy opening geometry would have prevented the full opening of the canopy, limiting the pilot's ability to exit. Further, the canopy was not equipped with any emergency egress provisions, such as quick-release hinge pins. Finally, the pilot's lack of a helmet or any fire protection garments increased his susceptibility to thermal injury and reduced his useful time to effect an exit, particularly given the rapidity of the fire's spread.

Although initially a survivable accident, the combination of pilot egress difficulties, the rapid fire growth, and the more than 4-minute firefighting response time altered the final outcome.

Probable Cause and Findings

The pilot's failure to maintain clearance from the runway during a low-level aerobatic maneuver due to his impairment by an over-the-counter antihistamine. Contributing to the severity of the pilot's injuries were the pilot's lack of fire protective clothing, his inability to egress the cockpit, the rapid spread of the fire, and the decision of the air show's organizers not to have the airport rescue and firefighting services at their highest level of readiness, which delayed arrival of fire suppression equipment.

Aircraft:	**Robinson R-44**
Injuries:	**1 Fatal**
NTSB#:	**ANC14FA030**

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The accident flight was one of several recent practice external-load flights that the pilot had been conducting with a 150-ft long-line and weighted barrel. The helicopter approached the airport from the north and then hovered over the approach end of runway 20R. At the time, two airplanes were in the airport traffic pattern for runway 20R, another was in the airport vicinity, and a fourth was departing from runway 2R toward the hovering helicopter. One witness reported hearing the accident pilot attempt to communicate with the departing northbound airplane, but no response was heard, and the airplane passed close to the helicopter. After the northbound airplane passed by, the helicopter moved to its normal landing area on the east ramp, and the accident pilot responded to another pilot's query as to his intentions by stating that he was landing. Immediately after the pilot's response, the helicopter suddenly pitched up, rolled left, and descended to the ground.

Examination of the helicopter revealed no evidence of preimpact mechanical anomalies with the airframe, systems, or powerplant. Damage to the main rotor and associated ground scars and wreckage distribution were consistent with the rotor system operating at normal rpm during the impact sequence. Damage to the helicopter and the location of the main rotor ground scar were consistent with the helicopter having collided with the ground in an extreme left roll. The long-line remained attached to the barrel but was not attached to the helicopter's cargo hook, and the disconnected end was near the main wreckage. The relative orientation of the long-line and the main wreckage indicated that the line was still attached to the

helicopter when the helicopter moved laterally at some point; however, no known witness observed when or how smoothly the line and load were released.

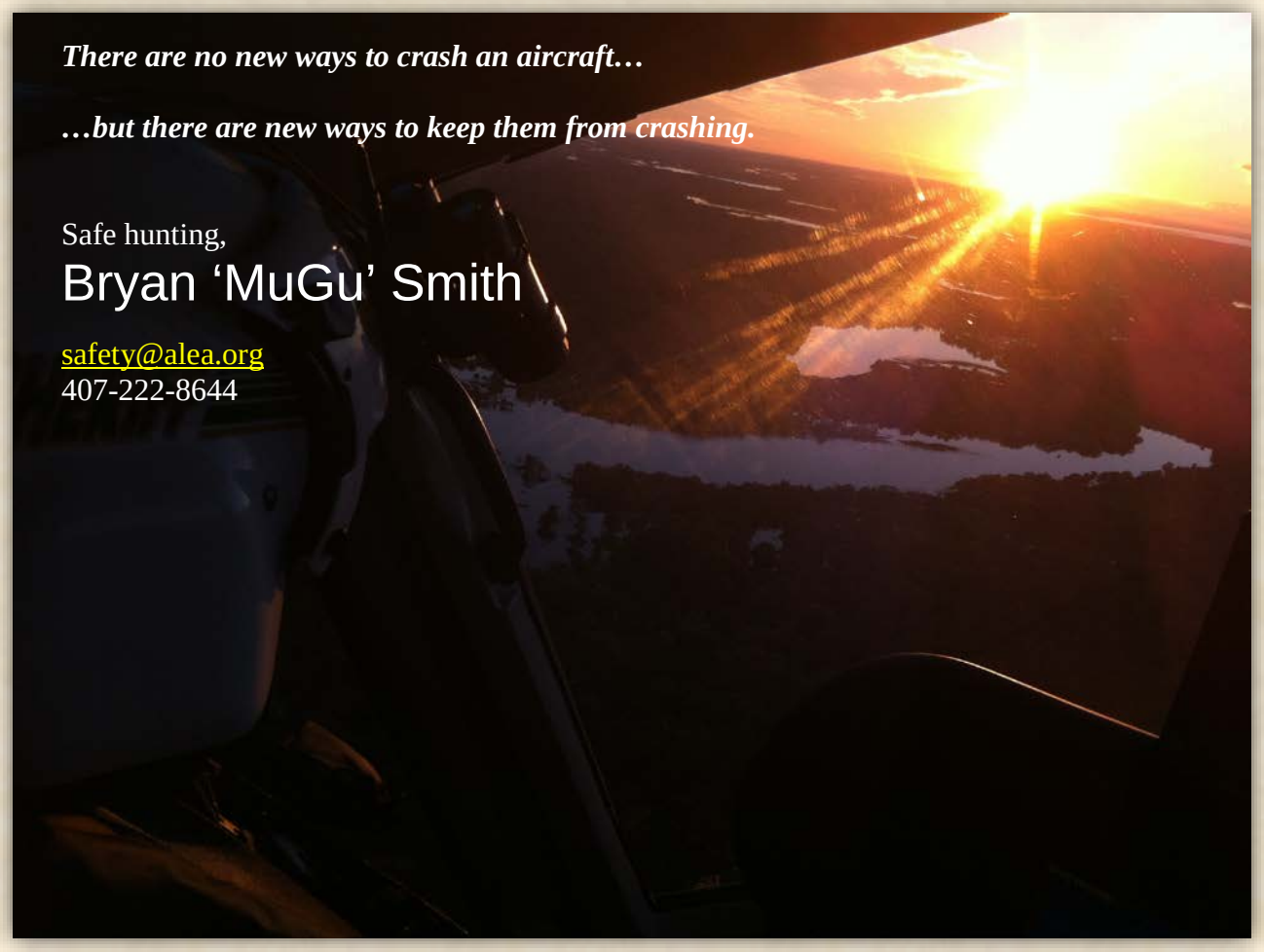
Maneuvering a helicopter to land during external load operations requires precision in both helicopter control and timing of load release. Although the accident pilot's workload was increased by the demands of maintaining traffic separation and communicating on the radio in the busy, nontowered airport environment, there was no evidence to suggest that such an operation was beyond his skill level, particularly given his recent practice. The accident pilot was based at BCV and, in the 2 weeks before the accident, had conducted seven flights (including the accident flight) with a 150-foot long-line in the accident helicopter; in the preceding 90 days, the pilot had flown almost 60 hours, most of which involved autorotations, hover maneuvers, and long-line practice.

The pilot's autopsy identified severe coronary artery disease with greater than 75% stenosis in two main arteries. In addition, scarring in the left ventricle was identified, which indicated that the pilot had experienced a previous heart attack. Although the pilot had sought and received in recent years medical care that included cardiac testing, there is no evidence that his previous heart attack was ever diagnosed (research has shown that the tests are not always accurate), and he was not taking any preventive medication. Given the presence of two severely stenotic lesions in two main arteries, the presence of scarring from a previous heart attack, and the absence of medication to prevent a recurrent cardiac event, the accident pilot's likelihood for experiencing another acute cardiac event was inevitable. An acute cardiac event would likely leave no identifiable evidence on autopsy and cause symptoms ranging in severity from impairing (such as chest pain and shortness of breath or palpitations) to incapacitating (fainting from low blood pressure or sudden cardiac death). Considering the precision required while maneuvering to land with an external load, any level of impairment could result in catastrophic consequences; therefore, the pilot likely experienced a sudden, acute cardiac event that adversely affected his performance.

Probable Cause and Findings

The pilot's loss of control of the helicopter due to impairment or incapacitation from a sudden, acute cardiac event.

Associated news article: https://www.adn.com/alaska-news/aviation/2017/08/12/investigators-a-cardiac-event-likely-caused-a-fatal-2014-birchwood-helicopter-crash/


There are no new ways to crash an aircraft…
…but there are new ways to keep them from crashing.
Safe hunting,
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