AIRBORNE LAW ENFORCEMENT ASSOCIATION

The Safety Wire

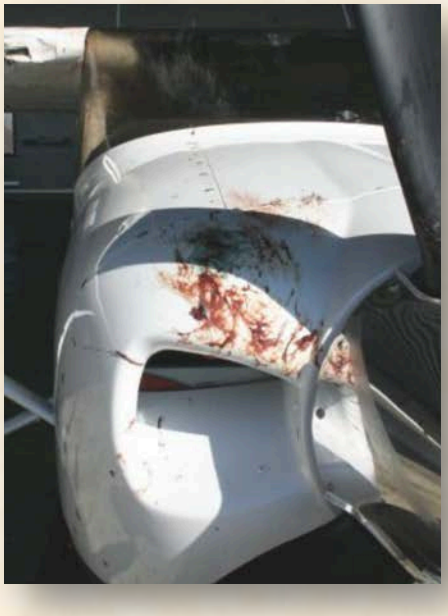
April 2015

BIRD! I think that most of us have had occasion to blurt out this warning more than a few times. I would argue it is one of the most common safety related exchanges made between aircrew members in the cockpit. It is also one of those safety issues that we tend to do little about, despite the high risk it poses to our operations. Our risk management for bird strikes is often little more than, "be careful and look out for birds." It is migration season in many places where ALEA members fly, so it seems like a good time to look again at this topic.

If we maintain a systemic approach to bird strikes, we can lower risk by either lowering the probability of it happening or the severity of a strike if it should occur.

Severity:

Personal Protective Equipment (PPE) – chiefly a helmet and eye protection, is the most effective way to lower severity. In reading bird strike reports, the outcome is significantly different if a helmet was being worn by at least the pilot. I understand that there are complaints that people have about wearing a helmet. Those complaints are usually based on comfort. There is simply no arguing that if you get hit in the head with a bird and glass your chances for survival are exponentially better if your noggin and face are properly protected. I am willing to guess getting hit in the face by a large bird at 100 knots is more uncomfortable than wearing a helmet. Just like flight gloves, there are ways to 'fit' the helmet to improve comfort and performance. If you are not sure, contact your helmet's manufacturer or distributor.



Fixed-wing flyers are not immune to this PPE requirement. I have heard people say that their fixed wing operations are conducted at altitudes where bird strikes are less common. The most severe bird strike I ever had was in a Cessna 210 returning from a patrol flight. I would also suggest reading Iowa State Patrol pilot Scott Pigsley's harrowing story of hitting a flock of geese at night in a Cessna (*Air Beat*, Sept-Oct 2012, p. 22). I have also heard the argument that the propeller will minimize the size of the bird pieces that hit the

canopy. These two videos would seem to disprove that claim:

https://www.youtube.com/watch?v=TlDWCDnXZ2k

https://www.youtube.com/watch?v=wVq3dfDDFKY

If you are still not sure if you should wear a helmet, this video is a good motivator:

https://www.youtube.com/watch?v=vQRFMlGswNI

Preparation is another way to reduce the severity of a bird strike. The first time you discuss what to do in case of a bird strike should not be immediately after a duck takes out your canopy. This preparation should include a discussion about pilot incapacitation. Teaching non-pilot crewmembers to fly the aircraft in an emergency (a.k.a. Pinch Hitter training) is a topic worthy of an entire newsletter. Following a bird strike, a trained TFO or second pilot can be the difference between the outcome being an incident with minor injury or an accident with total aircraft loss and multiple fatalities. Consider the role of the second crewmember following the bird strike in Dallas last month:
http://www.nbcdfw.com/news/local/Dallas-Police-Helicopter-Makes-Emergency-Landing-297328661.html

The aircrew training does not need to be limited exclusively to pilot incapacitation. A severe strike could lead to flight control, airframe or engine damage. The crew of the aircraft in the picture here took this photo after a large bird struck the tail rotor driveshaft and splattered aft the gearbox.

Cockpit glass upgrades are another interesting approach to reducing the severity of hitting a bird in flight. I recently read a related article about the Pennsylvania State Police's aviation unit. According to the unit commander, Capt. Arndt, they had six bird strikes in two years, two of which penetrated into the cockpit. Capt. Arndt told me that the agency decided to mitigate the risk involved in future incidents by installing polycarbonate canopies in their Bell 407s. Fortunately, they have not yet had the opportunity

to test the effectiveness of the new windows since installation. Check with your aircraft manufacturer for options that may be available.

Probability:

Of the two options for mitigating risk, reducing probability is the more difficult option when it comes to bird strikes. As mentioned above, aircrew training is an important part of bird strike safety efforts, and should occur before the feathers start to fly. Teaching a new crewmember basic ideas about strike avoidance should be part of initial training. One of my favorite tips for new unit members is to immediately look for additional 'wingmen' when the first bird is spotted. You may also consider formalizing hand signals so a pilot doesn't misinterpret a TFO pointing out a bird as directions to fly in that direction.

Location can play an important role in bird strike probability reduction. Birds tend to congregate in certain areas such as landfills, piers, popular nesting areas, etc. Identifying these and minimizing flights through those areas is an easy way to reduce risk in this category.

Altitude is a major factor in bird strike mitigation. According to the FAA more than 50% of strikes occur below 500 feet AGL. Their studies show that flying above the 500' mark lowers the chance of a bird strike 40%. Most of the thermal imagers we use today can be comfortably used well above 500 feet AGL. Actually, in many ways, using a modern camera system from a higher altitude is easier and more effective. Lowered risk of a bird strike is just one more good reason to operate from higher altitudes, especially at night.

Lights seem to encompass an area of great debate in the bird strike avoidance world. From my early days of flying, I was told of a military study that showed a decrease in bird strikes on aircraft that used landing lights at lower altitudes. I have never found that study, but I have heard it referenced many times. The USDA also did a study and found that lights, specifically pulsating ones, had an effect on birds. However, the effect was influenced greatly by the type of bird, time of day and lighting, etc. For each article I find supporting the use of landing lights at lower altitudes, I can find one that says it doesn't matter. One of the more compelling studies to support the benefit of aircraft lighting can be accessed here: http://www.avweb.com/avwebflash/news/Report_LightsHelpPreventBirdStrikes_206986-1.html

Officer Delon Freund of the Chicago Police Department (and ALEA Midwest Region Deputy Director) passed on some good information for a previous newsletter on the same topic. The information is worth repeating here:

Between 1990-2010:

Fatalities: 23 [229 worldwide]

Injuries reported in civil aircraft: 257

Aircraft destroyed: 54 [210 worldwide]

80% of all strikes occur within airport environment

2/3rds of all bird strikes happen below 500'agl

What we can do:

- Familiarize yourself with local and national bird migration routes.
- Avoid sanctuaries, landfills, fish processing plants and other bird havens.
- Avoid low flights along rivers or shorelines.
- When the presence of birds is likely, use landing lights during all phases of flight.
- Keep your visor lowered in flight to deal with windshield penetration.
- Up to 90 kts, birds might take evasive action, but the greater your speed, the greater the chance they can't.
- If one bird is avoided, be on the lookout for others nearby.
- If the windshield is penetrated, slow the aircraft to reduce the confusion from wind-blast, debris or precipitation.
- Fly the aircraft first and always. Don't get distracted by the blood, feathers, noise and wind.
-

I THINK WE CONSIDER TOO MUCH THE GOOD LUCK OF THE EARLY BIRD, AND NOT ENOUGH THE BAD LUCK OF THE EARLY WORM.

~ FRANKLIN DELANO ROOSEVELT

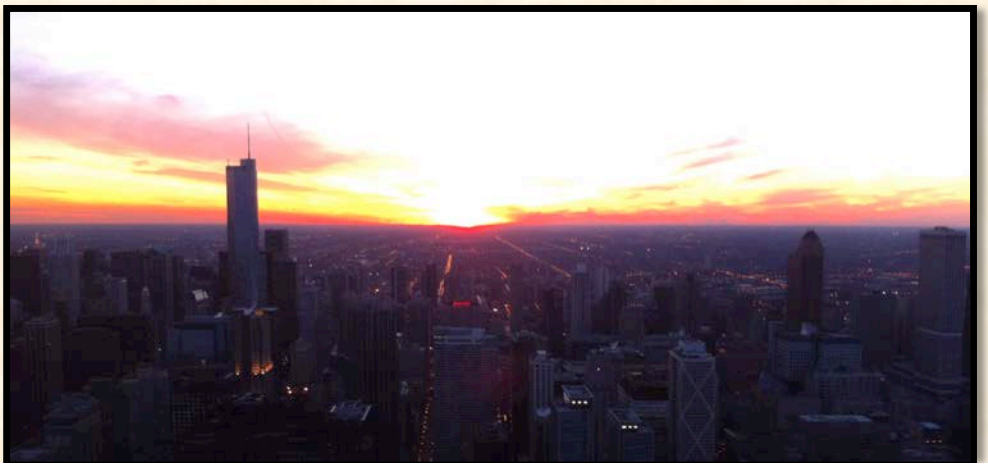
Resources

- ✓ http://www.birdstrike.org
- ✓ http://www.usahas.com/home
- ✓ http://wildlife-mitigation.tc.faa.gov/wildlife/default.aspx
- ✓ http://www.hsac.org/portals/45/rp/RP2010_3New.pdf
- ✓ https://www.dodlegacy.org/Legacy/project/productdocs/FINAL%20OSD%20Legacy%20Report%20Joint%20RW%20Bird%20Strike%20Hazardswithcomments%20FINAL_ff16305b-b450-4d1c-9050-4404d614c07c.pdf

Safety Officer Mutual Aid

The next ALEA safety online meeting will be on May 21st at 1:00 pm EDT (1700UTC). Please send me an email if you are not on the mailing list and would like to attend. The minutes from previous meetings are also available.
safety@alea.org

May 21st, 2015
1:00pm EDT (1700UTC)



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: Airbus AS350 B2
Injuries: 3 Uninjured
NTSB Identification: ANC15LA015
http://www.ntsb.gov/_layouts/ntsb.aviation/brief.aspx?ev_id=20150313X75813&key=1

An Airbus Helicopters AS350 B2 sustained substantial damage as a result of a tail rotor pitch control failure. During an interview with the National Transportation Safety Board (NTSB) investigator-in-charge, the pilot stated that while en route, about 1,000 feet above ground level (AGL), he felt a "clunk" in the tail rotor control pedals and the helicopter began to yaw to the left. When he attempted to counteract the yaw by depressing the right tail rotor control pedal, there was no reaction from the helicopter and the right pedal travelled to the forward stop. The pilot declared an in-flight emergency with air traffic control and executed an emergency run-on landing.

A post flight examination of the helicopter revealed the tail rotor pitch change spider assembly, part number 350A33-2030-00, had fractured into multiple pieces, all with rotational scarring present along the fractured surfaces. The inside of the spider assembly contained dark discoloration consistent with thermal damage. Light circumferential scarring was present on the tail rotor gear shaft about three inches outboard of the tail rotor gear box, approximately one inch wide.

Aircraft: Cessna 182Q
Injuries: 1 Fatal
NTSB Identification: CEN15FA174
http://www.ntsb.gov/_layouts/ntsb.aviation/brief.aspx?ev_id=20150318X00901&key=1

A Cessna 182Q was destroyed after impacting mountainous terrain while maneuvering near El Paso, Texas. The commercial pilot, who was the sole occupant, sustained fatal injuries. According to company representatives, the airplane departed Snyder, Texas, approximately 0855 central daylight time, to perform a pipeline patrol aerial observation flight with a final destination of ELP. At 1156 central daylight time, the company dispatcher received a telephone call from the pilot who requested weather information for the southeast New Mexico and El Paso areas. The dispatcher informed the pilot that El Paso was reporting light rain. The pilot told the dispatcher he was going to depart, and "if he was going to make it, he had better get into the air."

Preliminary radar data showed the accident airplane about 30 miles northeast of ELP and traveling southwest at an altitude of approximately 6,000 feet mean sea level. Approximately 25 miles northeast of ELP, the airplane was observed to make a left turn towards the south and then execute a right turn back toward the north. After heading north for approximately 2 miles, the airplane made a left turn toward the west and radar contact was lost.

After company personnel determined the airplane had not arrived at ELP, a search ensued with local authorities. The airplane wreckage was located by local authorities in mountainous terrain near the last radar contact location approximately 0900 on March 18, 2015.

Aircraft: Airbus AS350 B2
Injuries: 1 Fatal, 2 Serious
NTSB Identification: CEN15FA171
http://www.ntsb.gov/_layouts/ntsb.aviation/brief.aspx?ev_id=20150313X72113&key=1

An AS350 B2 helicopter, operating as "Eagle Med 35", was destroyed after impacting trees and terrain during maneuvering flight near Eufaula, Oklahoma. The pilot was fatally injured and the two medical crewmembers sustained serious injuries. Dark night visual meteorological conditions (VMC) prevailed at the time of the accident and a company visual flight rules flight plan had been filed for the 14 Code of Federal Regulations Part 135 helicopter emergency medical service positioning flight.

During the previous northbound flight to transport a patient to the heliport, the pilot mentioned to the medical crew that he noticed that the clouds above their cruise altitude were lower than he expected. The pilot descended slightly and the helicopter landed at without incident. While on the ground the pilot checked weather again and after conferring with the medical crew they decided to begin the planned return flight. The helicopter was southbound at a cruise altitude of about 1,500 feet MSL when the medical crew reported the helicopter had twice briefly entered and exited instrument meteorological conditions. After a short discussion the pilot then stated he was going to divert, and he began a left turn to return to Tulsa, Oklahoma. Soon after beginning the left turn the helicopter impacted trees and terrain at a surface elevation of about 850 feet MSL. The impact resulted in the separation of the tail boom and portions of the fuselage and the main wreckage came to rest on its right side. The helicopter's fuel tank remained intact, there was no fuel leak, and there was no post-impact fire.

After impact, the surviving medical crewmembers extracted themselves from the wreckage and immediately made a cell phone call to report their situation and location. Several agencies then used the position report from the crew, data from the on-board GPS position reporting system, and signals from the 406 MHz emergency locator transmitter to locate the wreckage. Emergency responders hiked in the dark night conditions through the remote rugged terrain and arrived several hours later.