The Safety Wire

July 2013

"SURVIVAL STARTS BEFORE THE ENGINE" Someone smarter than me recently said that. I wish I could remember who it was so I could give them due credit. In Orlando this month the statement seemed to resonate during the Safety Symposium, which focused on IIMC survival. Fortunately, I remember exactly who the people were who drove home this point with their expertise and experience. The panel included:

- Glenn Daley -NYPD (ret.)
- Randy Rowles -Era Training Center
- Randy Mains -Oregon Aero
- Eric King -American Eurocopter
- Woody McClendon -FlightSafety International
- Rich Weber -Jacksonville Sheriff's Office

We also had great input from numerous members of the audience, which added significantly to the event. In over two hours, we covered a lot of ground; I'd like to pass on some important information discussed during the symposium:

- There are several things we can do in the office that will help keep us out of IIMC encounters. Our policy should not only authorize flight crews to land offsite or at alternate airports when necessary, but also provide structure to that plan. Provide the crews with the means to purchase fuel or have it transported to the aircraft. Ensure the chain of command outside of the unit understands the importance of landing at an alternate site to avoid potential accidents and establish a policy to support the crew (guard the aircraft, transport them to/from the hangar, etc.) if the situation arises. Only if a plan is in place will crews feel comfortable getting the aircraft on the ground instead of trying to push their luck to get home. Ever hear of 'Get-home-itis'? In our work, we have the even more lethal 'Get-home-because-I-don't-want-to-get-in-trouble-itis'.

- Do not set unit weather limits at the very edge of what is deemed safe for flight. Ensure there is room for the crew to recognize that conditions are approaching those minimums, which gives them time and space to respond safely.

- The aircraft should be set up for an encounter with instrument conditions before entering IMC, the best scenario being before even leaving the ground. Have approach plates nearby (it was recommended to have one or two always on your kneeboard), load an approach in the avionics as a part of the start-up sequence, set any frequencies you may

need in the standby position or on a second radio, and brief the crew. Several panel members conveyed a strong message that trying to do all of this *after* encountering IIMC would likely lead to a loss of control…to put it lightly.

- IIMC prep should include CRM. Use the second pilot or TFO in any emergency. IIMC is an emergency. Include the entire crew in IIMC training. Have the TFO trained to assist with monitoring instruments, working avionics and retrieving required equipment or charts.

- For reasons far too numerous to list here, training for planned IMC flight does not adequately prepare a crew for dealing with inadvertent IMC flight. Several members of this panel helped to develop the IIMC training recommendations available on the ALEA website: http://www.alea.org/assets/cms/files/safety/IIMC%20Training.doc

- The most effective way to train for IIMC is to use a modern simulator. It allows for a safe and effective element of surprise and apprehension to be applied to the lesson in true 0/0 conditions. View limiting devices and safety considerations keep us from creating equally realistic IIMC training in our aircraft. A number of tips were given as to how an instructor can improve training in the aircraft as well. Caution was also given to instructors. If done well enough, the actual fear that a real IIMC encounter can produce may come up in training. The instructor needs to be trained and prepared to handle the responses that may come from a student under the influence of these mental and physical influences.

- Modern technology in the cockpit can greatly increase the chances of a crew surviving an IIMC encounter…only as long as the equipment is set up beforehand. Attempting to set up avionics after entering IIMC, especially when done why simultaneously hand-flying the aircraft, was strongly recommended against by everyone on the panel. The greatest benefit technology can offer is the information needed to avoid IMC in the first place.

Just like the symposium, this article could go on and on. I want to thank everyone who took the time to sit in on the panel discussion. I would again like to thank the panel members for taking the time out of their busy schedules to join us in Orlando. I would also like to thank Don Roby, ALEA's Training Program Manager. Without Don's hard work and support, the symposium would have never happened.

"An ounce of performance is worth a pound of promises"

~Mae West

Giant THANK YOU!!!

Prior to taking on my current role with ALEA, I did not understand the incredible amount of planning and work that ALEA staff put into the annual convention to make it the great success that it consistently is. My small part in that effort includes the aircraft movement operations that bring the helicopters and airplanes to and from the convention center each year. Without the support of local ALEA members, it would simply not happen. This year, I would like to thank the guys who spent so much time and effort to get aircraft to the convention center. They handled flight operations professionally and safely, usually as volunteers on their own time.

Seminole County Sheriff's Office:
Mark Stanley

Orange County Sheriff's Office:
Kevin Poston
Scott Sampsel
Charles Cantrill
Mark Battle

Most of the pictures (here and throughout this newsletter) were taken by George Blanchette. I would also like to thank Seminole County Sheriff's Office Aviation Unit Commander Steve Farris for loaning us the vehicle and towing equipment needed to move aircraft in and out of the convention center.

SMS Development

In recent newsletters, we discussed important aspects of setting up the Policy surrounding SMS and the various means of collecting information through a Hazard Reporting Program. Working with the Safety Officer Mutual Aid Group, several free forms were developed that you can download and use during this process (http://www.alea.org/assets/cms/files/safety/Hazard%20and%20Risk%20Assessment%20Reports%201.0.docx). Some of the most common ways of collecting hazard information are addressed in the documents, such as hazard reports, occurrence reports and hazard surveys. Other means of collecting hazard information are through inspections, audits or your simple observation of the operation.

- ✓ **Establish the Context (Policy)**
- ✓ **Identify the Hazard**
- ☐ **3. Analyze the Hazard**
- ☐ **4. Evaluate the Risks**
- ☐ **5. Treat the Risks**
- ☐ **6. Monitor and Review**

The next step is to take all of this hazard information and determine if there are latent factors that contribute to the hazard or direct factors in the case of an occurrence (accident, incident). The direct factor is the last link in the accident chain or most simple description of the hazard. It is usually what we see in an accident report or warning label, “The pilot failed to….” statements or, “wet floor” signs. Simply addressing these factors often limits our ability to address the hazard.

Let’s look at bird strikes for example. A hazard or occurrence report may simply list, “bird strike.” If we do not analyze this for latent factors there is little we can do other than to say, “Be safe and try not to hit birds.” This is not the quality of safety management we want. Telling people to simply ‘be safe’ or ‘don’t crash’ is rarely effective. Analyze hazards for the latent factors. In the case of a bird strike, are there certain geographic areas, altitudes, or times of day that seem to be more of a problem? Is there any equipment missing or not being used on the aircraft that could have an effect on the problem (lights, strobes, etc.)? Are injuries occurring (or nearly occurring) due to lack of protective personal equipment availability or use such as helmets or eye protection? These latent factors may offer more opportunity to realistically mitigate the risks associated with this hazard.

Not sure where to start? A simple and effective method is to use the 5-Why’s model. It is especially useful when analyzing an occurrence report. I originally came across the concept while reading an article about USAF aircraft investigators who use the concept in their work. We simply ask ‘why’ at least five times when looking at a hazard or incident.

1. Why did Thunder Pig almost hit the hangar with the tailboom?
   He lost control when landing and the tail came within 5 feet of the building.
2. Why did he lose directional control?
   He was hovering downwind and did not put in enough pedal.
3. Why didn’t he put in enough pedal or hover into the wind?
   He had not flown in those wind conditions in several months and was ‘rusty.’
4. Why had he not flown in unit approved wind conditions in several months?
   He had set personal weather limits that were less than that of unit approved maximum wind limits and did not fly when conditions exceeded his personal limits.
5. Why did he exceed his personal limits that day?
   The call was for a missing 2-year old child and he felt compelled to go.

Where do you think a traditional hazard or occurrence analysis would have ended? Number 2? Number 3? All five answers identify a latent factor and give us an opportunity to mitigate the risks associated with the direct factor (number 1). Sometimes, we cannot do much about the first couple of elements, but those further down the list may offer a chance to break the chain.

Doing all of this will help us better understand the hazards in our operations. However, it will also increase our list significantly as each direct and latent factor constitutes an individual hazard. Do we address them all with equal vigor? NO! We do not have the time or resources to do that. This is where many safety programs fail. If we simply address hazards, we usually become the Chicken Little that spreads resources too thin and wears out the attention of our unit personnel with constant warnings that are too often ineffective. We do not want to address the hazards, we want to address the *risks* and put our limited time and effort where we can make the biggest impact on safety. More about that next month…

In the meantime, download the new ALEA Risk Management Tool on the website and start filling in the hazards you have uncovered so far in your operation. Don't expect to understand all of the items on these forms at first. Over the following months, we will continue to use this Excel-based tool and the forms mentioned at the beginning of this section to work through the risk management process and build your SMS program.

Blank Form - http://www.alea.org/assets/cms/files/safety/SMS%20Book%201.xlsx
With Examples - http://www.alea.org/assets/cms/files/safety/SMS%20Book%201%20with%20examples.xlsx

Additional Resources

NTSB Safety Alert Videos

The NTSB is releasing several new safety videos online. These are in addition to their other various safety alerts. Use the link below to access them.
www.ntsb.gov/safety/safety_alerts.html

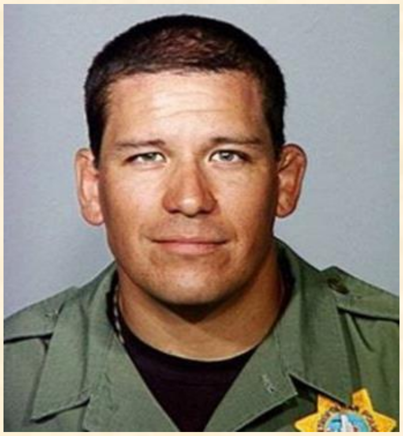
Embry-Riddle Worldwide - Free Human Factors Course (MOOC)

What is a MOOC? It is a Massive Online Open Course. What's more important is it's free. Go to their website to find out more about the human factors class that starts in August
http://worldwide.erau.edu/degrees-programs/free-online-courses/index.html

Helicopter Pilots' Model Code of Conduct

Just released this month. We'll discuss this more next month.
http://alea.org/assets/pressReleases/assets/1845/Announcement-HMCC.pdf

Fallen Brother



On July 22nd, David Vanbuskirk of the Las Vegas Metropolitan Police Department was killed while performing a rescue of a stranded hiker from an agency helicopter. The details of the incident are still under investigation. What is known is that while performing the hoist rescue, Officer Vanbuskirk became separated from the line and fell. He had managed to secure the victim who was retrieved safely and saved by Officer Vanbuskirk's last heroic act. Our thoughts and prayers go out to his colleagues and family.

Reality Check...

Remember, the risks to ourselves, our crews and those we serve do not apply only when we are in the aircraft. This month, two tourists were killed after exiting a helicopter while the helicopter was lifting off:

http://uk.news.yahoo.com/britons-killed-chopper-crash-122113349.html#Ql8rptC
http://www.bbc.co.uk/news/uk-23396819

Aircraft: BELL OH-58A
Injuries: None
NTSB Identification: **WPR12LA096**

During takeoff, the pilot pulled up on the collective, and the main rotor mast fractured near the point where it extends from the transmission; the pilot then aborted the takeoff. The fracture was located below the threads for the mast nut and above the bearing journal for the upper mast bearing. Post-accident examination of the fracture surface revealed multiple fatigue cracks that initiated at the outer diameter of the mast and extended through about 50 percent of the mast's cross section. The fatigue initiation areas and the through-the-wall portion of the fatigue were heavily corroded with extensive pitting and dark deposits visible. A dark oily material was found on the mast's outer surface near the fracture, and the mast's surface was severely corroded on both sides of the fracture. Analysis of samples of the dark oily material suggests that it was a mixture of lubricating oil and water.

The NTSB has previously investigated a similar main rotor mast failure on the same make and model helicopter; in that case, the most recent overhaul of the main rotor mast was completed 1,486 hours before the accident. As a result of these events, in February 2012, the manufacturer issued an alert service bulletin that reduced the main rotor mast overhaul interval from 2,400 hours to 1,200 hours. Additionally, in July 2012, the Federal Aviation Administration issued Airworthiness Directive (AD) 2012-14-11, applicable to Arrow Falcon Exporters, Rotorcraft Development Corporation, and San Joaquin Helicopters model OH-58A, OH-58A+, and OH-58C helicopters. The AD requires operators of those helicopters to, within 30 days, overhaul the helicopters' main rotor mast assemblies.

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The failure of the main rotor mast due to fatigue cracks that originated from corrosion pits. Contributing to the accident was the operator's failure to adhere to the manufacturer's recommended overhaul interval for the main rotor mast.

Aircraft: Piper PA-12
Injuries: 2 Fatal
NTSB Identification: CEN12FA594

A Piper PA-12 was substantially damaged after impacting mountainous terrain. The pilot and passenger were fatally injured. According to law enforcement witnesses, the pilot and passenger arrived overhead their planned surveillance location and established radio contact with law enforcement personnel stationed on the ground. These law enforcement personnel, as well as other witnesses, observed multiple passes of the airplane about 500 to 1,000 feet above ground level, followed by a maneuvering of the airplane towards the west and out of their sight. The airplane subsequently impacted terrain about two miles west of the surveillance area in a heavily wooded area at 10,171 feet. A post-impact fire ensued.

At the time of his most recent medical examination, the pilot reported having 900 hours of flight experience, with 50 hours in the last six months. A review of records indicates the pilot had flown about 140 hours in the accident airplane. The girlfriend of the pilot stated that the pilot was very familiar with mountain flying and flew frequently in the mountainous areas of Colorado, including near the Lake Isabel area where the accident occurred. The airplane was equipped with a Lycoming O-290-D2 135 horsepower engine, which had accumulated about 690 hours since last field overhaul. Density altitude at the accident site elevation of 10,171 feet was about 13,000 feet.

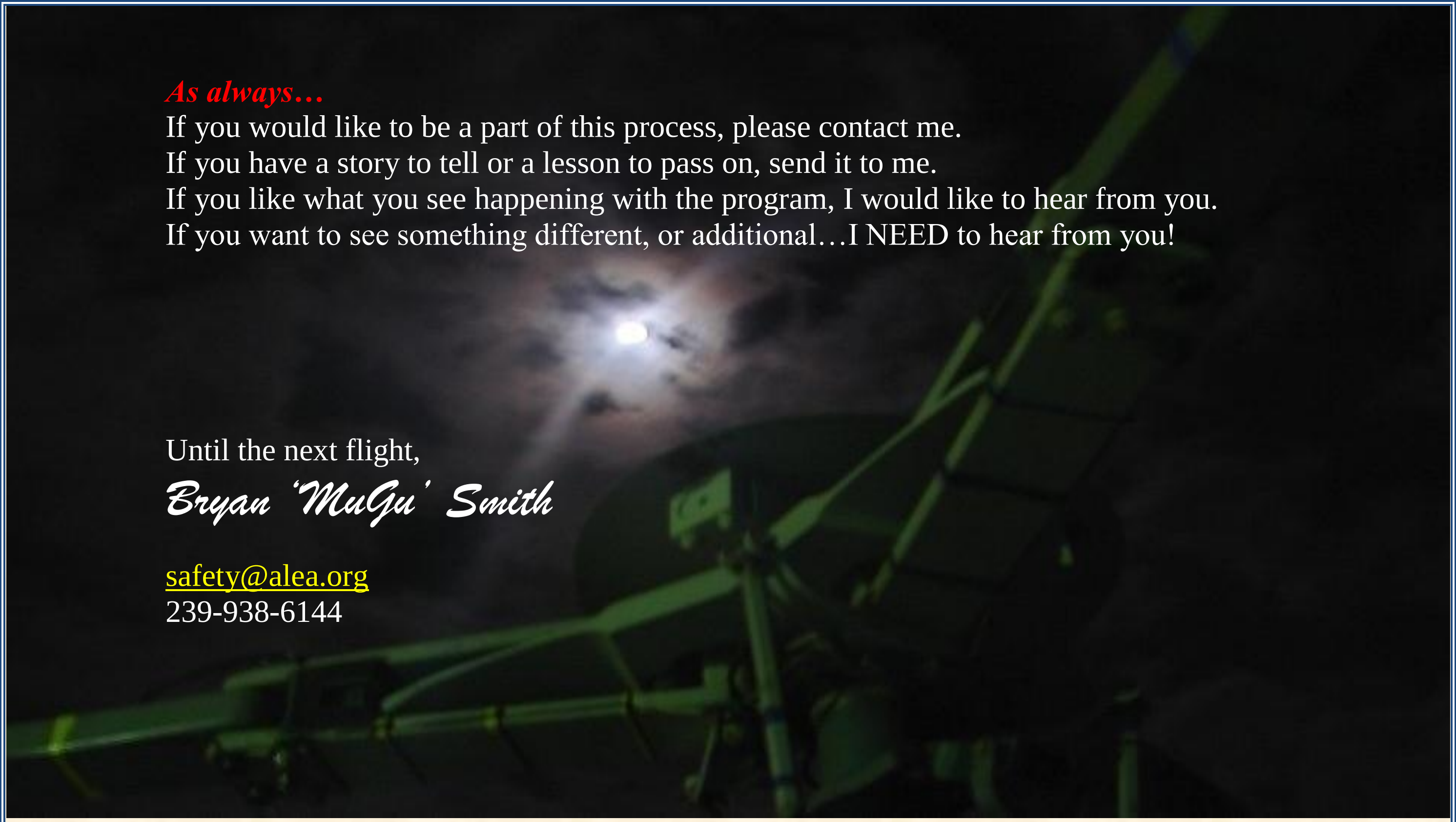
The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's selection of a flightpath toward rising terrain that exceeded the climb capability of the airplane.

Aircraft: BELL 206B
Injuries: 3 Uninjured
NTSB Identification: **ERA12TA515**
14 CFR Public Use

The helicopter was serviced with 25 gallons of fuel about 3 hours before the accident flight, and the pilot thought he had a total of 60 gallons of fuel on board. About 35 minutes into the flight, the crew smelled a fuel-like odor and initiated a return to the airport. Five minutes later, the fuel pump warning light illuminated, and the engine lost power. The pilot initiated an autorotation into a parking lot, and the helicopter landed hard, partially severing the tail boom.

Post-accident examination of the wreckage revealed that the fuel tank was empty and undamaged. There were no signs of fuel leakage observed, and the fuel filler cap was secure. All fuel system components and lines were in good working order. The fuel gauge read "zero" when energized on the ground. Fuel was later added to the tank to check for leaks; none were observed. Finally, the engine was removed from the airframe and installed on a similar helicopter. The engine was test run on the ground and in a hover for a total of 40 minutes with no anomalies noted. The fuel burn during the test run was normal for the helicopter. Neither pilot reported observing the fuel tank gauges during the accident flight. It is likely that the crew began the flight with much less fuel than they thought they had and did not monitor the fuel state during flight.

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The crew's inadequate preflight inspection and failure to monitor the fuel state during flight, which resulted in a total loss of engine power due to fuel exhaustion.



As always…

If you would like to be a part of this process, please contact me.
If you have a story to tell or a lesson to pass on, send it to me.
If you like what you see happening with the program, I would like to hear from you.
If you want to see something different, or additional…I NEED to hear from you!

Until the next flight,

Bryan 'MuGu' Smith

safety@alea.org
239-938-6144