

The

Safety

Wire

January 2018

New year, name, information, program... Everything about this time of year

revolves around the idea of new starts and changes. In 2018, this association has taken that concept to the extreme, and I am excited about it. The industry we work in is in a constant state of growth. Public safety aviation is not the same today as it was in January, 2017. It certainly is different than it was 10 or 20 years ago. We can change with the world around us, or get left behind by it. I'm glad to see that the Airborne Public Safety Association is committed not only to stay up with the changes, but drive them in a direction that will benefit us all.



Safety is no exception to this. In the five years I have worked as the safety program manager, I have seen major changes in the best practices, tools and resources available for effective risk management in our line of work. This year, the safety program will continue to grow with the rest of our industry. We have seen a steady increase in the number of incidents involving hoist, firefighting and other external load operations. The growing number of UAS operators need the same quality safety management systems as manned aircraft, especially as the two types of aircraft start sharing airspace on missions. We also need to reassess the issues we

have been hitting in the past to make sure we have continued success. I am proud to say that we had another year without any IIMC related accidents in public safety aviation. How can we keep that positive trend going?

I encourage you all to ask yourselves the same questions. Do any policies, procedures or training methods need to be updated? What can you do better? Now is the time to ask those questions and make needed adjustments. If you need assistance, APSA will continue to be here for you, wherever the industry may take us.

2017 Public Safety Reported Accidents:

1. Bambi bucket operations (1 serious injury) - Florida *see Jan/Feb Air Beat for details*
2. 2 Hoist accidents (5 fatalities) – Austria and Slovakia
3. Tail rotor strike on building during landing (2 injuries) - Kansas
4. Forced landing in UH-1H (*unknown cause*) – Customs and Border Control, Texas
5. Training (*unknown cause or training type*) (1 fatality) - Uganda
6. Unknown (2 fatalities) - Mexico
7. Unknown (2 fatalities) - Virginia State Police
8. Loss of Control during landing (2 injuries, 1 paralyzed) – Georgia

*“Not change, but growth.
Growth embraces the old, but moves it forward”*

*~ Capt Mitchell Morrison
U.S. Coast Guard*

Practical Safety Management



One of the main advantages of a Safety Management System over traditional safety programs is reduced waste. Through the SMS process, we can direct our limited time and resources more effectively, increasing efficiency in both risk management and organizational operations. The new year is a good time to recalibrate those SMS sights and make sure we are hitting our targets. Based on the annual report you completed at the end of 2017,

develop goals and objectives for 2018. I recommend at least three goals. These are the big picture, point on the horizon, types of statements. Too often we stop there. Goal statements often are similar to 'visions', such as 'Vision -Zero Accidents', or 'Increase Operational Safety'. Great...*how?* That is where the objectives come in. Set at least three objectives for each goal. They should be stepping stones, like the Yellow Brick Road that leads to Oz.

The goals and objectives should be tied into hazards you have identified in your SMS. These can be reported hazards, incidents that actually occurred, unresolved risk controls from 2017, survey results or audit findings. By tying SMS information to the annual goals, you will ensure your finite resources go where they are needed.

APSA Online Meetings

The schedule for upcoming APSA online meetings is as follows.
If you would like to join, send an email to: Safety@PublicSafetyAviation.org



Safety Officers:

Tuesday, February 13, 2018
1:00 PM - 2:00 PM EST (1800 UTC)

UAS:

Tuesday, February 14, 2018
1:00 PM - 2:00 PM EST (1800 UTC)

Maintenance:

Tuesday, February 20, 2018
1:00 PM - 2:00 PM EST (1800 UTC)

Resources

NASA Safety Newsletter – Fatigue
https://asrs.arc.nasa.gov/docs/cb/cb_438.pdf

International Helicopter Safety Team – Flight Instructor Manual
<https://www.easa.europa.eu/document-library/general-publications/ehest-helicopter-flight-instructor-manual-0>

Human Factors Newsletter
<http://www.decodinghumanfactors.com>



*“There is nothing noble in being superior to your fellow man.
True nobility is being superior to your former self.”*

~ Ernest Hemingway

Reality Check...

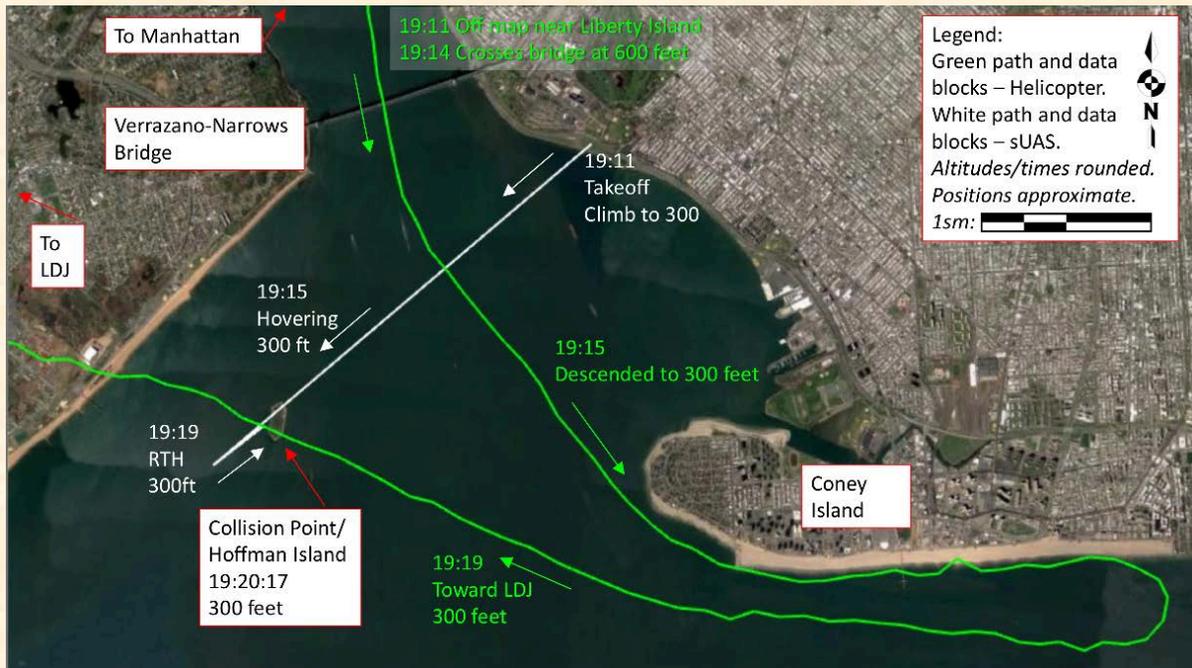
Note: The following reports are taken directly from the reporting source and edited for length. The grammatical format and writing style of the reporting source has been retained. My comments are added in **red** where appropriate. The goal of publishing these reports is to learn from these tragic events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

Aircraft:	UH-60M and DJI Phantom 4
Injuries:	None
NTSB#:	ERA16FA248

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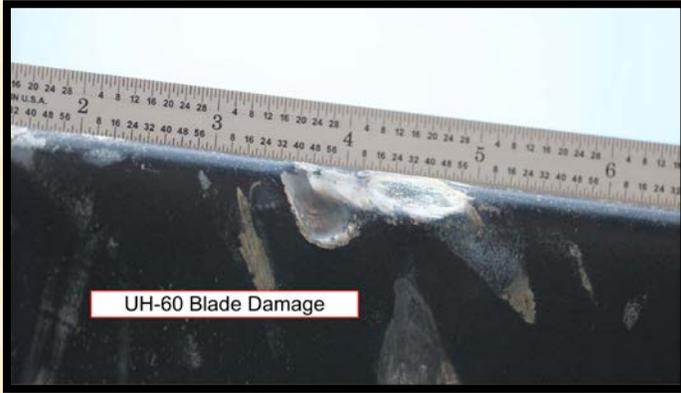
The United States Army UH-60M helicopter was operating under visual flight rules within Class G airspace about 300ft above mean sea level (MSL) when it collided with a privately owned and operated DJI Phantom 4 small unmanned aircraft system (sUAS). The helicopter sustained minor damage and landed uneventfully; the sUAS was destroyed. Although the pilot flying the helicopter saw the sUAS before impact and immediately applied flight control inputs, there was insufficient time to avoid the collision.

The sUAS pilot was operating the aircraft recreationally and did not hold a Federal Aviation Administration (FAA) Remote Pilot certificate. Hobby and recreational pilots are expected to operate their aircraft in accordance with Title 14 Code of Federal Regulations Part 101, which includes maintaining visual contact with the aircraft at all times and not interfering with any manned aircraft. There are no training or certification requirements for model aircraft pilots.



During the incident flight, the pilot of the sUAS intentionally flew the aircraft 2.5 miles away, well beyond visual line of sight and was just referencing the map on his tablet; therefore, he was not aware that the helicopter was in close proximity to the sUAS. Although the pilot stated that he knew that the sUAS should be operated at an altitude below 400 ft, flight logs revealed that he had conducted a flight earlier on the evening of the incident, in which he exceeded 547 ft altitude at a distance of 1.8 miles, which was unlikely to be within visual line of sight. In addition, even though the sUAS pilot indicated that he knew there were frequently helicopters in the area, he still elected to fly his sUAS beyond visual line of sight, demonstrating his lack of understanding of the potential hazard of collision with other aircraft. In his interview, the sUAS pilot indicated that he was not concerned with flying beyond visual line of sight, and he expressed only a general cursory awareness of regulations and good operating practices.

A Temporary Flight Restriction (TFR) was in effect for the area of the flight; the helicopter was authorized for flight within this area. The helicopter was operating over water and not in the vicinity of any vessels; therefore, its operating altitude was in accordance with FAA regulations and Army guidance. The sUAS pilot was unaware of the active TFRs in the area that specifically prohibited both model aircraft and UAS flight. Further, the sUAS pilot relied only on the DJI GO4 app for airspace awareness. Although the TFR airspace awareness functionality in the DJI app (GEO) was not active at the time of the incident, this feature is intended for advisory use only, and sUAS pilots are responsible at all times to comply with FAA airspace restrictions. Sole reliance on advisory functions of a non-certified app is not sufficient to ensure that correct airspace information is obtained. Had the functionality been active, the sUAS pilot would still have needed to connect his tablet to the internet before the flight in order to receive the TFR information. Since the sUAS pilot's tablet did not have cellular connection capability, it is unlikely that he would have been able to obtain TFR information at the time of the flight. Because the pilot solely relied on the app to provide airspace restriction information; he was unaware of other, more reliable methods to maintain awareness.



The collision occurred 2 minutes before the end of civil twilight. Although modeler (recreational) sUAS pilots may fly at night under certain conditions, when asked about night flight, the incident pilot only stated that he had built-in position lights; thus he was likely unaware of any guidelines or practices for night operations.

There was no evidence of any mechanical or software problems with the sUAS relevant to the flight. The pilot did not report any anomalies, and stated the recorded information on the flight logs accurately reflected the incident flight. The sUAS operated as expected at all times. Although the recorded data showed a 9-second gap in telemetry, this was likely due to distance from the remote controller.

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The failure of the sUAS pilot to see and avoid the helicopter due to his intentional flight beyond visual line of sight. Contributing to the incident was the sUAS pilot's incomplete knowledge of the regulations and safe operating practices.

Aircraft:	Bell 407
Injuries:	1 Fatal
NTSB#:	ERA16FA248

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The pilot was performing a visual approach to a landing zone to board an additional crewmember. A witness reported that there were no abnormalities in the helicopter's sound or position, until it was approximately 75 to 100 feet above the ground. Suddenly, the main rotor tilted to the right. Immediately after, the entire helicopter banked to its right and fell to the ground on its right side, where it came to rest. The main rotor blades broke apart during the impact sequence. The engine continued to run after the accident, and was subsequently shut down by responding personnel.

An examination of the wreckage revealed that the collective lever, located at the front and bottom of the swashplate support, was disconnected from the pivot sleeve. The collective lever was designed to move the pivot sleeve vertically on the swashplate support, via direct linkage from the cockpit collective control, to change the pitch on all the main rotor blades simultaneously. The collective lever pins and screws that attached the collective lever to the pivot sleeve were missing; they were later found loose, near the main rotor area. The safety wires intended to secure the screws to the pins were missing. Examination of the hardware at the NTSB Materials Laboratory revealed that the safety wires were not present, and the screws backed out over time, resulting in the complete loss of collective control in flight.

Maintenance on the helicopter was performed about 38 flight hours prior to the accident. The maintenance included a 24-month inspection that required examination of the flight control bolts and nuts. The collective lever pins were not

specifically included in that inspection. Two mechanics and a maintenance foreman, all employees of the operator, performed the maintenance, and all reported during postaccident interviews that they did not recall removing the safety wire or examining the pins. However, the foreman added, "I could see why it [examination of the collective lever pins] could have been done. The 24-month flight control bolt inspection was being performed, why not pull them and look at them too. I've done it before." Two of the mechanics reported that they would occasionally be "pulled off" one aircraft to work on another, and there was no work interruption policy in place. Thus, given that the safety wires were missing, it is likely that they were removed and not replaced during the most recent maintenance and that maintenance personnel did not recall taking that action due to possible work interruptions.

Subsequent to the accident, the operator implemented numerous safety initiatives to prevent recurrence, including two independent safety audits, a formal fatigue risk management program, a Safety Management System, a formal tool/material accountability program, new work interruption policies, creation of a formally-trained Safety Officer position, and a formal process for the communication of safety-critical information.

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Company maintenance personnel's inappropriate removal without replacement of the safety wires on the collective lever pin screws during a recent maintenance inspection, which resulted in the screws backing out and led to a loss of collective control in flight.

Aircraft:	ERA16FA329
Injuries:	1 Fatal
NTSB#:	ERA16FA329

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Earlier on the day of the accident, the pilot/mechanic flew the airplane from its home base airport to another airport to perform scheduled maintenance. Airport security video captured the entire maintenance event and showed the pilot/mechanic removing the engine cowling, draining the engine oil, and inspecting the spark plugs, air filter, and other components. The video did not show him adding engine oil before reinstalling the engine cowling and departing on the accident flight. Shortly after takeoff, the pilot reported to an air traffic controller that the airplane's engine was losing power and that he was returning to the airport.

Several witnesses reported that the airplane flew in a southeasterly direction, completed a 180° turn, and flew back toward [the airport]. The airplane was then seen "flying erratically" before it stabilized momentarily and then "fell out of the sky sideways." One witness stated he could see the top of the airplane's wing during its entire descent to the ground. Review of airport security surveillance video revealed that about 8 minutes after the airplane departed, it began emitting a smoke plume. At that point, the airplane was about 1 mile southeast of the airport.

The witness observations were consistent with the pilot failing to maintain airspeed following the loss of engine power, which resulted in the airplane exceeding its

critical angle of attack and experiencing an aerodynamic stall. Postaccident disassembly of the engine revealed catastrophic failure of internal engine components and signatures consistent with no lubrication and high heat.

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot/mechanic's failure to maintain airspeed following a loss of engine power, which resulted in the airplane exceeding its critical angle of attack and experiencing an aerodynamic stall. Also causal was the pilot/mechanic's failure to service the engine with oil following maintenance, which resulted in the total loss of engine power.

Aircraft:	Bell 407
Injuries:	3 Fatal
NTSB#:	CEN18FA033

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On November 19, 2017, about 1855 Central Standard Time, a Bell 407 helicopter impacted terrain near Stuttgart, Arkansas. The pilot and two medical crew members were fatally injured, and the helicopter was substantially damaged. Night visual meteorological conditions prevailed for the flight, which operated on a company visual flight rules flight plan.

Residents near the accident site reported hearing a boom and seeing a fire plume. Local law enforcement located the wreckage on private property on the bank of a reservoir. A post impact fire consumed a majority of the fuselage. All major helicopter components were located at the accident site. Several bird carcasses were located in the wreckage of the helicopter.

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

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

Safe hunting,

Bryan 'MuGu' Smith

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