AIRBORNE LAW ENFORCEMENT ASSOCIATION

# The Safety Wire

September 2016

**Preflight Inspections** are one of those areas where human factors tend to sneak in and ruin our day. Textbooks show pilots walking around aircraft with a checklist in their hands during banker's hours with no time or mission pressures to influence the process. The reality for us in public safety aviation is often much different. Some of us are required to conduct preflights when the rest of the world is sleeping, under pressure to respond to a call, in less than optimal lighting or temperatures in a location full of distractions. Many of you have been preflighting the same make and model of aircraft, if not *THE SAME* aircraft, for decades, which can be good and bad. Our safety does not allow us to make excuses for any of these reasons.

One of my most embarrassing moments in aviation was during my second year as a law enforcement pilot when I forgot to secure the engine cowling on an OH-58. After attending a public aviation event at a local airport, I had dutifully done a preflight, but was distracted and forgot to close the cowling back up. Fortunately, someone noticed it as I left the airport and radioed in so I could land and close it up. Unfortunately, hundreds of other people also noticed because I was making a nice photo pass down the runway as I left. Fortunately, I only suffered a humiliating lesson. Such mistakes can easily lead to accidents, and I knew that. So I started collecting tips and tricks to keep my preflight game sharp. The following are some of my favorites:

1 Two sets of eyes are better than one. Have the TFO, second pilot, or other crewmember look over the aircraft behind you. One does not need to be a pilot to see that a cotter pin is missing, a bolt is loose or notice an unusual oil spot. I have my TFO check behind me every day. Most enjoy the opportunity to learn more about the aircraft. If they find something I missed, I buy them a meal. I have bought a few more meals than I would like to admit.

2 Use a flashlight. Two reasons. First, the light from the flashlight will often allow you to see cracks and wet areas from oil seepage that you will not see without the light. Second, it helps maintain your focus on a specific component so you can inspect the aircraft without simply gazing at a large section and not focusing long enough on any particular part to notice it is broken. This is especially helpful during those 5:00 am preflights.

3 Don't just use your eyes. Touch components and ensure that they are in good condition. If it's not supposed to move, try to move it. I once found a pitch control rod that rotated just a little beyond what the bearing allowed. Maintenance pulled it and found the threads between the bearing and the linkage had stripped. A experienced OH-58 pilot who helped mentor me always checked each linkage on the fuel control system to make sure the fittings were tight. A loose one had once caused the engine to roll back to idle on him in flight. I still check every fitting I can get my hands on during preflight. More than one airplane pilot I have known has found a potentially catastrophic control surface problem during preflight by physically moving the ailerons, elevator and rudder.

4 Have two preflight 'flows'. It is good to mix up the preflight once in a while. Especially when it is the 10,000$^{th}$ time you did a preflight on the same aircraft. However, a flow will help make sure you do not miss anything. Use the checklist, then have a second way to do it based on that same list of items. Perhaps, just go backwards.

5. Change where you stand when checking each section of the aircraft. We tend to stand in the exact same spot each time. Moving even a foot either direction can change the angle you view the aircraft and allow you to see something different.

6. Do not lay anything down in an open engine, transmission or cargo deck. Eventually, you will forget it there. Put it in a pocket or on the ground. If you do have to set something down on the aircraft, set it on the edge so part of it is sticking out, preferably in a place that makes it impossible to close the cowling without removing it.

7. No cell phones when preflighting. The temptation can be impossible to fight.
8. Always climb up and check the rotorhead. Always climb up and check the top of the wings.
9. Yes, turbine helicopters should have the fuel checked too.
10. Don't preflight when you're hungry. You'll rush it, and are not likely to pay very close attention. Eat a snack first.
11. If you do not want to hold a checklist while you preflight, reference one when you are done to make sure you didn't forget anything.
12. Don't forget about the mission equipment (camera, searchlight, hoist, etc.).

Have any other favorites? Send them to me and I will post them next month. safety@alea.org

*"This thing we call luck is merely professionalism and attention to detail. Luck is the sum total of all your abilities as an aviator. If you think your luck is running low, you'd better get busy and make some more. Work harder. Pay more attention. Do better preflights."*

*~ Stephen Coonts*
*The Intruders*

# Resources

- We are now able to offer FAA Wings Program credits at ALEA events! During the recent Western Regional Safety Seminar in Palm Desert, California, attendees were able to earn up to 6 Wings credits. There are numerous online courses available as well. Check out www.faasafety.gov/WINGS for more information about this free program. Remember, you can use the program to satisfy the requirements for your biennial flight review.

- ALEA Online Resources (*remember to sign in as an ALEA member*): https://www.pathlms.com/alea#

- IHST Risk Management/SMS Resources: http://www.ihst.org/Default.aspx?tabid=3251&language=en-USS

- Police Aviation News: http://policeaviationnews.us4.list-manage1.com/track/click?u=e3f664fb1d0245baf07ab374f&id=ce6c710de7&e=99cabea956

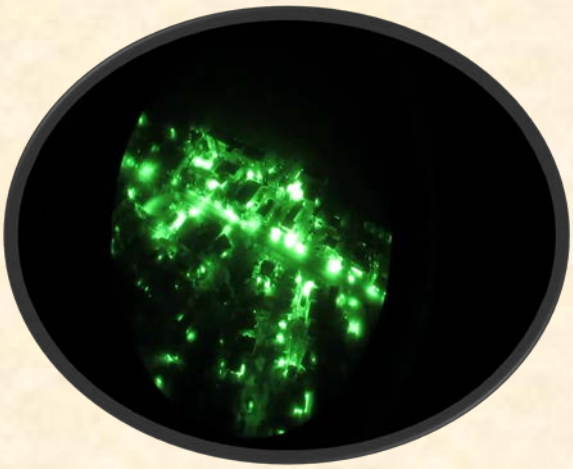
- NASA Callback Newsletters: http://asrs.arc.nasa.gov/publications/callback.html

- US Forestry Service – Pamphlet on ground handling damage: http://www.wildfirelessons.net/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=a492581e-5964-e9e3-955a-38c6b0e38e94&forceDialog=0

# ALEA Online Meetings

The schedule for upcoming ALEA online meetings is below. Please email me (safety@alea.org) if you would like to be added to the participant list. Meetings are conducted though an online conference call you can join using your computer or phone. They are open to any ALEA member.

UAS:
Friday, Sep 30, 2016
1:00 PM - 2:00 PM EDT (1700 UTC)



Maintenance:
Tuesday, Oct 18, 2016
1:00 PM - 2:00 PM EDT (1700 UTC)

*If you use contract maintenance, please pass on this invite and my contact information to them.*

Safety Officers:
Monday, Oct 24, 2016
1:00 PM - 2:00 PM EDT (1700 UTC)

"Flying is done largely with the imagination."

~ Wolfgang Langewiesche
Stick and Rudder - 1944

# 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.*

Accidents in the news:

UH-60 accident related to human factors:

http://kdhnews.com/military/exclusive-pilot-error-caused-black-hawk-crash-at-fort-hood/article_eee938ca-7ad0-11e6-82f6-4f04ebe95168.html

Kenyan Police Agusta A139 crash:

http://www.the-star.co.ke/news/2016/09/08/four-cops-injured-after-new-police-helicopter-crashes-in-mathare_c1417430?utm_source=vertical-daily-news&utm_medium=email&utm_campaign=vertical-daily-news-09-09-16

Mexican Police Airbus H125 shot down:

http://www.vallartadaily.com/news/mexico/suspected-gang-members-shot-helicopter-clash-police/

Slovakian Bell 429 crash, returning with a patient onboard:

http://www.foxnews.com/world/2016/09/08/helicopter-crash-in-slovakia-kills-four.html

**Aircraft:** Cessna 182
**Injuries:** 2 minor
**NTSB#:** GAA16CA387

http://www.ntsb.gov/_layouts/ntsb.aviation/brief.aspx?ev_id=20160725X61204&key=1&queryId=c9f9b10f-daa8-4cf5-842d-eeaaecf2a0cb&pgno=1&pgsize=200

The pilot reported that prior to the flight the fuel tanks were "topped off with fuel" and after being distracted, a second walk around the airplane was not properly conducted. The pilot further reported that after about an hour of flight the engine lost power and he was forced to maneuver for an emergency landing. During the emergency landing, the pilot reported that his initial approach was to an interstate, but due to thick traffic he made a turn towards a landfill and impacted terrain. The airplane sustained substantial damage to the fuselage.

The pilot reported that after the impact the passenger received a telephone call from the departure airport fuel service attendant stating that the airplane's left fuel cap was on the airport ramp. During a postaccident examination by the pilot, it was revealed that the left fuel cap was missing.

The National Transportation Safety Board determines the probable cause(s) of this accident as follows: The pilot's failure to replace the left fuel cap following the preflight inspection, which resulted in fuel exhaustion, a loss of engine power, an emergency landing, and impact with terrain.

**Aircraft:** Hughes369E
**Injuries:** 3 minor
**NTSB#:** WPR13LA290

http://www.ntsb.gov/_layouts/ntsb.aviation/brief.aspx?ev_id=20130625X05535&key=1&queryId=c9f9b10f-daa8-4cf5-842d-eeaaecf2a0cb&pgno=11&pgsize=200

Before the accident flight, maintenance personnel exchanged the helicopter's air inlet barrier filter system, during which the engine was removed from the helicopter. A preflight inspection was completed before departure of the postmaintenance check flight, and no discrepancies were noted. The engine start and pretakeoff checks were normal, and, after departure, the flight appeared to progress normally. About 1 to 2 minutes after completing an in-flight power check, the pilot heard a "distinct loud pop." Subsequently, the engine lost total power, and the pilot entered an autorotation. The helicopter landed hard, its right skid collapsed, and it rolled on its right side. A postaccident examination of the helicopter's engine air inlet found that cloth material had been ingested into the engine air intake. During further examinations, more cloth material was found in the engine in a sufficient quantity and location to block the airflow through the engine and cause it to flame out. The cloth material found in the engine was consistent with maintenance rags found in a box at the operator's hangar facility. It is likely that, during the maintenance of the helicopter's engine, maintenance personnel covered vulnerable areas of the engine with shop rags to prevent contamination, and, during the reinstallation of the engine, they did not remove all of the shop rags. The engine then ingested the rags during the postmaintenance test flight.

**Aircraft:** Agusta A109K2
**Injuries:** 5 fatal

## Japan Aircraft Accidents Investigation Commission: #AA2007-3

http://www.mlit.go.jp/jtsb/eng-air_report/JA11PC.pdf

http://aerossurance.com/helicopters/accident-report-fatal-police-helicopter-double-engine-flameout-city-centre/

A routine afternoon road congestion survey flight was to be conducted using the 'Fuji 2, Eurocopter AS365N3 by the local Prefecture's police aviation unit. The flight had been planned to cover the eastern area of the prefecture, but when the team of observers from the Traffic Regulation Division arrived, 40 minutes before the planned take-off, they asked to include a congestion survey on the Tomei Expressway in the west of the prefecture too and the Pilot In Command (PIC) agreed.

Following a technical fault shortly after take-off at 14:00, Fuji 2 returned to base and five of the seven people on-board transferred to the slightly smaller Fuji 1, an AgustaWestland A109K2. The flight was expected to last 2 hours and the pilot filed a flight plan that estimated 2 hours 20 minutes of fuel on-board. The change to the smaller aircraft resulted in one other significant change, namely the PIC choose to leave the co-pilot behind.
The replacement aircraft took off from Shizuhama Aerodrome at 14:42. Investigators concluded the aircraft took off 58kg over maximum gross weight, perhaps symptomatic of the rushed change in plans.

After taking off the aircraft flew a195nm route with a ground speed of about 110kt. The early aerial photos recovered were taken from a 1,000 – 1,500ft above ground level, but those photos taken later were from 1,000ft or below. The last photo was taken at 16:23:26, approximately five minutes before the crash. At 16:25 the PIC made a radio call "Over Shimizu. Landing soon." It was usual to make a call to warn ground crew of their arrival and there was no indication of any abnormality. In these final few minutes, witnesses remarked on the aircraft's particularly low altitude. The accident investigators report that:

a. At the point approximately 500m away from the crash site, flying altitude was approximately 300ft.
b. In the area mentioned in a. above, sound of the aircraft changed and went silent.

c. At the point approximately 150m away from the crash site, something fell away from the aircraft.

d. In the area mentioned in c. above, the aircraft was silent with the MR blades almost stationary.

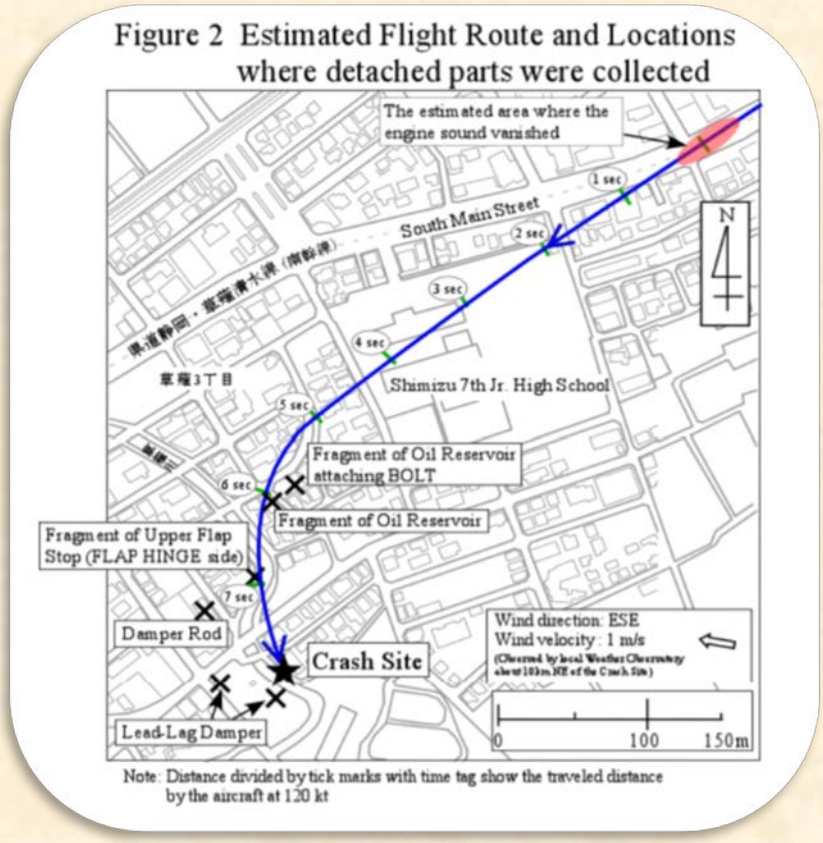


Figure 2 Estimated Flight Route and Locations where detached parts were collected

Note: Distance divided by tick marks with time tag show the traveled distance by the aircraft at 120 kt

e. At approximately 100m, the aircraft's attitude changed greatly into a nose-down attitude.

The accident site is located in a flat area used as a parking lot and a road, sandwiched by the apartment house and the Kusanagi River. The aircraft rested on its left side with its nose orienting to southwest. The cockpit was jammed into a road fence [on the edge of the river embankment].

The fuselage was destroyed and nearly burned out. All four MR blades were broken but still connected to the MR head. The tail boom was fractured in the middle. The forward half of the tail boom was folded forward onto the fuselage and the rear half was found on the riverbed several meters below with the TR blades still attached. There were traces of leaked fuel on the embankment.

Photo 2 Crash site (2)
(At 16:31:08 Flame is visible.)


It is considered very likely that this accident occurred in the situation where the aircraft did not autorotate and crashed after both engines stalled during the road traffic congestion survey mission. While the reason could not be confirmed why both engines lost power and why the aircraft did not autorotate, it is considered possible that the followings would have cumulatively acted as contributory factors to the occurrence of the accident. As the accident might not have occurred if any one of them had been cleared, persons concerned should keep the following items in mind as they perform operations.

(1) Flight operations became unreasonable after the unexpected change of flight plan
It is considered possible that the fuel load would have become insufficient for the flight after the flight route was extended from the original plan and aircraft were switched from Fuji No. 2 to the aircraft. Furthermore, it is considered very likely while higher flying speed increased the range and fuel consumption, it reduced the endurance. In addition, it is considered very likely that the aircraft eventually took off with exceeded maximum gross weight and this also would have contributed to increased fuel consumption. As fuel consumption is a function of such factors as gross weight and length of flight, all persons concerned should have carefully checked the fuel consumption and other parameters involved and operated the aircraft with feasible flight plan.

(2) Single pilot operation
Because minimum required number of persons on board the aircraft was specified as one pilot, single pilot operation is admissible. However, since unexpected occurrences are foreseeable, persons concerned should have as much as possible abide by "The two-pilot rule for safe flight", which was stipulated in the voluntarily established Flight Safety Standards. In case where single pilot operation is a compelling need, crew assignment should not have been left solely to the discretion of the single person responsible for the mission assignment (the person who has the final authority to approve the pilot(s) for duty on each flight), but all persons concerned should have been involved to make such assignment in accordance with clearly defined criteria, which excludes consecutive flights of different types of aircraft.

(3) Low altitude flight
The aircraft was considered to be in a condition of flying at an altitude of a few hundred feet and at a speed of 110 – 120kt when both engines lost power and this condition is within the envelop of possible autorotation. Autorotation trainings are usually conducted from an altitude with sufficient safe margin. In this accident it is considered possible that low flying altitude at the moment of loss of engine power constituted a factor that prevented the aircraft from autorotation. If the PIC had maintained flying altitude as high as possible to secure sufficient time for gliding, it is considered possible that the PIC would have been able to make the transition to the autorotation with relative ease.