ALASKAN AVIATION SAFETY FOUNDATION

January 2016

Dreaming of summer in Anchorage
photo courtesy Wikicommons

Preparing for a mid-air collision with a drone

By Harry Kieling, Chairman

Let's talk about drones, but let's approach it from a different angle. The last couple of months we have heard a lot about the coming title wave of drones for hobbyist and recreational use. Differing estimates put the number of model drones under the Christmas tree at between 700,000 and one million. That is a lot of airborne objects sharing the skies with us.

Along with the proliferation of drones in amateur hands has been an education campaign to encourage people to fly them safely. A number of guidelines were published about size and weight, staying below 400 ft, away from airports etc. All of this is very important to mitigate the risk to manned aircraft and people on the ground.

But that is not what I want to discuss in this article. What I want to delve into is the possibility (or inevitability) of a midair collision with a drone. It absolutely amazes me that it hasn't occurred yet. But I am going to write about what to do if it does happen, especially to you.

Do you realize that despite all of the hype with possible mid-airs no one has done any testing to see what the likely outcomes might be? There has been plenty of testing over the years to see what a bird strike could do, (they used frozen chickens), to large passenger jets and engines. But no drone vs GA airplane testing. So we don't know what the outcome will be. But let's pursue a hypothetical scenario that would work with any small drone (or bird for that matter).

You are flying merrily along in your 185 and suddenly, (and it will be suddenly), you collide with a drone (less than 55 pounds and not a Predator). A lot of what I will suggest now is similar to a bird strike (but also may be more destructive):

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- If you see it at the last minute do whatever evasive maneuver is possible, usually up and away from it. That might prevent a windscreen full of drone. As a normal precaution against bird strikes do you always wear protective glasses or a helmet and visor?
- If the drone came through the prop, the damage will probably depend a lot on how big it is and how much metal is in its composition.
- First thing, maintain aircraft control. Second, analyze the situation. (Any obvious damage, engine/flight instruments appear normal? Any strange sounds?) Third, take proper action. If you don't know the extent of the damage you should probably assume the worse. Be looking for a decent place to sort it out… that means landing.
- If you aren't at least 2,000 feet, start an L/D climb to get there if you can. It will give you more options if things get worse.
- While you are heading for that recovery field and you have time, do a controllability check. Slow the aircraft and configure for landing (above 1,500 ft.) and make sure the aircraft flies safely and predictably. Be prepared for anything, but it is better to experience controllability issues at altitude, where you can recover, rather than on short final.
- Set up for a "Precautionary Landing"
    - Aim to touchdown 1/3 to 1/2 way down the runway.
    - Keep your altitude as long as you can and until you are sure you can reach your touchdown point if the engine decides to quit.
    - Tell the controlling agency or declare an emergency on CTAF and state that you need traffic priority.
    - Once you have the runway made (even if the engine quits), you can adjust your touchdown point to avoid being long and hot.
    - Try to avoid having to go around but also don't make an unsafe landing.
    - Consider clearing the runway and shutting down and inspecting for damage before taxiing.
    - Notify the FAA of the incident as soon as you can and preserve any evidence. Make notes on what happened while it is still fresh in your mind.
    - Call me so we can get you on "Hangar Flying" to share your experience.

Fly Safe!

Harry

Accident analysis: How good decision-making begins on the ground

by John Mahany

On July 7, 2013, a de Havilland DHC-3 Otter crashed on takeoff, in Soldotna, Alaska, killing the pilot and his nine passengers. According to the NTSB's probable cause report, one of the contributing factors was the way the Otter was loaded for this flight. Investigator's estimated it was likely about 21 pounds overweight, but where cargo was loaded resulted in an extremely aft CG— considerably aft of the aft limits for the airplane. This directly affected the aircraft's handling and performance immediately on takeoff; the pilot was unable to control it, resulting in a stall and subsequent crash.

There are several things that contributed to this accident, but one that I would like to address is Aeronautical Decision Making (ADM). In reading the accident report, it appears that the pilot was almost nonchalant about this flight. The cargo was not weighed and he did not complete a weight and balance[1]. Interestingly, the accident report also states that the flaps were not properly set for takeoff and were still in the full-down (landing) position, contrary to recommended procedures. One has to wonder what else the pilot did not do. Did he follow any checklists? What was his decision making process? Did he become a victim of complacency? It looks that way.

What can be learned from the Soldotna accident? In looking at the decision-making process, consider that ADM actually starts on the ground. In the Pilot's Handbook of Aeronautical Knowledge, Chapter 17 addresses ADM. It states that the decision-making process provides the pilot with a "foundation for developing ADM and SRM skills." SRM of course refers to Single-Pilot Resource Management.

The chapter discusses the decision-making process and various 'models' that provide a structured framework that help a pilot solve a problem and decide what course of action to take. SRM and the "5P Check" is designed specifically for single pilot operators. The "5P Check" consists of:

- The Plan
- The Plane
- The Pilot
- The Passengers
- The Programming

The 5Ps are used to help a pilot evaluate his or her current situation, either in flight or on the ground, and make appropriate decisions. This includes preflight, pre-takeoff, hourly or at the mid-point, pre-descent, and just prior to the final approach fix, or for VFR operations, just before entering the traffic pattern.

In the preflight phase, did the pilot in the Soldotna accident consider his payload at all? Apparently not. What happened to was his decision-making? Did he fall victim to complacency? The accident report states that "estimates" of the passenger weights were provided in preparation for the trip. One has to wonder why actual passenger weights were not provided. Further, not only was the cargo unweighed but the fuel records were not kept for each flight. Prior to the accident, the pilot simply topped off the front and center tanks. Perhaps, he had conducted this flight so many times that he had become lax but regardless of the reason, his actions were indeed not professional.

Finally, according investigators, the cargo that was loaded was "about 2.4 times the weight indicated" on the load manifest. The weight also exceeded the load limit of the cargo net by more than 50 pounds and the CG was at least 5.5 inches aft of the aft limit. The report states, "…The CG was so far aft of the limit that the airplane likely would have stalled even with the flaps in the correct position."

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The NTSB's probable cause for the July 7, 2013 accident:

"The operator's failure to determine the actual cargo weight, leading to the loading and operation of the airplane outside of the weight and center of gravity limits contained in the airplane flight manual, which resulted in an aerodynamic stall. Contributing to the accident was the Federal Aviation Administration's failure to require weight and balance documentation for each flight in 14 Code of Federal Regulations Part 135 single-engine operations."

How about you? Do you apply the "SRM Five P Check" to your flying, whether for fun or work? Or do you have another method that you use? What works for you?

Fly safely!

John Mahany has been flying for 30+ years. He is an ATP/CE-500 and an MCFI in southern California, with corporate, airline and charter experience. He spent 4 ½ years flying in Alaska. He is currently a King Air and Citation Instructor at FlightSafety International in Long Beach, CA. He flies a 1953 CE 180 for fun!

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If you have an aviation related photo we can run in upcoming newsletter, please contact Colleen at colleen@chasingray.com. We would really like to showcase some of the unique operations and locations that Alaska aviation has to offer!

Aviators Brave the Elements to Attend Alaskan Aviation Safety Foundation's Fall Safety Seminar

Over seventy-five participants braved snow, slush and ice to attend the Alaskan Aviation Safety Foundation's annual Fall Safety Seminar held on November 21. Special guest speaker was Dr. Melchor Antuñano, Director of the FAA's Civil Aerospace Medical Institute (CAMI). He educated and entertained the audience with information about safety and survivability, new trends in aviation technology and current medical issues for general aviation pilots. His enthusiasm for the job and love for aviation was apparent in all of his presentations, and kept the audience on their toes. Dr. Antuñano was joined by Dr. Marcel Dionne, the Alaska Regional Flight Surgeon who gave a talk on operational fatigue in Alaska aviation.

Marshall Severson, with the FAA's Flight Services Program and Tom George, AOPA Alaska Regional Manager, provided updates on the PIREP initiative and the latest changes to the Mat Su CTAF Areas. Updated maps were available at the Flight Services Program/ FAAST Team and AOPA tables; be sure to contact your local FAAST Team or AOPA representative for a map if you didn't pick one up. The latest version is effective October 15, 2015.

Members of the Carlson family spoke to attendees about the importance of satellite tracking, and the development of the Carlson Foundation. The foundation will provide spidertracks devices to pilots in honor of Dale Carlson, who perished in April. Applications for spidertracks devices are available on the Alaskan Aviation Safety Foundation's website at www.aasfonline.org.

The overwhelmingly positive response to Dr. Antuñano's presentations has the Safety Foundation looking to team up with the FAA to bring him back next year. If you have heard any great speakers, presenters, or know someone who has an interesting safety story to share, please contact us at www.aasfonline.org or leave us a message at 907-243-7237.

The Alaskan Aviation Safety Foundation would like to thank the presenters and volunteers, and the members of the Alaskan Aviation Safety Foundation whose support made this seminar a success. Thanks to the FAA for bringing Dr. Antuñano to Alaska, and thanks to the donors that make our great door prizes possible, including the Aircraft Owners and Pilots Association, Alaska Airmen Association, Aviall, DeLorme, Garmin, Northern Lights Avionics, and Stoddard Aero Services.