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Problems & Solutions

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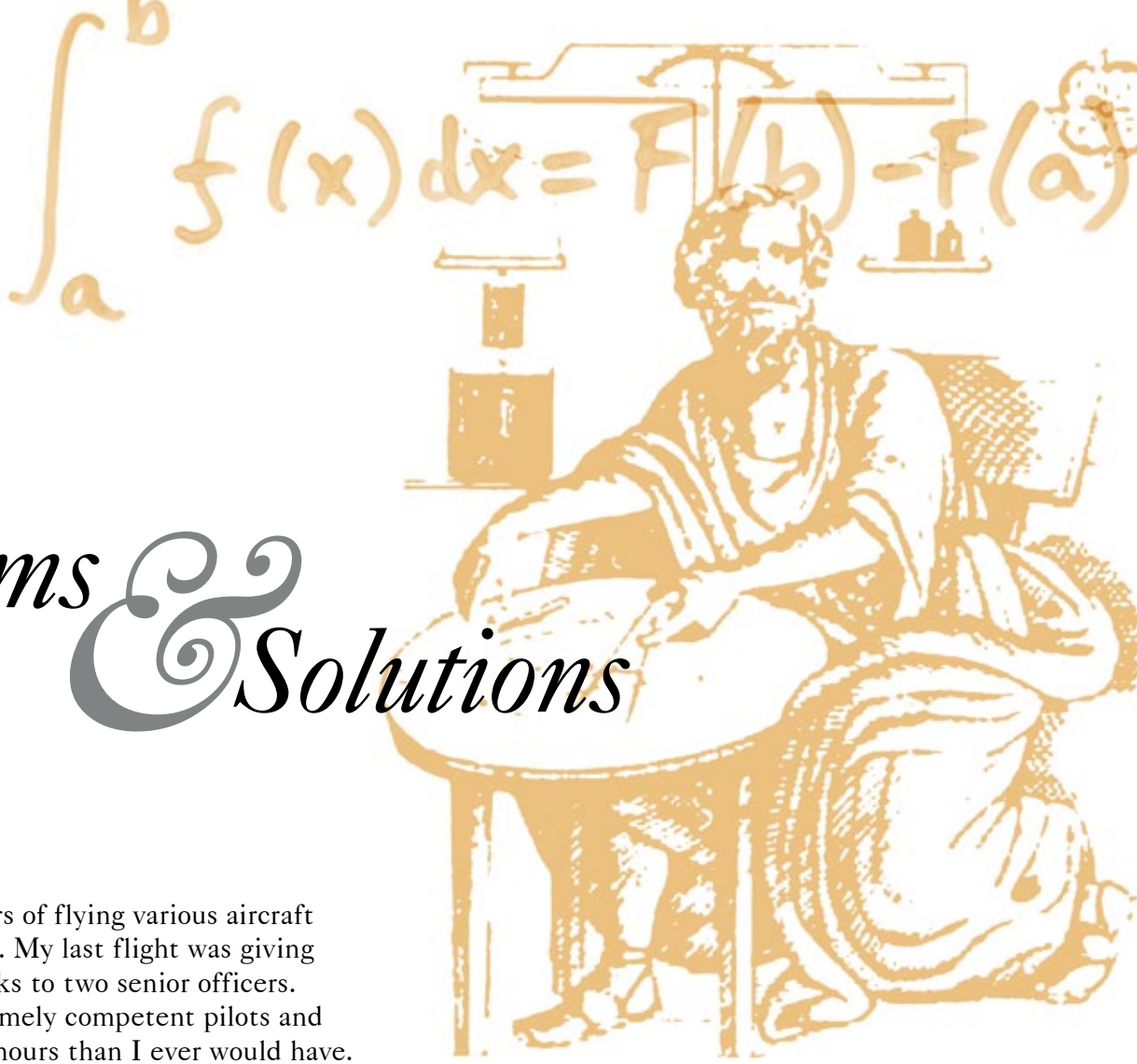

Problems & Solutions

By Tom Hamrick

I retired after years of flying various aircraft without incident. My last flight was giving instrument checks to two senior officers. They were extremely competent pilots and had more flight hours than I ever would have. We briefed the flight and flew the brief. They had picture-perfect check rides, with no actual emergencies or scary moments, just like 95 percent of all the flights I ever had.

I didn't know, however, that this flight was my last. Over the previous week, all my scheduled flights had been canceled for severe weather. I never had a chance to feel the emotions of knowing it would be the last time I would do a start checklist or call tower for take-off clearance.

I'm fortunate my flying days in the Navy ended quietly, and I never had to stand in front of the long green table and tap dance. That's a good thing, because I'm not good at dancing.

I had my share of in-flight emergencies over the years, but I always brought my crew and aircraft back. I'd heard the lore about different aircraft disasters that should stand as examples of what not to do. Everybody has heard about an H-60 that flew into a mountain on the way to Vegas, or the midair between two P-3s, or of other near-misses. You may recall the one about a tail rotor that maintenance had put on backwards, or the pilot who flew the wrong side of the needle on the way to get gas from a tanker. These stories are shared by JOs in the wardroom to keep them from making similar mistakes when they get in a similar situation.

Eventually, Grampaw Pettibone will come out with his platitudes. Remember, "Never pass up a chance to make a safe landing when you are not sure about your aircraft," or "The three most useless things to a pilot are the altitude above you, the gas you left on the deck, and the runway behind you." These truisms come in many varieties, but they all offer nuggets of wisdom that one day may save your life.

I RECENTLY READ ABOUT B-17 DISASTERS during World War II. While I learned a history lesson, I think there is wisdom for today's pilots. They can put it in their helmet bags to use the next time all the bigwigs scratch their heads and wonder what just happened. Here's some background.

The Army Air Corps, based in England, flew the B-17 Flying Fortress to bomb strategic German targets. The aircraft suffered colossal losses from the German fighters, so the Army brass decided to improve the chances of an aircrew returning to home base. They noticed the returning aircraft, though hit by hostile fire, all had similar patterns of damage. The brass took a model of the aircraft and put in pushpins to replicate bullet-hole locations on the returning fuselages.

Once they had a good idea of the placement distribution of bullet holes, they then reinforced the aircraft in those locations before the next mission. The key thing to note is they limited the reinforcement only to areas where they had found bullet-hole damage to avoid adding unnecessary weight. However, this reinforcement effort did not work. They found the aircraft that had been retrofitted were even less likely to return to base. They realized something was wrong with their analysis.

Abraham Wald, a Hungarian mathematician working for the American war effort, eloquently explained what was happening. The engineers had been looking at the data the wrong way. They were collecting data from aircraft that successfully returned to base. They had looked at data that actually showed the distribution of survivable bullet damage, or locations where the aircraft could take hits and keep flying.

The reinforcement program had added weight to the aircraft and reinforced areas that did not need the extra protection, making the upgraded aircraft heavier and more vulnerable to enemy fire. They should have looked at the data and considered what was missing, or seen where the survivors were not hit. Wald was instrumental in pointing out that, when viewed in a different way, the data from the returning aircraft could help identify vulnerable spots. They ultimately succeeded in improving aircraft survivability, which goes to show that clear thinking about the data does make a difference.

When you are in the middle of a highly emotional problem, and lives are riding on the decision you make, sorting through the data isn't easy. Fortunately, tools are available through several programs to help you improve your critical-thinking skills, so you can arrive at an acceptable answer sooner, rather than later.

The Naval Postgraduate School in Monterey offers multiple distributed-learning programs that let you earn graduate credits and a certificate or master's degree in several different fields. One degree is the Master of Systems Analysis (MSA). This degree takes two years to complete, with two courses per quarter; the courses are taught by video teleconference or online. The first quarter provides tools you can use to better understand or deal with data. The MSA incorporates a companion systems-analysis certificate that can be taken as a stand-alone program of four online courses, taken one per quarter over one year.

You don't have to be a math wiz to take these courses. If you ever have taken a calculus course, you meet the prerequisites, and the courses in the program will bring you up to speed on anything else you need. The MSA requires a bachelor's degree, plus a few more steps for enrollment.

The certificate program only requires a willingness to succeed to get you onboard. The certificate has no rank requirement; enlisted and officers only need command endorsement to get started. If you want to aim toward the MSA and are not sure if you can do it, then the certificate program may be the right fit for you. The Systems Analysis Certificate and the MSA are funded by Navy Education and Training Command. Tuition is not required from the students or their commands.

As a junior officer, I thought I knew it all, but I've learned a thing or two outside the cockpit that's made me a better pilot. I encourage you to take advantage of the new distributed-learning graduate programs at Naval Postgraduate School. There's free tuition, and you'll learn skills valuable for your career. We can help you make a difference in your aviation community.

For more information on distributed-learning opportunities at Naval Postgraduate School, go to *http://www.nps.edu/dl*.

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