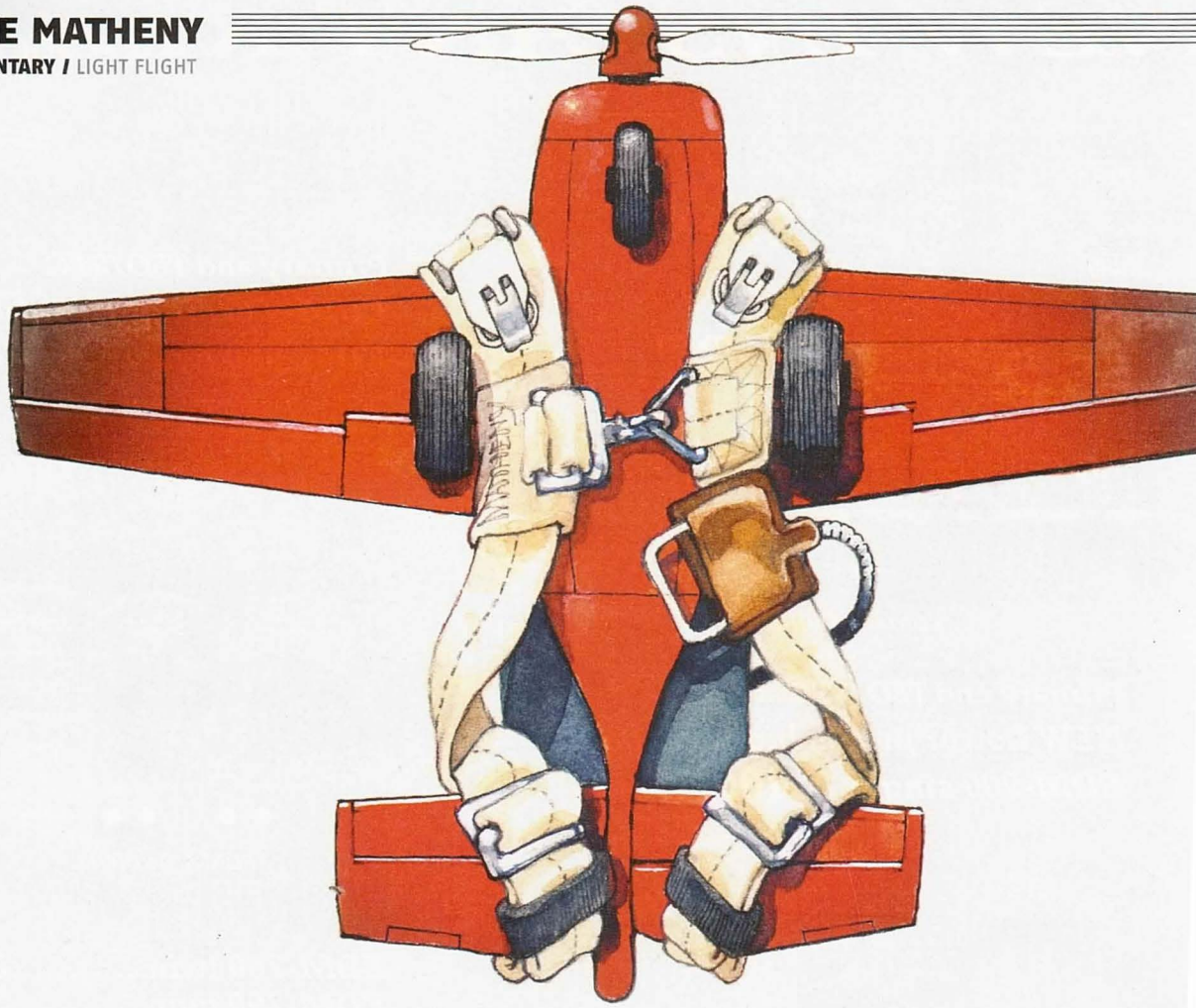
DAVE MATHENY

COMMENTARY / LIGHT FLIGHT



When Airplanes Wear Parachutes

The case for and against having a whole-aircraft recovery parachute

I GO WAY BACK WITH parachutes—*way* back: A few years before I was born, my dad, as a young Army Air Corps lieutenant, bailed out of a Stearman when he ran out of fuel one black night over Alabama. Once safely down, he still couldn't see anything, so he wrapped himself in the canopy and went to sleep. In the morning he found his way to a farmhouse. I don't know what happened to the Stearman; I only heard him tell the story once, and then it was only to make the point that he was young and foolish and should have checked the fuel level himself before takeoff rather than leaving it to somebody else. That seems like a good rule in any case.

Growing up on Air Force bases, I thought that everybody in airplanes wore parachutes: pilot, crew, passengers, everybody. By the time I was old enough to realize that, no, some people flew without any parachute in the airplane at all, in ing airline passengers, I wondered wh gloomy, self-destructive spirit possess them to do such an irrational thing. A years passed, first one and then anoth I knew ejected from a disabled aircra lived. One man had gotten into a dogf with a MiG-15 in his F-86 over North The MiG disintegrated, and the F-86 ingested debris and flamed out. He st for the nearby Pacific Ocean and pun out over water, and was later picked helicopter. A nephew of mine, a Mari

ILLUSTRATION BY DA

pilot, was engaged in an air-combat exercise in an A-4 some 70 miles off the coast of South Carolina when his oil pressure went to zero. A pair of F/A-18s formed up on his wing to escort him to shore, but then told him he was trailing 40 feet of flame from his tailpipe; he and his back-seater ejected and were picked up by helicopter. He's now a captain with Delta. I have made 14 parachute jumps, meaning that I've trusted my life to a parachute just that many times. Welcome to my world.

NOT A TOUGH SELL

I have a long history with BRS, the whole-aircraft parachute recovery system, so I'll lay my cards on the table: When I was first drawn to ultralight flying, in 1981, it happened that Boris Popov, who was just then in the process of developing the BRS, was also the dealer who sold me my first aircraft. I was anxious to buy a unit and mounted one of the very first ones on my first aircraft. We became good friends; he was best man at my wedding in 1986. I helped with small activities around the shop in the early days, firing early BRS drogue guns and stuffing parachutes back in their containers for more test firings (you really don't have to be that careful about the repack when the canopy is just going to be yanked out in another firing in a couple of minutes). Later, I flew the camera ship for some early test deployments and saw the canopy stream out behind and fill—an utterly beautiful sight—then watched as the pilot cut away from it and resumed normal flight. I also watched a test deployment where, because of a malfunction, the pilot had to ride the deployed canopy down to the ground (he hit power lines but emerged unscathed). I have always had a BRS mounted on every ultralight I have owned. I even bought $200 worth of BRS stock back in 1988; if this article were to somehow double the cash value of my stock, I might be able to add cheese to a hamburger at a fast-food place, but probably not.

I am not a salesman for BRS. I am just a big advocate of having some kind of backup parachute system. In any case, BRS is not the only player in the game these days. Second Chantz, the manufacturer of a similar system, appeared and disappeared in the 1980s but has since returned to the market. And a European manufacturer, Magnum Ballistic Parachutes, also offers such a system. I won't try to compare and contrast the different systems. I am strongly biased toward having some kind of whole-aircraft backup parachute aboard, whatever is being flown. Even parachutists wear a reserve parachute. But I will try to lay out the arguments pro and con as squarely as I can so that pilots can decide for themselves which way is best.

OUT OF THE FEVER SWAMP

Discussions about whether whole-aircraft parachute systems are a good idea is a

perennial in aviation, but I was particularly drawn to a recent blog post by this magazine's editor-in-chief, J. Mac McClellan. He looked at the experience that Cirrus aircraft had with insurance because it was selling new airplanes with a type of BRS installed. He observed that in the beginning, "The underwriters—and actually most of us in general aviation—expected Cirrus airplanes to be raining down under the chute, but nobody knew how much damage the event would cause or how much it would cost to fix the airplane. Because of the chute, underwriters just didn't know how to price Cirrus hull coverage." Now, after about 15 years of sales of these airplanes, "more than 95 people are alive because Cirrus pilots deployed the Cirrus Airframe Parachute System (CAPS), and the number of deployments is increasing." And insurers, he wrote, "didn't need to worry. Cirrus pilots did have accidents for all of the conventional reasons, but they just weren't using the chute." Pilots were not firing the system for less-than-catastrophic failures.

The comments section inevitably became a discussion of the relative merits of having such a device installed in an aircraft. The comments were largely polite and well-reasoned, which is not an everyday occurrence on the Internet. (As anyone who has read comment boxes knows, they usually turn into a fever swamp within a few exchanges. But EAAers are a better-natured bunch, more inclined to use reason than insult.)

Rather than simply listing arguments for and arguments against, I'm just going to lay out the *anti*-arguments as they are usually given—not necessarily as they were phrased in the comments section—and then discuss each one.

"I have thousands of hours in everything from sailplanes and crop dusters to airliners, and have never needed one of these systems." I believe this might actually be the most compelling argument, although it's not based on reason. To have decades of experience and knowledge and yet reject the idea of a backup parachute is the Godzilla of anti-parachute-system opinions, stomping Tokyo and New York, breathing fire on

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fleeing hordes of terrified little counter-arguments squeaking out their objections. *Me have experience. You little fearful things. Shut up now, stop worry, fly plane.* But the same argument can be made for never wearing a seat belt and shoulder harness in a car. I, personally, have always worn them and have never, ever in all these years been thrown against them. Never. Which would make me an idiot for having buckled up all those tens of thousands of times, except for the highway traffic fatality statistics.

One ultralight expert whose knowledge I admire, a dealer in the Midwest, has been building, repairing, and selling parts for ultralights for more than 30 years. He just shrugs off the idea of the BRS, saying things like, "I've got one I pulled off a trade-in. It's just taking up space in my shop. I'll sell it to you if you really want one." Another man, writing in the comments section, said he had 25,000 hours: "I have had several low (below 200 feet) engine failures and other incidences due to striking objects, including complete loss of rudders, brakes, etc. ... To me it's just a continuation of the eroding of pilots' skills and competencies, and professionalism...it is even more ridiculous, and an admission of incompetence to think that a BRS should be an essential requirement... Let's try and make some difference between ourselves and monkeys."

"They weigh a lot and cost a bundle." True. And certainly some of that added weight could be used for fuel, passengers, or anything else that will probably be used on most flights, as opposed to a system that is very unlikely to be needed. And parachute systems are indeed costly. For example, Second Chantz's lowest-price system, intended to be used in an aircraft wit a gross weight of no more than 550 pounds, costs about $3,000, and you will still have to install it yourself, an probably will have to modify your air craft to make it fit. The 1,050-pound system is a little over $4,000. And the costs don't stop with the installation. All of the systems will need a periodic repack and replacement or overhaul o the rocket, or whatever serves to deploy the parachute, as often as five years in some cases, 10 years in others Depending on size and whether the deploying device needs to be replaced the cost can range above $2,000.

The counter-argument on cost is that *everything* in aviation is expensive—I have always tried to console myself with that thought. But—paying a lot of money for something you will probably never need? That galls. So let's ask: How often is that system needed? According to Wikipedia's article about Cirrus, "As of 11 June 2014, the CAPS has been activated 59 times, 46 successfully with 95 survivors and 1 fatality in equipped aircraft. No fatalities have occurred when the parachute was deployed within the certified speed and altitude parameters." BRS claims a total of more than 300 lives saved since it first came on the market in 1982. In BRS reckoning, one deployment saving two lives counts as two saves.

"But are these really 'saves,' and not just cases of some ninny pulling the handle unnecessarily?" A lot are unquestionably saves. Some years back, in an effort to prove that BRS deployments were unnecessary, a man posted on an Internet forum a long list of BRS deployments that he had pulled off the company's website. By including only those in which the handle had been pulled after merely losing the engine, and leaving out any in which there had been a structural failure or catastrophic loss of control, he managed to make it look as if a long procession of weaklings had bleated, "Oh, save me!" and buried

their faces in their hands when they lost power. But a reading of the actual circumstances behind deployments shows that a large percentage are cases where the parachute was the only option.

By a striking coincidence, I know two pilots who have used a BRS in true emergencies. One was flying a hang glider in Wisconsin and had a structural failure: A wing spar broke in the middle—not something you would be likely to catch on a preflight inspection—and he fired the unit.

The other was a man in Texas who was flying a homebuilt biplane when the elevator linkage failed, sending him into a vertical dive, so he pulled the handle. Both pilots walked away from what would have otherwise almost certainly been fatal accidents.

"You might pull the handle instead of just landing the airplane." I have some experience in this matter. In the early 1980s, flying with unreliable two-stroke engines and powertrains, I made a total of 24 forced landings. Maybe not a Guinness World Record—not when there were so many paleo-ultralight-fliers out there who could just about count on every flight to end with a seized engine or the scream of the engine over-revving when a belt drive lost its cogs—but enough to be able to speak with some authority on what one actual pilot might do in the event of losing the engine. In none of those did I ever even consider pulling the BRS. The aircraft turned into a glider, and a glider is a flyable aircraft, and I glided down to a landing.

One commenter wrote that he'd had three engine failures in 24 years of flying and had never chosen to use the BRS. "Two of the engine failures were at night and one in daylight at about 50 to 100 feet and 100 mph just after liftoff," he wrote.

Not everybody who has the option turns to the parachute. A Vietnam-era fighter pilot I know lost both engines in an F-4 to flak and chose to glide it right on down to a forced landing on a long, smooth beach. He just had a horror of ejecting, he said, and preferred to take his chances with the landing, and it turned out just fine. I don't think I would have done that, but I wasn't the one in the cockpit. I think we need to trust pilots to make their own decisions.

Another commenter wrote: "I would suspect that in the majority of cases a pilot will feel that he can make a reasonably safe off-airport landing somewhere. So, rather than deploy the parachute that is what he decides (and prefers) to do. Might work out for him and the airplane or it might not."

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"You will never need a backup parachute if you exercise common sense and maintain your aircraft to the highest standard." It is unquestionably true that you can be painfully strict about such things as never flying in bad weather, and keeping a sharp lookout for other aircraft, and maintain your aircraft religiously, and avoid voluntary flight maneuvers that might result in disaster. But it's impossible to eliminate every chance of getting into a situation where one will need a backup device. Even if we cross off as avoidable such things as inadvertent flight into instrument conditions by VFR-only pilots, we still have the unavoidable, as in the case of the man cited above whose wing spar failed in the middle, where it is not normally inspected before flight. Loss of control and midair collisions are also always possible.

"If you have one of these systems, you might take chances you would not otherwise take." No argument here. Embarrassing though it is to admit, I did once actually consider, for about 1.2 seconds, rolling my Quicksilver GT400. I thought something like, "Well, I have the BRS if anything goes wrong." But I rejected that idea before it was even properly out of the gate. (My only excuse is that it was a beautiful day, and I had been doing some steep turns and stalls and was feeling like Sky King. Plus, I have rolled some other aircraft, although they were designed to take that kind of thing.) Probably the GT can be rolled, but I don't know that for sure. And although I could probably complete the maneuver without trouble, it would have been crossing a very clear line, one that there is no need to cross. The system is there as a backup for bailing me out of situations I can't control, not for ones I deliberately get myself into. It is completely up to me to decide not to do stupid stuff. Could some other Sky King install a parachute system and then give into temptation to do something stupid? Yes. Of course. It's up to the pilot. But then, so many things are up to the pilot.

"To a man with a hammer in his hand, everything looks like a nail." Meaning that pulling the handle can be seen as the solution to any problem. However, although this saying sounds profound, it doesn't stand up to the slightest examination. I have walked around with a hammer in my hand many hundreds of times and have never been tempted to hit anything with it other than what I originally intended to hit. (I *have* used a pair of heavy gooseneck pliers to hit a nail, but that was only because I was too lazy to go get a hammer; nor was I then tempted to go around crushing things with my mighty goosenecks because everything looked like it needed a good squeeze.)

Well, I have tried to be fair with presenting opposing points of view, but it doesn't feel like I have succeeded. I plan to go on flying with a BRS mounted whenever the aircraft I fly is capable of having one fitted to it, and I plan never to have to use it. For all that I regard an inflated canopy as beautiful, I have seen what happens when an aircraft has had to ride a deployed parachute all the way to the ground—in that one case, he tangled with power lines—so I will only pull that handle in the event of something extreme. That's the only reason it's there. EAA

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