If a corporate aviation safety manager is worth his salt he will consult accident statistics to help determine where his flight department’s real risks are. It is written large throughout such statistics that the 1st cause of fatal aviation accidents today is loss of control in-flight (LOC-I). This category now tops even controlled flight into terrain (CFIT) in fatalities. You can use Google to find Boeing Aircraft Company’s Statistical Summary of Commercial Jet Airplane Accidents 1959-2013 and look at the chart on page 22.

If our safety manager operates an SMS, he will have to identify mitigation for this risk. He could, for example, stress that pilots should accept no less spacing on a visual approach than ATC must provide them under IFR. Do they know what that spacing is? Or have they forgotten?

Adequate spacing and other measures could diminish the wake turbulence threat, but LOC-I has many causes, not just wake vortices. People die in LOC-I accidents after thunderstorms and windshear penetrations, after flight control malfunctions—Boeing 737 rudder actuators among them—or due to vertigo or inattention, in icing, in mountain waves and after messing up with automation. China Airlines has lost 2 Airbus A300s because the pilots mishandled the automation of perfectly good airplanes. And the list is long. No single mitigation resource will remove the potential for upsets to happen.

Colgan Air’s accident at BUF (Buffalo NY) and Air France’s crash into the Atlantic involved shockingly poor pilot performance from supposed professionals. UPRT for professional crews has come to the forefront as a remedy. Europeans have incorporated UPRT in actual aircraft—not just in simulators—into new IATA guidelines for professional licensing through the new multi pilot license (MPL) airline pilot training programs. FAA is still mulling it over.

A wide variety of airplanes are used for UPRT training, from aerobatic capable Pitts, Extras and Decathlons to jet engine aircraft such as this Impala from Flight Research.

By Don Witt
ATP. Learjet series, Airbus A320, Boeing 737, Boeing 757/767

Corporate flight depts and some OEMs recognize value of UPRT

Airlines have not yet elected to send the bulk of their crews to UPRT in actual aircraft. Some, like Alaska and South African Airways, have sent managers and training pilots. To date, most airlines see training all their pilots in aerobatic certified aircraft as just too expensive and time consuming.

Corporate flight departments on the other hand have been more proactive. Many big name departments—although perhaps not yet the majority—have sent their crews for UPRT. It can take an aviation safety manager some work to convince the corporate flight department boss to buy off on UPRT. As an aviation safety manager, it took me several years to achieve that goal and I can give you some advice on how to promote the cause.

If you can get your leaders to attend a good UPRT course themselves, your case is made. But how do we do that? Professional pilots of multimillion-dol-
lar jets are mostly used to their nice digs and fancy airplanes. An individual instructor with his Citabria and an office in the trailer may give just excellent training in UPRT. However there are now several large UPRT schools with very nice new classroom space, polished PowerPoint ground school presentations and shiny, expensive new airplanes. Aviation Performance Solutions (APS) facilities in Mesa AZ, Dallas TX and now also in the Netherlands, and Flight Research in Mojave CA are good examples. Many corporate pilots would simply feel more comfortable, relaxed and safe in such environments. Those are the professional environments they are used to. It may be best to focus on such facilities. Show pictures. Arrange visits!

Regardless of the obvious quality of a school and its instruction, your leadership may still question: “Why do we need to do UPRT in the first place? We are not likely to have an upset!” Have you heard that? Perhaps they are simply unaware of accident data like the Boeing paper cited. And when data is shown to them, they may still not believe it could ever apply to their department.

A management pilot’s belief that his/her department never has upsets is probably based on the fact that they are not told about them. Ask in private and find the truth. In a large, busy department the only real question is how many of these upsets have occurred and how severe they were. They may often stay unreported unless the 2 pilots are in conflict over that event.

If your advocacy for UPRT is in the minority in your department, point out that since 2006 Bombardier provided purchasers of new Learjets, Challengers and Globals with UPRT for 2 pilots (for each aircraft) at no additional cost. The manufacturer of the aircraft believed so strongly in the necessity of this training that they paid for it. Who knows more about an aircraft than the manufacturer? Bombardier still supports UPRT training as one of several options in their leading edge program. Learjet gives all of their production test pilots UPRT every year, which used to be outsourced but is now done in house in a Pitts S-2 with one of the company’s management pilots.

**UPRT is not airshow aerobatic flying**

“So... agreed, we’d benefit from the training. But it’s dangerous! How can I ask my crews to do such flying?” When such an objection is raised it is useful to point out some clear distinctions. Firstly, UPRT is not airshow flying! In UPRT every maneuver is completed several thousand feet above the ground. UPRT is not aerobatic competition either. Maneuvers are never done as low as even the most conservative sportsman IAC aerobatic box floor. There is absolutely no good reason to be that low during UPRT. Competition aerobatics itself as a sport is actually quite safe compared to airshow or air race flying. But we are talking apples and oranges here. UPRT is much safer in turn. Point out that an individual client is always in the cockpit with a highly skilled professional instructor in UPRT.

The structural integrity of an aerobatic Extra or even a Great Lakes trainer is hardly in doubt. Look at the strength of the lower strut attachments of a Decathlon and breathe easy! What about maintenance? A corporate flight department should have the resources to audit the maintenance program or mx provider of the UPRT facility.
they are interested in. We did, and it proved reassuring.

For a long time Calspan has provided UPRT in an aerobatic Bonanza and a highly modified Learjet 25, structurally the safest of the Lear in the world. A fly-by-wire control system installed in the right cockpit position allows the aircraft to mimic other airplanes in control feel and response. It also allows the aircraft to protect its own strength limits in the same way that an Airbus A320 or Falcon 7X FBW aircraft can, through limits in the FBW control laws.

Bottom line: UPRT, chosen with care, is safe. That does not mean that a department’s lawyer may not ask pilots to sign a waiver in order to participate.

Watch for ejection seats as they require mx and pilot training

Consider that quite a few UPRT providers today are offering training in single engine jets that came with ejection seats. The L39 is a popular example. Maintaining an ejection seat is expensive and requires significant training. Furthermore, if a seat is available to a UPRT client, he or she must be thoroughly trained in its use and that takes time. An untrained or poorly trained pilot in an ejection seat is like an untrained individual carrying a gun, which means he may hurt himself. UPRT in a single engine jet with an inoperative ejection seat puts a premium on engine reliability.

Flight Research is a provider who does not make their jet’s seats inoperative. They have a long history in support of government and military research projects and in maintaining military aircraft and their equipment. The ejection seats in Flight Research’s Impala jets are kept fully functional for UPRT.

Sim UPRT is an option

Since some pilots may be prone to airsickness, experienced UPRT providers have successful strategies to reduce it. Still there may be cases that are just not going to work out. We can give that pilot a pass entirely or just send him to ground school. APS has a program where a simulator-only curriculum is an option.

We could also consider sending that individual to the ETC’s Nastar Gyrolab Simulator UPRT program in Pennsylvania. The Gyrolab sim like the Desdemona simulator, its European counterpart, is a cross between a centrifuge and a traditional motion-based simulator that can simulate flight in a jet cockpit with realistic G forces. Ideal for UPRT. Unfortunately some pilots who don’t get airsick doing akro in airplanes do get airsick in the Gyrolab! But there are also a few folks who don’t necessarily get airsick at all in aircraft but are just flat so scared of being upside down they can’t or won’t do UPRT. Gyrolab can work for them.

APS VP Training & Business Development Randall Brooks shares a few facts as a UPRT instructor:

1. Motion sickness: Less than 4% of UPRT students get actively motion sick. Although it is definitely a consideration, most students acclimate quickly. The fear of motion sickness is generally out of proportion to the actual threat.

2. IFR recovery: A big difference between UPRT and aerobatics is the practice of recoveries by instrument reference. “We conduct this training using an EFIS attitude indicator and a view limiting device. This is important for professional pilots who fly IMC and at night, which may be the conditions faced when a recovery is called for,” says Brooks.

3. Transferability: Pilots always ask how recovery skills for jet engine aircraft can be taught in a piston aerobatic airplane. This is a matter of transferability of training, like the instrument skills learned in a Cessna 172 that are later used to fly a King Air or a Citation. At least 85% of upset recovery concepts are common to all airplanes. For example, teaching how to unload to reduce the angle of attack or practicing the strategic priorities of upset recovery are concepts and skills that apply to all fixed-wing aircraft but 4-point vertical rolls in aerobatic planes are not transferable to a corporate bizjet.

4. Depth of practice: It’s essential to consider the amount of hands-on training being accomplished in UPRT. Exposure is helpful—and certainly better than nothing—but pilots in training must get enough time to practice recovery skills so that they become ingrained and can easily apply them when needed.
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Fear is the main cause of resistance to UPRT

Fear is actually the underlying cause of most resistance to UPRT. Ironically it is also the primary cause of the majority of fatal LOC-I accidents. For whatever reason, an untrained pilot finds himself in a wild attitude with the green earth above his head, or maybe staring him straight in the face. Then he panics and often that is all she wrote. The panicked pilot hauls the yoke back in his lap with superhuman force and pins it there. The aircraft is doomed.

To those who say that simulator training should be sufficient, ask how you replicate that panic in a simulator. If there’s an answer then ask how come in decades of trying, sim training hasn’t worked. You just have to get out there in the real world, get upside down and get used to it. Fear will leave rapidly and confidence will replace it. A pilot can then react intelligently to an upset and will also have the knowledge to recover efficiently. Calm and efficiency could be the difference between a pullout above the ground after a wake turbulence upset on final approach versus a smoking hole and shattered lives.

So far we’ve talked of sticks. What about carrots? Who wouldn’t like to fly an Impala, an L-39 or an Extra and have a video to prove it? UPRT can even be done in a real P-51 Mustang. Crazy Horse, Lee Lauderback’s Mustang, provides the 1st of 2 flights of the UPRT syllabus at UAT, Stallion 51’s UPRT School in Florida. Good, worthwhile, safe, and fun UPRT schools are all over the country now. It’s easy to find one to your taste. Just do some online research.

Price options for UPRT are available

If the cost of additional training is a sticking point, you can propose alternating UPRT with a 6-month recurrent simulator schedule for crews, or go 3 sims and 1 UPRT in 2 years. Some major insurers are coming to see that as a better deal for safety, and they support it.

Those are some tips to help you convince your corporate flight department leadership about the necessity of UPRT training. In the department I was part of they are now giving UPRT to all pilots, and they love it! If you are a supporter, keep up the good work. It is a worthy cause. We are dealing with today’s biggest cause of death in aviation and we must make the best case for its only real mitigation.

Don Witt was a USAF F-4 pilot and holds a DFC. He is a retired B-767 and A-320 United Captain and former Safety Manager for a large corporate flight department. He is presently an FSI Learjet instructor and is a long time aerobatic instructor.