As loss of control in flight (LoC-I) continues to be the biggest killer in what is a fundamentally safe industry, airlines and aircraft manufacturers have been forced to review the assumptions behind traditional pilot training methods and objectives.

Speaking at Flightglobal’s Flight Safety 2014 conference in London on 16-17 September, Airbus’s senior director flight crew training policy David Owens said the complex, highly automated modern flightdeck environment demands a new training approach. He explains: “Resilience becomes the primary goal of training. It is the quality that enables a pilot to put all the training, knowledge and skill to use in an unexpected situation.”

In most of the 16 or more fatal LoC-I events in the last 15 years, the stress of sudden, rare, unfamiliar occurrences has taken up so much of the crews’ cognitive capacity that they have become unable to react effectively, and have tended to fixate on specific information and lost overall situational awareness.

“Resilience” has become the industry word for a pilot quality that ensures, even under stress, that he or she never loses sight of the job’s priorities: aviate, navigate, communicate. But this is the first time a senior industry figure has named it as the objective, his implication being that if resilience has not been trained into a pilot, the aviator’s hard-won knowledge and skill may count for nothing when stress steps in.

PROFESSIONAL

One of the keys is the careful selection of candidates, says Owens, with a professional attitude being one of the foundations of resiliency. According to the official industry definition, “Resilience is the ability to recognise, absorb and adapt to disruptions”.

Owens describes the required building blocks as a “resilience pyramid”, where the base is manual flying competency, and the upward layers competency in managing automation, navigation, communication, task sharing and situational awareness.

“The once-revered term “experienced” – meaning lots of hours in a logbook – means little for pilots flying today’s highly reliable aeroplanes, Owens argues. Experience needs replacing with “exposure” to real or realistic events, he says, because it is through this that resilience can be engendered. But since most airlines will not allow pilots to use commercial flights to gain experience – even for manually-flown visual approaches – more intelligent use must be made of recurrent training time in simulators.

Owens and others are pushing the value of “scenario-based training”, in which crews are exposed to plausible combinations of circumstances that have a solution, but for which there is no checklist, or which may demand throwing away company standard operating procedures (SOPs) because the situation has already put the aircraft outside them. He cites a situation where Cat III bad weather has forced a diversion, runway occupancy forces a go-around and then fuel shortage means the next landing is essential, but where one of the autopilots fails during the final approach. Autolanding then is technically illegal, but is the best solution.

CONFIDENCE

Regular exposure to such scenarios engenders confidence in problem solving, while sticking to the aviate-navigate-communicate priorities that lead to resilience, he says.

Over the last year or so Airbus and Boeing have become interested in the idea of making the multi-crew pilot licence (MPL) more accessible by offering a manufacturer-based course. At present, to complete a full course a student pilot must, following the primary single-pilot flying skills phase, have an airline sponsor. This means the remaining phases of the course – all the way through type rating into the right hand seat – are trained according to that airline’s SOPs. If the airline drops out of the equation for economic reasons the student is left high and dry, even if with useful experience.

Owens says the airframers would like the rules to allow MPL students to train to manufacturer SOPs, effectively flying according to their flight operations manuals, on which all carriers are required to base their own manuals.

Owens sees the MPL as being the most suitable modern training route for ab initio pilots that have airline flying – rather than professional general aviation – as their objective, partly because the concept of competency-based training is built into the system, and because all the states that have developed MPL have incorporated upset recovery training into the core skills part of the course.

Meanwhile, Owens reminded the conference that pilot shortages will soon be “a big problem”. The two major manufacturers predict that by 2032 there will be more than 29,000 commercial aircraft to train for, which at five crews each will drive a need for 300,000 pilots, including 15,000 newly qualified pilots every year.