AUTOMATION Expectations

So far, 2009 does not look like a great year for safety. As we hit the halfway mark, the world already has had as many airline accidents as the recent norm for a whole year. If things continue at this pace, we could have a year as bad as 1999, an accident spike. Of course, recent high-profile crashes of Airbus aircraft have thrown the debate about automation and envelope protection into the spotlight. In the public forum, that discussion gets boiled down to some overly basic questions: Is automation good or bad? Is one manufacturer's approach better than the other? Those are the wrong questions.

First, it is impossible to turn back the hands of time on the issue of flight deck automation. Current aircraft are highly automated, and the next generation of aircraft will be more so. I don't think this is bad. But I do think that we all have done a lousy job — or at least a superficial job — adapting to the reality of automation. Airplanes come with nice checklists to deal with some problems that automation presents, but we generally have fallen victim to the unconscious assumption that automation will not fail. Of course it fails. Sometimes technicians don't seat a circuit board properly. Sometimes a sensor goes bad, like a pitot tube (maybe the case in the crash of Air France Flight 447) or a radar altimeter fails (certainly the case in the Turkish Airways accident in Amsterdam). Other times, pilots input the wrong weight (e.g., the Emirates tail strike in Melbourne, Australia) or even type in the wrong route.

And when automation does fail to protect us, we appear to expect that other automated systems will step in to save the day. Is that how we treat engine failures? I think most of us started thinking about engine failures at an early stage of our aviation consciousness. I remember being 15 years old, dreaming of the day I'd have a handful of throttles and deal brilliantly with an engine exploding at rotation. Even then I knew the sequence of events, starting with "dead foot, dead engine." This sort of thing is just part of a pilot's DNA. The "trouble" is, engines just don't quit much anymore. Most of us will retire without being a party to an engine failure at any time, much less on takeoff. What every pilot *will* experience, however, is some sort of confusion regarding the automation. Whether it is due to a system error or a human error doesn't matter. It is a threat that has to be acknowledged and has to be managed because it can take down an aircraft.

When a pilot flew a DC-6 or a Connie, the biggest worry was an engine failure on takeoff. Now the biggest threat is the possibility of being handed an aircraft with ambiguous indications, and maybe a stick shaker in the middle of the night. It is time for young pilots to go to bed thinking about that threat, and to come up with the equivalent of "dead foot, dead engine" for that scenario. Just look at the accidents lately; it is time to stop debating the role of automation and really start to deal with it.

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