



Beyond Compliance

BY J.A. DONOGHUE

Seminar speakers stress the need to exceed basic requirements.

“Aviation safety is not that good so far this year,” said William R. Voss, president and chief executive officer of Flight Safety Foundation, opening the 21st European Aviation Safety Seminar in Nicosia, Cyprus. We need to work harder to improve safety, Voss said, to fulfill “our promise to the public that we are not waiting for the next accident.”

A successful safety system depends on “a competent and effective regulator” operating free of political interference that establishes a close relationship with its operators. Further, experience has shown that networks of airlines providing oversight functions for each other, and regulators auditing each other around the world, produce an interconnected process that can continue to protect safety should a regulator or an airline begin to fail, Voss said.

Inter-airline safety oversight, airlines working together, also was suggested by Tomislav Gradisar of Croatian Airlines as a way of getting around regulators’ lack of resources, trained personnel and scope — regulators are restricted to judging based on what regulations require and nothing more. He said that while regulators may be able to define and quantify the organizational structure and data gathering elements of a safety

management system, the status of a firm’s safety culture “is hard or impossible to check. It is impossible to revoke an operating certificate because a company has a low safety culture,” Gradisar said.

An inter-airline system has “adequate finances, adequate human resources and [potentially] unlimited scope.” However, there also exists a commercial bias in such a system: “They want to make it work. This is better, but not good enough.”

Targeting Safety Criminalization

Flight Safety Foundation and Eurocontrol at the seminar announced that two Eurocontrol officials, Radu Cioptione and Tzvetomir Blajev, have been seconded to Flight Safety Foundation for two years to serve as Foundation Fellows campaigning to educate prosecutors about the negative consequences of post-accident criminal prosecutions and interfering with the immediate safety investigation of accidents.

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Conventional regulators need to be overhauled by the addition of a dedicated oversight agency with access to a “registry of experts” drawn from the industry to conduct audits, Gradisar said. There also need to be added analysis and database functions to help the industry “to move beyond compliance.” The resulting system can allow auditors to look beyond the regulations, and make a clear assessment of the state of an operator’s safety culture.

Robert Sumwalt, member of the U.S. National Transportation Safety Board, was clear on the subject of safety culture: “If you think you have a good safety culture you are almost certainly mistaken. A safety culture is a journey, not a destination. . . . Safety has to start at the top of the organization and permeate throughout.” NTSB investigates many accidents in which “the most common link is the attitude at the top of the organization.”

Sumwalt cited the crash of a Cessna 310 (see story, p. 46) where “management commitment was not there. They did not have the policies and procedures in place to keep an unairworthy aircraft from becoming airborne with a known and unresolved discrepancy.”

Also cited by Sumwalt was a company that gave maneuver guides only to its chief pilot and instructors, an airline that permitted crews to use an automated system for the first time in line service and a regional airline that had no way of knowing if procedures had been followed other than that the airplane “arrived on time and took off on time.”

Sumwalt said, “You track engine health with multiple gauges. Wouldn’t you like to have multiple sensors to keep informed about the health of your safety culture? You have these sensors, your employees.”

Nick Mower, vice president technical services for the European Regions Airline Association, said there is a need for the European Aviation Safety Agency to strengthen its safety focus and establish priorities, instead of devoting too much time to transcription and documentation. “EASA has yet to develop a clear safety road-map,” he said. Part of the problem is that EASA regulations lack “teeth” due to the weakness in the legislation that established EASA, and lacks a European Union-wide aircraft registry.

The absolutely essential nature of data to the safety process was highlighted by Eric Merckx, deputy director, air traffic management programs, Eurocontrol: “It is criminal if you don’t share [safety information]. Indications are that only 20 percent of incidents are being reported [because] air traffic controllers and pilots are still afraid to report out of fear of criminal prosecution. We need to tell prosecutors how important reporting is to protect passengers.” (See “Targeting Safety Criminalization,” p. 17)

“Safety has stopped improving since about 2003,” according to his analysis of data, said David Learmount, operations and safety editor, Flight Group. “We need to go beyond compliance. Excellence, rather than just staying within the law, must be the objective.”

An example of this failure to reach beyond the rules is the industry’s failure to adopt jet upset training despite a Boeing study that clearly showed the training benefits, he said. “There is no requirement to provide such training; we need to go beyond compliance,” he repeated.

Another operational element that needs to be examined is the psychology behind pilots’ actions during non-revenue flights, Learmount said,

Mower (left), Learmount and, from left, Gradisar, Vecko, Dick van Eck (air traffic controller, The Netherlands), and Rausel.



pointing at the Air New Zealand/XL Air Airbus A320 accident during acceptance testing off the coast of France. In addition, he said, “we have to do more study of pilots flying highly automated aircraft,” noting the possible role automation played in the crash of a Turkish Airlines Boeing 737-800 just short of the runway at Amsterdam Schiphol Airport.

Learmount also charged that the industry, “despite the respite granted by the economic downturn, has taken its eye off the ball dealing with the shortage of trained labor,” a refrain echoed by Emile Rausel, director of training engineering at ATR. Rausel pointed out that pilot skill levels must cope with increased aircraft automation, especially in emergency situations, congestion, accelerated training and minimal recurrent training.

Part of this economic pressure for regional airlines is having to cope with training programs developed by and for major carriers that focus on full flight simulators (FFS) with motion despite the relative scarcity of FFS for regional aircraft. Also, there are increased requirements for mandatory exercises in the same amount of simulator time. The result, Rausel said, is “cockpit proficiency is decreasing.” In addition, operators found that “students starting in the ATR did not have adequate skills; they needed more [simulator] time.”

However, while an FFS costs as much as an ATR 42, a new high-capability fixed base training device (FFT-X) has been developed that costs about \$4 million that, in a modified training program that adds a few weeks to the introductory training process, allows pilots to develop a much deeper understanding of aircraft systems, Rausel said. These new simulators, deployed in a network of training centers, have been accepted for recurrent training in Poland, Italy, Venezuela and New Zealand, while France, the United

Kingdom, Brazil, Oman and Fiji have accepted them for checking and recurrent training.

Call sign confusion leads pilots to deviate from air traffic control (ATC) clearances, said **Richard Lawrence**, deputy manager, Eurocontrol contingency planning project. A Eurocontrol study showed that call sign confusion usually involves two or more aircraft from the same company, with 14 percent of confusions resulting in an altitude deviation. Only the French air navigation service provider, Direction des Services de la Navigation Aérienne, had a program to de-conflict call signs until Eurocontrol last year launched a three-stage, three-year program that intends to eliminate 80 percent of call sign similarities that lead to confusion events, Lawrence said. A major element in the effort is pushing call signs away from numbers-only into an alphanumeric combination. Attention also is being paid to the last letter of the call sign, often the key to a confusion incidence, designing flight number scheduling schemes to keep identical “last letter” call signs out of the same airspace.

Up to 50 percent of all traffic alert and collision avoidance system (TCAS) resolution advisories (RAs) are unnecessary and can be a significant nuisance, said **Martin Vecko**, director of flight safety at CSA Czech Airlines. These unnecessary RAs can create aircraft handling problems by over-responding pilots, a pilot input opposite to the RA and even the reduction in separation with aircraft not involved in the initial encounter. Many of these unnecessary RAs are triggered by the high vertical speed of aircraft climbing or descending to an altitude that will not cause a conflict, but sets off the look-ahead feature of TCAS.

TCAS is a valuable tool and its warnings must always be acted upon

immediately, leaving event evaluation for later, he said, but the system would be safer overall if unnecessary RAs can be reduced. The problem, Vecko said, is that modern aircraft have normal climb rates well in excess of the rate that will not trigger an RA. While Eurocontrol recommends a rate of 1,000 fpm in the last 1,000 feet of the climb, and International Civil Aviation Organization suggests 1,500 fpm, the vertical speeds in any autoflight mode available on CSA’s 737s and A320s, based on a flight data monitoring study, “are significantly higher than the recommended values.”

At present the best solution is for pilot intervention into the autoflight settings to manually reduce the climb rate, “but the reduction must be timely,” Vecko said, with hope that eventually manufacturers can modify the autoflight altitude capture laws. Also possible is a redesign of TCAS logic (see story, p. 34) or new ATC route systems that avoid simultaneous horizontal and vertical aircraft convergence, Vecko said. Given the time required to redesign systems, Vecko recommended that pilots “push one more button before leveling off” as the best approach to take today.

The development of a landing overrun risk assessment index through a joint airline, university and Netherlands’ National Aerospace Laboratory (NLR) effort was described by **Gerard van Es** from the NLR Air Transport Safety Institute. He said that data show that overruns are a rising proportion of total accidents. Using data from 182 overrun accidents and quick access recorder data from 14,000 landings, the team constructed a risk index that involved as many as 35 risk factors. The Landing Overrun Risk Index (LORI) has been successfully demonstrated and is available to help manage the risk of an overrun, van Es said. ➔