

MANAGING RISKS IN CIVIL AVIATION

Two members of the Independent Review Team, created by the U.S. Department of Transportation, review the team's assessment of the FAA's approach to safety.

BY EDWARD W. STIMPSON AND WILLIAM O. MCCABE

Flying is accepted today as an ordinary part of daily life and is remarkably safe. Commercial airlines in the United States now carry more than 750 million passengers a year. The last passenger fatalities occurred when a Comair regional jet crashed on takeoff in Lexington, Kentucky, in August 2006. Since that accident, the U.S. air carrier system has moved roughly 1.25 billion people with no on-board fatalities and one ground fatality.¹ Commercial airline crashes have become so rare that the metric the U.S. Federal Aviation Administration (FAA) now uses to track progress toward its safety goals is “fatalities per 100 million persons on board.” Principled collaborative safety partnerships between the FAA and the airlines have been important factors in that success.

Even while the accident rate remains at historic lows, a series of events earlier this year put the FAA very firmly in the public spotlight. These events led to inquiries from the U.S. Congress, significant news media attention and a broader questioning of the regulatory style and methods on which the FAA relies to keep the skies safe.

On April 3 and 4, 2008, the House Committee on Transportation and Infrastructure, chaired by Rep. James L. Oberstar (D-Minn.), conducted hearings on alleged safety issues at Southwest Airlines and possible lapses in FAA oversight. The committee's investigation, based on whistleblower complaints from FAA inspectors, explored allegations that Southwest, with FAA complicity, had allowed at least 117



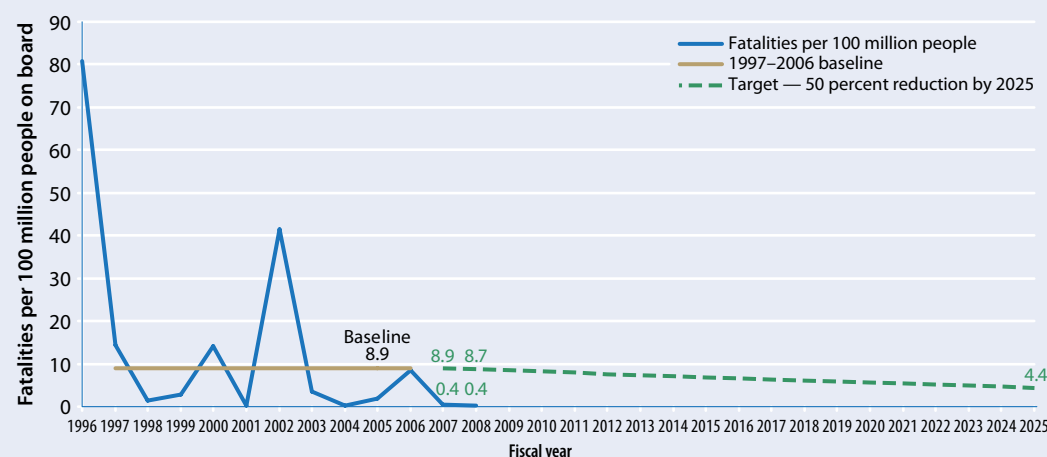
of its planes to fly in violation of regulations. The central issue was whether the FAA had succumbed to excessively “cozy” relationships with the airlines, routinely failed to take proper enforcement action and allowed noncompliant airlines to escape penalties by using voluntary disclosure programs without fixing their underlying safety problems. Such a relationship is termed *regulatory capture*.

many to suggest that the FAA overreacted and that the grounding was unnecessary. The combination of these events, and the extraordinary coincidences in terms of timing, produced for the FAA a perfect storm. First, the agency was broadly accused and roundly condemned for having slipped into overly friendly relationships with industry. Then, within days, it was accused of acting harshly and legalistically, causing

severe disruption and economic damage.

As a result, Transportation Secretary Mary E. Peters announced measures to improve the FAA’s safety inspection program and to minimize travel disruptions caused when airlines abruptly ground aircraft. The secretary also formed the Independent Review Team (IRT) to examine the FAA’s safety culture and its safety management.²

Air Carrier Fatal Accident Rates/Targets



Source: U.S. Federal Aviation Administration

Figure 1

In response to the congressional and public concern arising from the hearings, the FAA ordered an immediate nationwide audit of airline compliance with airworthiness directives (ADs). As a direct result of these “special emphasis” audits, problems quickly surfaced with American Airlines’ fleet of McDonnell Douglas MD-80s. On April 8, faced with the prospect of an imminent enforcement action by the FAA, American grounded its entire fleet of MD-80s — more than 300 airplanes — returning them to service only after the AD requirements had been met to the FAA’s satisfaction. American Airlines cancelled 3,100 flights over a four-day period, stranding or inconveniencing more than 250,000 passengers.

The grounding of American’s MD-80s came only days after the congressional hearings into the Southwest *non*-grounding — which has led

She asked the team to recommend ways to help optimize the agency’s effectiveness for airline safety. On the team with us were J. Randolph Babbitt, Professor Malcolm K. Sparrow and the Honorable Carl W. Vogt.

During our 120-day review, we met with a broad range of stakeholders in the Department of Transportation (DOT), airlines and manufacturers, trade associations, labor unions, the U.S. Congress and others. We identified six areas for comment and proposed specific actionable recommendations in five of them (see “Recommendations,” p. 12). Our 13 recommendations addressed ADs; voluntary disclosure programs; the culture of the FAA; safety management systems (SMS); and ATOS (Air Transportation Oversight System), information technology and the role of FAA inspectors.

Independent Review Team Recommendations

- The Federal Aviation Administration (FAA) should provide timely information about new airworthiness directive (AD) requirements in advance of compliance dates to all relevant FAA field offices. Those offices should then respond to any carrier that requests assistance in the form of “progress towards compliance” audits or reviews, in advance of the AD compliance dates.
- The FAA should retain the unambiguous right to ground any plane not in compliance with an applicable AD. Inspectors should not be required or expected to conduct any type of risk assessment before taking action on AD noncompliance.
- The FAA’s voluntary safety reporting programs are vitally important to the future of aviation safety and should be retained.
- The FAA must abide by the rules constraining these programs in order to prevent the erosion of compliance.
- Voluntary disclosure reporting program data must be routinely analyzed at a higher level within the FAA to identify trends and patterns that represent risk and to guarantee the integrity of the programs.
- The number of voluntary disclosures made is a composite measure and should not be used either as a performance metric or as a risk factor in any context.
- To maintain the assurance of confidentiality, the FAA should resist any efforts to relax or eliminate restrictions on disclosure.
- The FAA should explicitly focus on wide internal divergences in regulatory ideologies, where they exist, as a source for potentially serious error.
- Training for managers and principal inspectors should explicitly cover the management of contrasting regulatory views within the workforce; methods for moderating extremes in regulatory style; and methods for optimizing the regulatory effectiveness and coherence across a diverse team of inspectors.
- The FAA should deploy the recently established Internal Assessment Capability (IAC) to review the composition and conduct of any offices or teams identified under the recommendation above.
- The FAA should deploy the IAC routinely to review the culture and conduct of any certificate management offices where the managerial team has remained intact for more than three years.
- The FAA should embrace its own operational role in risk identification and risk mitigation as formally and as energetically as it has approached the oversight of industry’s safety management system implementation, and expedite its implementation planning.
- The FAA without delay should commission a time-and-motion study of its front-line inspection operation, to empirically assess the time demands of Air Transportation Oversight System (ATOS) and other information system implementations. Based on the results of such a study, agency leadership should establish clear expectations for what proportion of an inspector’s work week that data entry, data analysis and other computer-related tasks should reasonably consume. It should monitor progress toward more reasonable ratios as ATOS and other information technology systems are improved over time.

Airworthiness Directives

Acting FAA Administrator Robert A. Sturgell has initiatives under way to improve the AD process, along with the quality and clarity of the ADs themselves. He commissioned a joint FAA-airline industry team to review the AD process, from drafting, review and integration of ADs, to their audit and compliance enforcement. Our team wholeheartedly supports those initiatives.

Nevertheless, we expect some disparity in AD interpretation to continue. To reduce this disparity, we proposed that the FAA provide to all relevant FAA field offices timely information about new AD requirements before their compliance dates. The field offices should then respond to any carrier that requests assistance in the form of “progress toward compliance” audits or reviews in advance of the AD compliance dates. This collaboration can benefit the airlines, the FAA and the traveling public by reducing the chances of major disruptions.

We believe it is vital for the FAA to retain an unambiguous right to ground *any* aircraft found to be out of compliance with *any* relevant AD without having to prove anything else at that moment. An aviation safety inspector should not be required or be expected to make safety-of-flight determinations or other risk assessments before taking enforcement action about AD noncompliance. Mandating the use of evaluative criteria would likely only undermine the FAA’s ability to take effective enforcement action when necessary. Inspectors should be allowed to apply their professional judgment and discretion.

Voluntary Disclosure

Voluntary disclosure is a well-accepted component of any modern regulatory tool kit. U.S. airline accidents are now so infrequent that enhancing safety even further depends on identifying emerging risks as early precursors to an actual disaster. Most such events are known only to those directly involved and might otherwise remain hidden from the authorities. The three predominant programs are:

- Voluntary Disclosure Reporting Program (VDRP), used by airlines and other regulated entities;
- Aviation Safety Action Program (ASAP), used by 73 operators, with 169 programs for pilots, mechanics, flight attendants and dispatchers; and,
- Flight Operational Quality Assurance (FOQA), with participation by 20 airlines.

We reaffirmed the value of the FAA's voluntary disclosure programs as vital to continuing to improve safety. The programs are in line with modern regulatory practice and have suitably clear boundaries. We also reaffirmed how important it is for the FAA to comply with the guidelines and restrictions surrounding the voluntary disclosure programs to guarantee these programs' integrity and to prevent the erosion of industry's compliance incentives.

We were concerned about the potential misinterpretation of the variety of problems experienced and problems reported across airlines. It is misleading and dangerous to interpret variations in such metrics as either good or bad without systematic or scientific approaches to unbundling them. It is also important that participation in all of the voluntary disclosure programs depends on the assurance of confidentiality for information submitted. The FAA must protect that confidentiality for those programs to succeed.

FAA's Culture

We found the FAA's aviation safety staff to be clearly committed to their core safety mission. At the same time, we found remarkably varied regulatory ideologies among the staff. We believe agency leadership should pay particular attention to this issue and

create intervention mechanisms to help guarantee coherence and rationality in regulatory practice. A case in point is identifying and dealing with potentially troubled certificate management offices (CMOs), where sharp conflicts of regulatory ideology may persist. The concentration should be on offices or teams where enforcement initiation is severely skewed across the inspection team. Finding such situations does not necessarily mean that the enforcement-generating minority is wrong or in need of correction. Nor does it mean that *anyone* is necessarily wrong; it just indicates a wide divergence in regulatory preferences, possibly affecting the consistency of the decision-making processes.

Because of this potential, we believe the FAA needs a method to review the overall regulatory functioning of CMOs, using teams of experienced managers drawn from other FAA offices. To accomplish this goal, the recently created Flight Standards Service Internal Assistance Capability (IAC) can be a good vehicle. The alignment of its design purpose with these types of office-based interventions could help address regulatory culture variations.

During his April congressional testimony, DOT Inspector General Calvin L. Scovel III suggested creating another independent office inside the FAA that reports directly to the administrator to receive and handle complaints about critical safety issues. While we considered this option, we believe such a structure now should be unnecessary, especially if the measures mentioned above can be used to identify and resolve clashes of regulatory ideology within FAA offices.

It also has been proposed to mandate rotation of CMO managers and/or supervisors on a three- or five-year basis. Despite the risk of regulatory capture that might be produced by longstanding relationships between regulators and regulated entities, we believe there is a strong countervailing value in building and maintaining a detailed knowledge of a specific airline's operations. The risks of coziness between the regulators and the regulated can be effectively mitigated through routinely scheduled IAC reviews of any offices in which the managerial team has remained intact for more than a preset number of years. This approach provides a more focused and diagnostic way of dealing with the regulatory

Independent Review Team: Babbitt, McCabe, Stimpson, Vogt, Eby and Sparrow



capture risk while avoiding the costs and disruption of mandated rotations.

Safety Management

We were encouraged by the general level of SMS understanding and implementation among the airlines we visited. Several SMS programs reflected a clear understanding of the various methods of hazard discovery and the need for formalized assessment, analysis and resolution of the risks. They further addressed the need for follow-through and methodological rigor to ensure continued mitigation of those risks.

In assessing the FAA's approach to SMS, we distinguished three contributions the FAA can make:

- Policy and rule making should rest on sound risk assessments and analysis. The agency has demonstrated a sound ability in this role;
- The FAA should specify requirements for SMSs to be constructed and operated by regulated entities, and then audit them for adequacy, effective operation and compliance; and,
- The agency should deal with risks that belong at the FAA level — those that require national or governmental attention — by establishing systems *within* the agency to identify and mitigate risks that transcend individual regulated entities, or that straddle multiple sectors of the industry.

We noted the agency will have trouble meeting the International Civil Aviation Organization's deadlines for designing and implementing SMS regulations by November 2009. However, the FAA's SMS program engages with airlines on a voluntary basis and in a healthy fashion, even in advance

of any final rule. We are confident that the FAA, in its SMS oversight role, will help airlines less advanced in this area to catch up. The agency also should be able to overlay a more standardized framework on the miscellaneous approaches to SMS now being pursued across the industry.

We observed widespread confusion throughout the FAA regarding the nature of its own operational role under SMS. The FAA has demonstrated a capacity to conduct sophisticated analyses of policy issues and some high-profile risk concentrations. It is also developing certain technical capabilities that will be pivotal to this operational role, and it has begun to assemble the requisite analytic teams. However, the FAA has paid less attention to the organizational challenges in structuring this work. We do not believe the FAA is focused sufficiently on its ability to expand and develop its own operational risk management capabilities.

Oversight

The FAA aviation safety inspector workforce is talented, motivated and professional. However, inspectors' productivity and effectiveness are reduced by the number and diverse nature of the information systems involved in their work. In our interviews with inspectors in 15 FAA field offices, we found that ATOS was the primary subject of concern. It needs continued close attention to live up to its promise. We believe that further refinements of this system must be guided by a solid empirical understanding of how inspectors now spend their time.

Summation

We completed our IRT work on Sept. 10, 2008, when Peters accepted the report in its entirety and directed the

FAA to implement all 13 IRT safety recommendations.³ She said that the recommendations in the report "will improve both the intensity and the integrity of the FAA's safety program," and that the agency would begin implementing the recommendations immediately. She then noted, "Today, the Independent Review Team has delivered a blueprint that will assure continued safe skies ahead for America. It is my hope and expectation that this report will be cited as one of the reasons when, years from now, people ask why our skies have been so safe for so many for so long."⁴

Notes

1. Statistics were reported to the IRT by the FAA.
2. Available via the Internet at <www.dot.gov/affairs/dot5408.htm>.
3. The IRT report is available at <www.dot.gov/affairs/IRT_Report.pdf>.
4. Available via the Internet at <www.dot.gov/affairs/peters091008.htm>.

About the Independent Review Team Members

Edward W. Stimpson is chairman of the IRT, chairman of the FSF Board of Governors and former U.S. ambassador to ICAO.

J. Randolph Babbitt is a partner in the Aviation & Aerospace Section of Oliver Wyman, a global strategy consulting firm.

William O. McCabe is president of The McCabe Group, an aerospace consulting firm, and sits on the FSF Board of Governors.

Malcolm K. Sparrow is professor of the practice of public management at the Harvard Kennedy School of Government.

Hon. Carl W. Vogt, FSF chairman emeritus, is a former chairman of the U.S. National Transportation Safety Board and member of the White House Commission on Aviation Safety and Security.

Clifford C. Eby, deputy administrator of the U.S. Federal Railroad Administration, was staff director of the IRT.