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Flight Safety Foundation realigns priorities to meet emerging threats.

Beyond Technical

BY WILLIAM R. VOSS

For 60 years, Flight Safety Foundation periodically has reinvented itself to meet the demands of the times. After a decade of spectacular reductions in accident rates, once again the time has come to refocus the Foundation on a new crop of emerging threats to aviation safety.

For many years the risk of having an accident was reduced by invention and communication; safer hardware and techniques were developed and information about those developments was disseminated. Lives and aircraft were saved by fostering the open exchange and publication of objective, accurate technical information.

Our orientation toward excellence in the technical aspects of aviation safety — including how to mitigate human error — also carried forward, for example, to the 1990s,

when international specialists transformed accident data into credible methods of reducing approach-and-landing accidents, including those involving controlled flight into terrain, and the other dominant accident categories.

The FSF Board of Governors, staff and I recognize that we not only must build on these solid technical underpinnings but also prepare for a new generation of challenges to safe flight. We have begun to reshape our activities into a global system — including establishing a network of FSF Fellows around the world — targeting emerging risks, expanding beyond our legacy of distributing information through informal networks. Flight Safety Foundation of the future will be less about inventing and communicating, more about implementing and enabling.





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We have identified these emerging risks:

- Unprecedented growth
- Lack of qualified personnel
- Lack of political will
- Safety management challenges
- Rise of criminalization
- ATC risks
- Runway safety

Flight Safety Foundation and our industry partners know how to achieve high levels of safety, as proven by the record in North America, Europe and elsewhere. For the most part, this knowledge has reached into the farthest corners of the world. Yet we have found that many safety professionals, while knowing what to do, cannot do it because of issues of political will or failure to commit adequate resources. Good regulatory oversight of civil aviation is not expensive relative to other costs in a state's aviation system, but governments have to be willing to do it and to pay for it. If they can't do it alone, they must partner with neighboring governments. One way or another, the job of safety oversight has got to get done.

This is an example of the emerging challenges already being seen in the aviation system, more strategic and structural than past concerns. The changing nature of the challenges has not diminished the world's need for an objective, independent aviation safety organization. But the

organization must evolve. Fewer future challenges will have purely technical solutions. Instead, they will engage us in complex political, social and cultural issues that industry and government bodies are poorly positioned to deal with.

The Foundation has that important ability to “tell the truth to power” that ensures leaders are aware of the safety consequences of their actions or inaction.

The “new model” Flight Safety Foundation that we begin building in 2008 will carry over our strongest assets but also aim to develop more effective ways of empowering people at all levels of responsibility to apply their knowledge, skills and resources — and to overcome impediments — to consistently achieve the norms of safety performance that the international aviation community expects.

The core mission of the Foundation remains reducing the risk of aviation accidents by ensuring the global dissemination of safety information and interventions to all segments of the aviation industry. We will continue this important mission while working to overcome social, political and economic barriers to the implementation of proven interventions, aligning our work with the *Global Aviation Safety Roadmap*, the international aviation safety plan adopted by ICAO that focuses limited resources on the highest risk areas.

Flight Safety Foundation will work more closely with industry partners, and rely extensively on partnerships such as the Industry Safety Strategy Group, especially on initiatives that require a global safety network and/or assistance networks.

FSF Fellowship Program

Under the new FSF Fellowship Program, experienced safety professionals will be named FSF Fellows and located around the world performing functions that mitigate developing safety risks either in growth “hot spots” within the developing world, such as South Asia, or specializing in important developments in any world region, such as the implementation of new generation air traffic control systems in the

The growth of operations around the world will reflect exploding demand for air travel.



United States and Europe or attacking the problem of criminalization worldwide.

FSF Fellows will develop information sources, personal relationships and safety intelligence insights to help focus global aviation industry resources where they can do the most good in terms of the *Roadmap*; advise the region's regulators and aircraft operators on developing issues; establish high-level government relationships that enable them to "tell the truth to power" and improve transparency of civil aviation activities and safety to the public; and offer an accessible, credible source for news media representatives, improving the accuracy of reporting on aviation safety.

Another role of FSF Fellows will be to develop relevant technical solutions — or help others to develop the solutions — that target problems in various industry segments and geographic regions such as business aviation in Europe, the Middle East and Asia; low-cost carriers in Asia and Europe; or air navigation service providers worldwide. The two-way communications channel that FSF Fellows establish immediately will benefit all sponsoring industry partners, and ultimately will benefit the entire aviation community.

The key advantages of an FSF Fellow working as an employee of Flight Safety Foundation — typically sponsored by a contract of three to five years, funded by grants from coalitions of government or corporate industry partners — are freedom from external ties or obligations, the flexibility to work on the ground in a developing region, and direction solely from the Foundation.

Safely Managing Growth

Current projections show the global airline industry doubling in the next 20 years. Projections recently presented

by Alteon Training, a subsidiary of The Boeing Co., show the global airline fleet doubling to more than 35,000 airplanes, with 363,100 new pilots required to support the projected fleet growth and pilot retirements from 2006 to 2026. Boeing also says the fleet size in the Asia Pacific Region will triple in 20 years. The Middle East fleet is expected to grow at an annual rate of 7 percent, doubling in just 10 years.

The demand for air transportation in high-growth regions will not go away. There may be US\$100 per barrel oil prices, and strong pressure from environmental concerns, but these factors are overridden by millions of people entering a new global middle class around the world, who insist on traveling. Regulators in developing states are under enormous political and commercial pressures; governments that have waited decades for prosperity are not inclined to say "no" to growth. It is not certain that safety concerns would drive down demand, so it is not safe to assume that economics and market demand will force safety improvements. Demand, and scarce supply, may overwhelm safety considerations. This poses a significant risk to the industry because some of the high-growth regions — now or projected — have had persistently poor safety records. Governments and regulations need the advice and positive reinforcement that Flight Safety Foundation must be positioned to offer.

In responding to emerging safety challenges in the rapidly developing regions of the world, we cannot afford to let down our guard in North America and Europe, where traffic growth will further test an already strained infrastructure. Although growth rates will trail developing areas of the world, the numbers are already large and the influx of needed airplanes and pilots

will pose significant challenges. Boeing estimates Europe will need 73,400 pilots over the next 20 years.

It is possible that aviation growth in Europe could be impacted by the public perception that aviation is a major contributor to global warming. While this charge might be greatly overstated, one cannot argue that the conversation has changed regarding aviation in Europe, shifting from safety to carbon, and that in itself is reason for concern.

The important role of safety management systems (SMS) in coping with growth should not be underestimated, yet the SMS template, which represents a fundamental overhaul of the global regulatory system, contains elements that appear threatening to existing holders of authority, such as regulators and labor unions. The Foundation's drive to support SMS proliferation guided by the *Roadmap* is undiminished.

Not Enough People

The availability of skilled personnel poses two threats to global aviation, the most worrisome being the safety of operations, followed by limited growth potential. Lack of qualified pilots and maintenance personnel has become acute in Asia and Africa. The problem has begun to emerge in other states and regions such as Russia, Eastern Europe and the Middle East, and soon will spread to the rest of the world. Programs must be established that can generate qualified professionals to keep up with demand, without compromising safety standards (see "Zero Time to First Officer," p. 38). Some accidents still under investigation look suspiciously like people losing control of aircraft during normal operations, a bad indicator of the level of proficiency of pilots in those airplanes right now.



Regulators' development of strategies and information needed to ensure controlled safe growth of the industry must consider the danger of bowing to massive economic and political pressures to sustain aviation system growth rates with under-qualified people.

The personnel crisis is a threat that no entity in the airline industry or government can address alone. It requires specialists in many fields to work together to address the problem. The Foundation believes some tools in place now, like flight operational quality assurance, could provide an early warning when an airline's expansion exceeds the capability of its people. Measures will be needed to make sure crews are of the appropriate quality, and airline operations are limited to those that the workforce can support. China has taken such measures, but that is the exception rather than the rule.

Shaky Political Will

Safety oversight in parts of the world has been compromised by economic interests. Unscrupulous aircraft operators exploit weaknesses in the aviation system for profit, and their carelessness causes accidents that kill people. What happens on charters during the *haj*, for example, is a terrifying and blatant disregard for safety standards and regulations, a flagrant end-running of government oversight systems. It is the job of regulators to control these operators, but while some states have taken action, the highest levels of governments in other states have lacked the political will to do so. Safety professionals in these situations — from civil aviation inspectors to directors general of civil aviation — have been left on their own, sometimes in grave personal danger, confronting difficult operators and never knowing when the next enforcement action they take will be their last.

In states with highly developed aviation industries and infrastructure, it is easy to ignore the circumstances of the sudden departure of a developing nation's director of civil aviation and not question the event. It must be appreciated that promoting aviation safety in the developing world will require more effort than shipping training materials. We must help others deal with the really tough political problems. It is worse than useless to tell people how to regulate safety if they are not allowed to act.

Taking ATC for Granted

The United States and Europe with increasing urgency are beginning to implement their next generation ATC systems, while states elsewhere are involved in major upgrades. The United States is driven by significant traffic congestion and flight delays, and Europe, also coping with congestion and delays, needs better ATC efficiency to hit carbon targets under environmental regulations. These systems must meet future demand, redefining ground and airborne separation responsibilities, and predicted performance must match real life experience based on objective assessments; experience has shown that new ATC technology rarely operates as expected.

The coming ATC changes must be revolutionary and will impact the level of safety in ways that will be difficult to predict. These are end-to-end changes that will need an end-to-end safety perspective. The industry cannot allow improvements in one area, such as required navigation performance, to increase the severity of consequences of an ATC error, such as incorrect altitude assignment, or a pilot error, such as an altitude deviation. Safety management systems and continuous feedback from operational experience will need to be applied to this emerging challenge.

Safety programs for the flight deck and ATC have developed over time in separate vertical "silos." In addition, labor-management issues impact the change process. Flight Safety Foundation and industry partners must help specialists within these disciplines and among different air navigation service providers to apply a cross-cutting approach — a perspective of the big picture that bridges the silos — providing a forum that helps them focus on safety dimensions separated from labor-management issues and mitigate tensions. At every level, we have to build mechanisms that allow for the exchange of data and the development of ATC solutions.

To Err Is Criminal?

Flight Safety Foundation will continue to strongly oppose the unwarranted application of criminal laws to aircraft accident investigations. When passengers are killed in an aircraft accident, the public's first reaction is to want to assign blame, identify individuals to hold accountable and punish them with fines or imprisonment. It is difficult for those who are not aviation safety professionals to grasp how criminal investigations interfere with safety investigators' efforts to identify the accident's probable cause and compromise programs that prevent recurrence of accidents.

As a result, legal systems around the world have tried to use criminal charges to obtain justice and, ostensibly, to improve safety. The Foundation's future role will be to educate prosecutors, jurists and the public around the world about the practical safety consequences of their actions. This message must be delivered by an independent safety authority; it cannot be a company or organization that has a monetary or legal stake in the case.



Justice is a matter of balance, balancing the human desire to assign blame and exact retribution versus the proven benefits of unhindered access to the facts of the accident. It is up to the Foundation and our partners in this effort to make that case, not trying to avoid justice, but to restore the balance that lets us save other lives by preventing accidents in the future.

If the global movement towards criminalizing accidents and abusing safety data goes unchecked, the proactive safety approach that depends on trust, openness and innovation — which has driven the recent dramatic improvements in the accident rate — will be compromised irreparably. The free flow of confidential data that can warn us of an impending accident will be lost, and there will be more accidents.

Grants and Endowments

Many types of companies have a stake in the success of the aviation community and thus have many incentives to help prevent accidents and incidents that could curtail the growth of markets they serve. Examples include aviation insurers, airport operators, aircraft lessors and equipment manufacturers. Given the scope and scale of emerging safety challenges and the societal benefits of effectively addressing them, Flight Safety Foundation is and will remain in a unique position to help reduce accident risks that — in addition to loss of life, injuries and/or aircraft destruction — cause myriad damages to business and reputation.

To ensure that the Foundation is equipped to respond to safety risks as they arise anywhere in the world, funding will be sought in the form of grants and endowments. We will seek funding from operations within

traditional FSF membership groups, such as aerospace manufacturers and airlines, and from others, such as aircraft leasing and holding companies and philanthropists.

In addition to helping fund existing FSF efforts, endowments will be explored specifically as a means of funding the work of FSF Fellows, who initially would demonstrate their value under a program supported by short-term grants. The presence of FSF Fellows in a developing state or region will make aviation safety expertise accessible and affordable to the region's operators. Asia alone is expected to generate US\$1 trillion in sales of equipment and supporting services during the next 25 years. It is reasonable to expect that industry leaders would be willing to make strategic investments that could reduce operational risk in that trillion-dollar market.

Poised for Action

In summary, Flight Safety Foundation will remain a neutral forum, an integrator of initiatives and an independent advocate. Some of our efforts will be directed to addressing the newly emerging threats, but our most dramatic change will be the placing of FSF Fellows on the ground around the world to serve as accessible and dependable safety touchstones.

We remain unconstrained by geographic limitations or industry boundaries. Our safety mission spans all industry segments, working to address safety challenges across organizational boundaries. Time and again, we have demonstrated our ability to be a catalyst in producing end-to-end safety solutions, even those that might require mitigation of errors across flight decks, control rooms, airports and airplane engineering and maintenance facilities.

Even now the FSF-led Runway Safety Initiative is striving to reduce the risk of an accident on or around runways in an effort that brings together regulators, unions, pilots, operators, ATC providers, airports and manufacturers.

We will build synergy with industry partners by demonstrating that Flight Safety Foundation will add a “safety only” portfolio of services that will not compete with our partner for-profit organizations. Technical work of other organizations also will not be duplicated.

One of Flight Safety Foundation's key roles is continually to stimulate the safety consciousness among institutions around the world. We have a proud history and a well-earned reputation for technical competence and independence, marked by data-driven assessment of safety risks. Our work has been, and will continue to be, driven by data rather than politics or commercial interests, a capability that will be enhanced as we add FSF Fellows and other innovations.

Updated priorities alone will not accomplish the work at hand. Future core competencies for our Board of Governors, our directors and staff, our FSF Fellows and participating Flight Safety Foundation members require some time to develop. These competencies include research and analysis of safety-related industry issues; analysis of trends in aviation safety; program/product research and development; analysis of safety data; and the ability to understand data/performance gap analysis as required by the *Roadmap*. This upgrade in vision and scope gradually will have an impact on the entire FSF structure and its functional objectives, one that we expect to once more raise the level of safety in global commercial aviation. ●