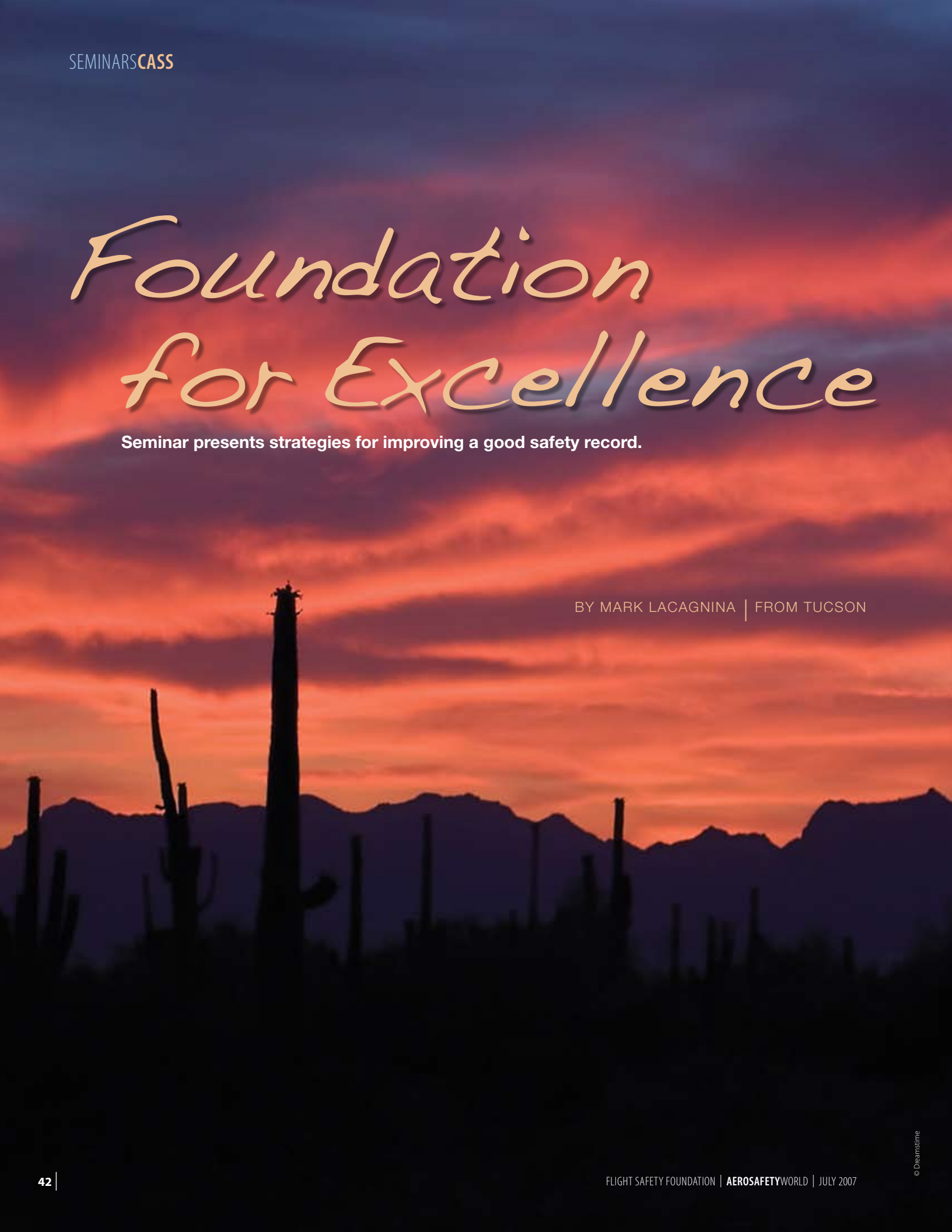
Foundation for Excellence

Seminar presents strategies for improving a good safety record.

BY MARK LACAGNINA | FROM TUCSON



Speakers from left, Matthews, Agur and Rohr

Photos: J.A. Donoghue

"Corporate aviation has a good story to tell, and the story will continue to get even better." This was the safety message shared with aviation professionals at this year's Corporate Aviation Safety Seminar (CASS) by Robert Matthews, Ph.D., lead safety analyst at the U.S. Federal Aviation Administration (FAA) Office of Accident Investigation.

More than 425 attendees, hailing from 10 countries, gathered in Tucson, Arizona, U.S., May 8–10 for the 52nd annual CASS, whose theme was "Safety: The Foundation for Excellence." The seminar was presented by Flight Safety Foundation (FSF) and the National Business Aviation Association (NBAA).

Detailing recent safety records, Matthews said, "The story is not so strong in business aviation, but the trends are going in the right direction." According to FAA definitions, the primary difference between corporate and business aviation is that corporate aircraft are flown by "professional" pilots — paid employees of the company; business aircraft are flown by "nonprofessionals" for transportation required by the businesses in which the pilots are engaged.

Corporate and business aviation activity in the United States is nearly equal, with about 3 million flight hours logged per year by each segment. Matthews pointed out, however, that in the five-year period from 2002 to 2006, corporate aviation had seven fatal accidents while business aviation had 85 fatal accidents.

Among possible factors accounting for business aviation's "less-positive" safety record are the nonprofessional pilots, less organizational support and the greater fleet mix. Matthews noted that 75 of the 85 aircraft involved in the fatal accidents had reciprocating engines — 50 singles and 25 twins. "If we are going to improve the accident rate in this industry, the focus should be on business aviation," he said.

Improvement of the corporate aviation safety record, meanwhile, will continue to be driven by fleet changes — mainly, the replacement of older aircraft — installation of modern avionics equipment and by "continuing to address the issues that don't go away," Matthews said.

Counterpoint

"There's no doubt that corporate aviation has a good safety record, but is it as good as it could be?" The question was posed by Peter v. Agur Jr., founder and managing director of The VanAllen Group. The answer, obviously, is no, and Agur provided some targets for improvement.

The targets arose from his study of 675 accidents involving turbine aircraft flown by airline and charter pilots, as well as corporate pilots. "What got my attention was that 23 percent of the accidents — nearly one-quarter — involved the pilots' technical deficiencies,"

Speakers from left, Healing, Heinrich, Stein, Sands, and Solan.

Outgoing FSF CAC chairman Edward Williams and incoming chairman Patricia Andrews

Photos: J.A. Donoghue

he said. "This is a piece of the safety puzzle that we do not often talk about, but it is one of the biggest pieces."

More than 80 percent of the accidents involved nonadherence to standard operating procedures (SOPs), which Agur classified as PINCs, procedural intentional noncompliance, and PUNCs, procedural unintentional noncompliance.

"The data show that corporate aviation is not as good as the airlines in preventing PINCs and PUNCs," he said. "We can do better. This is a piece of the puzzle that we can do something about and need to keep focusing on."

Safeguards

Ray Rohr, standards manager for the International Business Aviation Council, discussed tools included in the International Standard for Business Aircraft Operations (IS-BAO) for designing a safety management system (SMS).

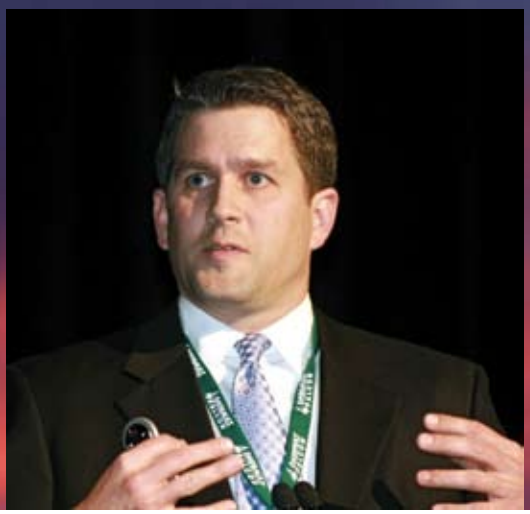
An SMS, he said, is a proactive process that includes identifying hazards, assessing and measuring safety risks, developing measures to eliminate the hazards and/or reduce the risks to acceptable levels, tracking to ensure that the measures are appropriate and effective, and modifying the measures when necessary. He said that gap analysis — "determining what you have and what you need, and what you do and what you need to do, to meet the goals of an SMS — is a very powerful tool for implementation."

In summary, Rohr said, "Your SMS will cost you money to implement but will save you money in the long run."

A critical element of an SMS, threat and error management (TEM), was discussed by Peter Stein, base manager and chief pilot for Johnson Controls, and Durwood Heinrich, Ph.D., director of aviation and chief pilot for PetSmart.

They described TEM as involving a mindset that humans make mistakes and that error cannot be eliminated but must be managed before it leads to an "undesired state" — for example, an unstabilized approach. Heinrich said that TEM is a reactive process involving the identification of threats and errors, assessment of the risks they pose and development of strategies to avoid or "trap" — detect and manage — them.

Stein noted that the FSF Corporate Advisory Committee and the NBAA Safety Committee recently launched a project to educate corporate/business aircraft operators about TEM. An initial objective is to develop a portable, interactive classroom course for business aviation professionals. "Our ultimate goal is to weave threat and error management principles into the very fabric of business aviation operations," he



said. "Keep your eye on the Foundation's TEM Web page."[1]

Data Mining

An emerging tool for corporate aviation accident prevention, flight operational quality assurance (FOQA), was discussed by Richard Healing, senior partner with R³ Consulting, and Jeffrey Sands, director of flight operations, finance and administration for Altria Corporate Services.

"Data are the foundation for preventing accidents," Healing said. "We are not taking full advantage of the information that is out there." He noted that FOQA data can help to identify precursors to human error, as well as reveal operational, maintenance, training and organizational problems.

Healing provided several examples of safety improvements, as well as economic and efficiency enhancements, that the airlines and the U.S. military have achieved from FOQA. A challenge to corporate operators, which have relatively small fleets, is to collect sufficient data for useful analysis and trend identification. "Corporate and business aircraft operators need to work together, to share data," he said.

Sands shared firsthand experience as a participant in the FSF/NBAA corporate FOQA (C-FOQA) demonstration program. His company is in its third year of collecting and analyzing data from two airplanes, and had been surprised by some initial revelations, such as a greater-than-expected incidence of bank angle exceedances. These were traced, in part, to a departure procedure at one airport that requires a steep turn soon after takeoff. Following discussions with pilots about the situation, bank angle exceedances dropped from 33 the first year to two the second year.

Sands said that the company's C-FOQA experience has reduced its risk of an accident by about 25 percent. "That is a conservative estimate," he added.

Chris Solan, manager of flight safety for Eclipse Aviation, said that FOQA is among the safety programs that the manufacturer will provide for its customers. He noted that Eclipse is studying technologies that would enable the transfer of data directly from the airplanes to the manufacturer, with no required intervention by the operator.

Among other topics discussed at CASS were in-flight fires, engine failures, maintenance human factors, ground accident prevention, deep vein thrombosis and medical certification issues. Next year's CASS is scheduled to be presented in Palm Harbor, Florida, April 29 through May 1.●

Sands said that the company's C-FOQA experience has reduced its risk of an accident by about 25 percent. "That is a conservative estimate," he added.

Note

1. The information can be found at <www.flightsafety.org/tem_home.html>.