FLIGHT SAFETY FOUNDATION
HUMAN FACTORS & AVIATION MEDICINE
Vol. 44 No. 1 *For Everyone Concerned with the Safety of Flight* January–February 1997

FAA Identifies CRM-related Issues and Training Needs in Flight-inspection Missions

Crew resource management (CRM) programs should be tailored to specific operations, rather than imported from another environment, says the report. Moreover, success depends on the active involvement of each program's flight crews.

Robert L. Koenig
Aviation Writer

After an accident that killed all three crew members, involving a Beech Super King Air 300/F aircraft in the Blue Ridge mountains near Front Royal, Virginia, U.S., in October 1993, U.S. National Transportation Safety Board (NTSB) investigators found that "no formal or informal crew resource management [CRM] program was in effect within the [U.S. Federal Aviation Administration (FAA)] flying operation." The aircraft was owned by the FAA and operated by the Flight Inspection Area Office (FIAO) based at Atlantic City, New Jersey, U.S. [For a detailed report on the accident, see *Accident Prevention,* August 1994.]

The NTSB inquiry also determined that the pilot had a history of ignoring visual flight rules, failing to adhere to checklists and not acknowledging the second-in-command's efforts to bring problems to his attention. Despite complaints by other crew members, the pilot's supervisors had taken no corrective action.

Investigations of two earlier accidents involving flight-inspection aircraft — one in 1988 near Oak Grove, Pennsylvania, U.S., and another in 1986 near Liberal, Kansas, U.S. — had also found problems related to situational awareness, communications and crew coordination.

Because elements of ineffective CRM appeared to be factors in the three accidents, the FAA increased its efforts to develop a CRM training program for all FAA air crews, including a specific training course for the flight-inspection mission. The FAA Civil Aeromedical Institute (CAMI) in Oklahoma City, Oklahoma, U.S., helped guide that development with a needs-analysis study that identified aspects of crew performance that might be most improved by CRM training.

A recent CAMI report, *Flight Inspection Crew Resource Management Training Needs Analysis*, presented the results of that study. The report outlined areas in which CRM training would be helpful and recommended steps for developing a CRM training program. The report, by CAMI researchers Lawrence L. Bailey and Rogers V. Shaw, focused on FAA training needs, but many of its findings and recommendations apply to other flight crews.

"Flight inspection" refers to airborne tests conducted to ensure that radio-navigational aids are transmitting data accurately and to ensure that instrument flight procedures are accurate and will safely guide aircraft to their destinations. A flight-inspection crew comprises a pilot-in-command (PIC); a second-in-command (SIC), or copilot; and an electronics technician.

[Flight-inspection missions differ from other forms of flying (such as passenger transportation) because most flight maneuvers are performed within the terminal area, at low altitudes, and, at times, running counter to the established air traffic–flow pattern. This requires a high degree of traffic

vigilance, as well as coordination among the flight-inspection crew, air traffic control and a ground-based electronics technician.]

The report emphasized the importance of premission briefings, the need to address deficiencies in technical training before focusing on CRM training and the importance of involving all crew members in flight-safety issues. Although the report recognized the need for organizations to make a long-term commitment to CRM training, the researchers suggested that the training should be focused on issues that are under the crew's full or partial control.

The researchers examined the lessons learned from aircraft accidents that involved FAA flight inspections and surveyed flight-inspection specialists to learn more about the aspects of flight crew performance that might benefit most from CRM training.

The survey of CRM-related problems in FAA flight-inspection incidents found that 43 percent "occurred while performing aircraft maneuvers during the airborne-testing phase of flight." Problems included communication errors, errors in information processing and factors related to the crews' "interpersonal climate." The report recommended that the FAA:

- Develop a CRM-awareness course from within the FAA, rather than using a CRM course that is not tailored to its needs;
- Ensure that the CRM program can be "sustained over the long term, rather than attempting to implement a 'quick fix'";
- Involve flight crews in developing the CRM course;
- Develop a "common language" to allow flight crews and AVN [FAA Aviation System Standards] management to discuss CRM issues;
- Develop a mission-based simulation training environment for flight inspectors to take advantage of the CRM practice and feedback phase; and,
- Adopt "organizational reinforcers" to ensure that the FAA supports CRM principles.

Driskell and Adams define CRM as "effective utilization of all available resources — hardware, software and personnel — to achieve safe, efficient flight operations."[1]

Although there are other types of teamwork training, CRM training tends to focus on crews or teams that must, on occasion, make important decisions quickly. For example, flight crews sometimes have only seconds to make decisions that can have life-or-death consequences for the aircraft's crew and passengers. CRM training emphasizes development of "the resource management skills necessary to ensure that all group members are operating from a common frame of reference," the report said.

Typically, the skills developed in CRM training include communication skills; methods of identifying problems and making quick decisions; self-monitoring skills for critiquing decisions and actions of the crew; skills for resolving conflicts; skills related to crew leadership; interpersonal skills to help maintain a professional climate among crew members; methods of focusing on the situation and avoiding distractions; ways to better plan and distribute workload; and techniques for recognizing and reducing stress.

In most organizations, CRM is conducted in three phases: formal classroom training (called the "awareness phase"); practice and feedback, often using simulations that are videotaped and later played back; and organizational reinforcement, in which the organization that sponsors CRM training adopts policies and procedures that reinforce CRM principles.

CRM training tends to focus on crews or teams that must, on occasion, make important decisions quickly.

Before the 1993 accident in Virginia, the FAA had sponsored two CRM training initiatives. The first, in early 1990, gave CRM-awareness training to all FAA flight-inspection pilots, with a program developed and conducted by United Airlines.

"Although the course exposed participants to CRM principles, it was not customized to the mission needs of flight-inspection crews," the report said. One major flaw was that electronics technicians were not included in the training, and another problem was that the FAA did not integrate the stand-alone course into a long-term CRM program.

To address those problems, the FAA Flight Safety Program began in 1992 to develop long-term CRM training for each of the five FAA aircraft programs: flight inspection, flight standards, the Washington flight program, research and development, and the training academy. During 1993, an informal task force (which included the FAA senior flight safety officer, CAMI officials and representatives of flight-inspection crews) began developing a prototype CRM training program.

After the Virginia accident, the FAA named a formal CRM task force and instructed them to complete the training program by mid-1994. The group developed a one-day postaccident CRM-awareness training course that was to be followed — after the CAMI needs-analysis study — by a three-day CRM course.

FAA officials asked CAMI to identify the most problematic phases (from a CRM perspective) of flight-inspection missions;

the crew-management dimensions that should be most emphasized in CRM training; and the steps that the agency could take to support a long-term CRM initiative.

One means of identifying CRM training needs was by analyzing accident reports on FAA flight-inspection missions such as the 1993 Virginia accident and the previous accidents in Pennsylvania and Kansas.

[The Pennsylvania accident, which involved a Rockwell Jet Commander operated by the Atlantic City FIAO near Oak Grove, Pennsylvania, on Nov. 2, 1988, killed all three crew members. The NTSB report determined that both engines flamed out after the crew activated the plane's surface-deicing system and ice broke loose and entered the engine intakes. The crew was unable to restart the engines during the emergency descent. Both pilots were reported to have undergone stress in their private lives that "could have affected their performance," the report said.

[In the nonfatal Kansas accident, a Rockwell Sabreliner was destroyed during a landing. The NTSB determined that the SIC was the pilot flying and that the aircraft touched down 6.4 meters (21 feet) short of the runway. The landing gear collapsed, causing the plane to skid the length of the runway before stopping on a golf course 0.4 kilometer (0.25 mile) away. The report also said that the PIC failed to follow proper flight procedures.]

CAMI researchers identified other CRM training needs by examining the results of FAA safety-meeting discussions after the Virginia accident. In addition, the researchers asked flight-inspection specialists "to provide narratives of problematic situations that they had encountered while performing a flight-inspection mission."

The purpose of the safety survey was to identify CRM dimensions that should be addressed in CRM-awareness training and to outline the organizational commitment needed to support a long-term CRM effort.

The specialists surveyed for the study were recruited during a one-day postaccident CRM-awareness course conducted at each FIAO. A total of 58 flight-inspection specialists (representing 30 percent of the flight-inspection workforce) volunteered to participate in the study. They included PICs, SICs and electronics technicians. They completed the questionnaires after the CRM-awareness sessions and took part in group discussions after viewing an aircraft accident scenario similar to that of the Virginia accident.

To protect the participants' anonymity, CAMI researchers did not collect demographic data, and they destroyed the surveys after the data were entered for analysis. "These measures were taken to assure the participants that they could be candid with their responses and that no punitive action could result from their participation in the survey," the report said.

The flight-inspection specialists completed questionnaires for two separate surveys: a safety survey and an incident survey.

The purpose of the safety survey was to identify CRM dimensions that should be addressed in CRM-awareness training and to outline the organizational commitment needed to support a long-term CRM effort.

The survey presented the specialists with 109 issues that were extracted verbatim from written summaries of safety discussions that were conducted in November 1993, after the Virginia accident. For each of those safety issues, the specialists indicated which of 13 performance categories — such as mission analysis, situational awareness and communication — most applied (box, page 4). A given safety issue could be assigned to multiple categories, if appropriate. Each of the categories was considered to be a potential CRM-awareness training module.

The CAMI researchers then cross-tabulated the 13 performance categories with the 109 issues that were raised in the November 1993 safety discussions. The results were ranked according to the number of times that the issues were indicated by respondents to the safety survey. The resulting "frequency matrix" represented the safety issues and associated training needs identified by the safety survey, according to perceived importance (Table 1, page 5).

To determine the safety survey's hierarchical structure, researchers converted the frequency matrix into subgroupings, or "clusters." Cluster analysis indicated that "the training needs that [emerged] ... [could] be further divided into two categories: (1) areas of personal concern and (2) areas of personal control" (Table 2, page 5).

The personal-concern category included issues affecting flight-inspection crews, such as technical skills and organizational stress factors, over which the flight crews had no direct control. As an example, the report said that "flight crews can request changes in the kind of training that they receive; however, they do not have the power to make those changes."

The personal-control category included issues such as crew stress factors, situational awareness, planning and decision making — all of which crew members could influence in one way or another.

The incident-survey questionnaire aimed to identify the most problematic phases of flight from a CRM perspective. The survey also gave some insight into the causes of those problems.

Performance Categories Identified as Potential Training Modules for Crew Resource Management Awareness

1. **Mission Analysis**[2] — includes monitoring, allocating and coordinating the resources of the crew and the aircraft; prioritizing tasks; setting goals and developing plans to accomplish the goals; and creating contingency plans.
2. **Situational Awareness**[2] — refers to identifying the source and nature of problems, maintaining an accurate perception of the aircraft's location relative to the external environment and detecting situations that require action.
3. **Decision Making**[2] — includes identifying possible solutions to problems, evaluating the consequences of each alternative, selecting the best alternative and gathering information needed prior to making a decision.
4. **Communication**[2] — includes sending, receiving and acknowledging information among crew members in a way that facilitates accurate transfer of information.
5. **Crew Interpersonal Climate**[3] — Refers to the overall interpersonal atmosphere of the crew. It includes the way interpersonal conflicts are resolved, the degree to which members enjoy working together, the shared values they have about their profession, and the degree of comfort the crew has with the way crew activities are coordinated.
6. **Leadership**[2] — refers to directing the activities of others, monitoring and assessing the performance of crew members, motivating members and communicating mission information.
7. **Adaptability**[2] — refers to the ability to alter one's course of action as necessary, maintain constructive behavior under pressure and adapt to internal or external changes.
8. **Assertiveness**[2] — refers to being willing to make decisions, demonstrating initiative and maintaining one's position until convinced otherwise by facts.
9. **Workload Management**[4] — refers to the ability to schedule, structure and coordinate mission activities so as not to jeopardize situational awareness during any phase of the mission.
10. **Life Stress**[4] — refers to stressors outside of the context of work that interfere with a person's ability to perform as expected by self and crew members.
11. **Skill Proficiency** — refers to technical skills, the absence of which adversely affects the crew's confidence in their ability to carry out the mission.
12. **Organizational Factors** — refers to formal (regulations) and informal (imposed by a given manager) policies and procedures that constrain the way a crew should ideally function.
13. **CRM Not Specified** — refers to any CRM principle not specified in the above list.

Superscript numbers are for references (page 7).

Source: U.S. Federal Aviation Administration Civil Aeromedical Institute

The flight-inspection specialists were asked to describe problematic situations that they had experienced during their missions. They were asked to describe the specific problem; the phase of flight in which the problem occurred; what led to the incident; actions by crew members, either effective or ineffective; and the impact of the problem on mission success.

When the researchers analyzed the incident-survey data, they found that only two of the five factors that the specialists were asked to include in their narratives were reported clearly.

Discussing the matter with those specialists, researchers found that "they were more comfortable talking about problems than writing about them." Because of such gaps in the data, the report cautioned that the content analysis of the incident survey "should not be construed as representing scientific rigor."

The data from the CRM incident survey were grouped by the phase of flight during which problems occurred, as well as by the problems' probable causes — related to people, weather or equipment (Table 3, page 6). Analyzing the data, the researchers found that:

- More than two-thirds (67.2 percent) of the reported problems were related to people. The problems involved interactions among crew members and interactions with air traffic control and ground maintenance personnel at airway facilities. An analysis of the problems suggested that the most vulnerable areas were errors in processing information (for example, situational awareness and decision making); errors in transferring information (communications); and factors related to the ways that crew members related to each other (interpersonal climate);

- About 14 percent of the problems were related to the weather, and 15.5 percent were related to equipment; and,

- Most of the incidents (43.2 percent) occurred during the flight inspection. Other problems occurred during the en route (22.4 percent), takeoff (17.2 percent), landing (10.3 percent) and predeparture (7 percent) phases.

In a second content analysis of the CRM incidents, researchers identified the CRM performance dimensions that were associated with incidents and compared those performance dimensions with the performance categories and those categories' percentages of indications in the safety survey (Table 4, page 6).

The rank order of the CRM categories was nearly the same for both surveys, the report said. But the researchers found a major difference in two CRM categories:

- Decision making: Although decision making was a significant factor (22 percent) in CRM-related incidents, it received only a small number of indications (4 percent) in the safety survey; and,

Table 1
Safety Issues and Associated Training Needs Identified in Safety Survey

Performance Categories Ranked by Percentage of Indications	(%)	Training Needs
Organizational Factors	(20%)	Management needs to develop and enforce well-defined polices and procedures; understand the nature of the flight-inspection mission and how management performance affects crew performance; establish standardization; and create an atmosphere in which candid exchanges about safety occur.
Crew Interpersonal Climate	(11%)	The entire crew needs to participate in creating a safe flying environment; to be clear on their respective team roles; and to resolve interpersonal conflicts before flying.
Situational Awareness	(10%)	The entire crew needs to participate in altitude and aircraft position awareness.
Leadership	(10%)	The pilot-in-command (PIC) needs to clarify the role of each member prior to flying the mission and to distribute the workload so that the PIC is not over-tasked.
Communications	(9%)	A preflight briefing should be conducted, highlighting the major phases of the mission so that the entire crew is prepared, and a professional climate for open communication exchanges among crew members should be developed.
Mission Analysis	(8%)	Mission analysis should include organizational factors affecting the mission, in particular, the scheduling of flight inspections, the availability of aircraft and the conduct of preflight briefings.
Skill Proficiences	(8%)	Skill proficiencies should be kept current and maintained to standardized levels.
Workload Management	(7%)	Coordinated workloads with air traffic control and scheduling pressures reduced.
CRM Dimension not Specified	(6%)	No specific training needs identified.
Decision Making	(4%)	The crew needs to take charge of decisions affecting the success of the mission, in particular deciding whether it is safe to fly.
Life Stress	(3%)	Organizational uncertainties (office closings and relocations) should be resolved quickly.
Adaptability	(2%)	Flight-check restrictions imposed by air traffic control should be handled without creating an adversarial situation, and itinerary changes should be incorporated without creating distraction among the crew.
Assertiveness	(2%)	No specific training needs identified.

Source: U.S. Federal Aviation Administration Civil Aeromedical Institute

Table 2
Subgroupings Identified in Safety Survey Analysis

Clusters	Dominant Themes
Areas of Concern	
Technical Skills	Train to a standard, and maintain currency with equipment.
Organizational Stressors	Mission-safety conflict, aircraft maintenance problems and lack of organizational support.
Areas of Control	
Crew Stressors	Role conflict, role ambiguity, low morale.
Situational Awareness	Altitude and position awareness.
Planning/Decision Making	Preflight briefings, aircraft safety.

Source: U.S. Federal Aviation Administration Civil Aeromedical Institute

- Organizational factors: In the safety survey, organizational factors were the most important single issue (20 percent). But organizational factors were noted in only 1 percent of CRM-related incidents.

"These differences have important implications for CRM training … , " the report said. One implication was that CRM training should focus on areas over which crews have direct control (such as decision making) rather than on factors such as organization, over which crews may have concerns but little control.

The CAMI training-needs analysis supported previous studies concluding that the three main factors in flight crew performance were technical skills, crew-coordination skills and the organizational context in which those crews work.[4,5,6]

Crew members reported problems with their technical training, with some pilots complaining that they were not getting enough flying time. Also, the report said, pilots complained that they were not always checked out on equipment modifications before they went on flight-inspection missions.

Table 3
Operational Phases and Probable Causes of Problems Encountered in Flight-inspection Missions

Operational Phase	Number of People Problems	Number of Weather Problems	Number of Equipment Problems	Row Totals	Row Percentage
Predeparture	4	0	0	**4**	**6.9%**
Takeoff	8	0	2	**10**	**17.2%**
En route	5	5	3	**13**	**22.4%**
Inspection	20	3	2	**25**	**43.2%**
Landing	2	2	2	**6**	**10.3%**
Column Totals	**39**	**10**	**9**	**58**	—
Column Percentages	**67.2%**	**13.9%**	**15.5%**	—	**100.0%**

Source: U.S. Federal Aviation Administration Civil Aeromedical Institute

"Since the single-most important resource that crew members possess is technical skill, technical training deficiencies such as these must first be addressed for CRM training to have a positive effect on crew performance," the report said.

The second lesson derived from the analysis is that crews would benefit from "more active crew participation," especially when related to premission briefings, safety decisions and maintaining situational awareness.

"The importance of the premission briefing cannot be overemphasized," the report said. During such briefings, crews develop what researchers call a "shared mental model of the mission" — a common set of expectations about what will occur, including the sequence of mission events, the tasks to be done and the coordination of individual efforts.

"When a premission briefing is lacking, crew members must rely on past experiences to guide their performance" — sometimes with the false assumption that every crew member is operating with the same set of expectations, the report said. Also, premission briefings provide good opportunities to discuss concerns related to leadership, communications and crew climate. As the researchers noted, " … to the extent that crews can resolve differences prior to the flight, they are less likely to be distracted by those differences during the course of the mission."

Researchers also found that, in addition to making an effort to ease "crew stressors" such as role conflict and role ambiguity, CRM briefings and training also need to address stress factors related to organization.

In FAA flight inspections, researchers noted instances of reported pressure on flight crews to perform flight checks during marginal weather or during off-peak traffic hours late at night, when crews tend to be fatigued.

Table 4
Incident Survey and Safety Survey Performance-category Comparisions

Performance Category	Incident Survey Percentage of Occurrences	Safety Survey Percentage of Indications
Decision Making	22%	4%
Crew Interpersonal Climate	22%	11%
Situational Awareness	20%	10%
Communications	15%	9%
Mission Analysis	8%	8%
Assertiveness	7%	2%
Leadership	3%	10%
Workload Management	2%	7%
Organizational Factors	1%	20%
Skill Proficiencies	0%	8%
Life Stress	0%	3%
Adaptability	0%	2%
Crew Resource Managment Dimension not Specified	0%	6%

Source: U.S. Federal Aviation Administration Civil Aeromedical Institute

"Crews consider these conditions to be unsafe," the report said, "and problems can arise when flight crews perceive (correctly or incorrectly) that their management is more concerned about getting the job done than they are about ... safety."

Although the report said that "concerns about organizational stressors are valid and need to be addressed by the organization," the researchers cautioned that it may not be a good idea to address such issues during CRM-awareness training.

Including organizational factors "is likely to shift the focus of CRM training" from "areas of control" — over which crews have the power to make changes — to "areas of concern," which involve issues over which crews have a vested interest but little personal control.

"One way of keeping CRM-awareness training focused on areas of control is to develop training scenarios around situations that crews have actually experienced while in flight," the report said.

The researchers suggested that, " … by simply changing the field of reference from problems in general (as discussed in the November 1993 [Virginia accident] safety meeting) to problems in the air (as reported in the incident survey), crew members are more apt to take personal responsibility for their actions."

For that reason, the feedback phase of CRM training was developed so that instead of simply evaluating the performance of others in accident re-creations, crew members could critique themselves and their fellow crew members by watching videotapes of their flight simulations.

The researchers cited a communication suggesting that the most successful CRM programs are developed internally rather than imported without change from another context.[7] The FAA CRM Advisory Circular (120-51A) also warns against using generic programs without customizing them to reflect the needs and nature of specific flying missions.

The report said that "[CRM] is more than just a course, it is a philosophy or way of knowing and thinking about flying a mission. ... By developing an internal course, organizations must address such questions as: (1) What is the purpose of the flying mission and what are its priorities? (2) How do organizational policies and practices affect the flying mission? (3) What really takes place when a flight crew flies a mission? (4) How prepared are flight crews for accomplishing their mission? and (5) What habits have flight crews developed that enhance or impede the success of a mission? ...

"When a generic course is used to deliver CRM training, there is a tendency for organizations to side-step many of these harder questions, and instead just implement a course as a 'quick fix.' As a consequence, such CRM programs tend to fade over time."

Nevertheless, time is required to develop tailored CRM programs with internal resources, and any mistakes in those programs must be corrected carefully, the report said, and "unless an organization is willing to commit the necessary resources to improve upon initial efforts, its CRM program is likely to fall below expectations."

The report suggested that managers should explain to flight crews that their CRM program will evolve and that the success of the program depends on "the degree to which flight crews are actively involved in course development, program implementation and program evaluation."♦

Editorial note: This article was adapted from *Flight Inspection Crew Resource Management Training Needs Analysis* (DOT/FAA/AM-96/24), a report by Lawrence L. Bailey and Rogers V. Shaw of the U.S. Federal Aviation Administration Civil Aeromedical Institute in Oklahoma City, Oklahoma. The 17-page report, dated September 1996, includes tables, figures and references.

References

1. Driskell, J.; Adams, R. *Crew Resource Management: An Introductory Handbook*. U.S. Federal Aviation Administration (FAA) Report no. DOT/FAA/RD-92/26. 1992.

2. Bowers, C.; Morgan, B.; Salas, E.; Prince, C. "Assessment of Coordination Demand for Aircrew Coordination Training." *Military Psychology* Volume 5 (1993): 95–112.

3. Feldman, R. "Interrelationships Among Three Bases of Group Integration." *Sociometry* Volume 31 (1968): 30–46.

4. FAA. *Crew Resource Management Training*. Advisory Circular 120-51A. 1993.

5. Cooper, G.; White, M.; Lauber, J. (eds.). *Resource Management on the Flight Deck*. U.S. National Aeronautics and Space Administration (NASA) Ames Research Center, Conference Publication No. 2120. 1979.

6. Hackman, J. "Teams, Leaders, and Organizations: New Directions for Crew-oriented Flight Training." In E. Wiener, B. Kanki and R. Helmreich (eds.), *Cockpit Resource Management*. San Diego, California, U.S.: Academic Press, 1993.

7. Carroll, Capt. J.E., United Airlines vice president of safety and training (retired). Personal communication, May 17, 1994.

About the Author

Robert L. Koenig is a Berlin, Germany-based correspondent who specializes in transportation and science issues. He has written on aviation matters for Science *magazine and the* Journal of Commerce. *Before his move to Germany, he was a Washington, D.C., newspaper correspondent for the* St. Louis Post-Dispatch, *for which he covered transportation issues. He won the National Press Club's top award for Washington correspondents in 1994. Koenig has master's degrees from the University of Missouri School of Journalism and from Tulane University in New Orleans, Louisiana.*

Visit our World Wide Web site at: http://www.flightsafety.org

HUMAN FACTORS & AVIATION MEDICINE

Staff: Roger Rozelle, director of publications; Girard Steichen, assistant director of publications; Rick Darby, senior editor; C. Claire Smith, editorial consultant; Karen K. Ehrlich, production coordinator; and David A. Grzelecki, library consultant, Jerry Lederer Aviation Safety Library.

Subscriptions: US$60 (U.S.-Canada-Mexico), US$65 Air Mail (all other countries), six issues yearly. • Include old and new addresses when requesting address change. • Flight Safety Foundation, 601 Madison Street, Suite 300, Alexandria, VA 22314 U.S. • Telephone: (703) 739-6700 • Fax: (703) 739-6708

What's Your Input?

In keeping with FSF's independent and nonpartisan mission to disseminate objective safety information, Foundation publications solicit credible contributions that foster thought-provoking discussion of aviation safety issues. If you have an article proposal, a completed manuscript or a technical paper that may be appropriate for *Human Factors & Aviation Medicine*, please contact the director of publications. Reasonable care will be taken in handling a manuscript, but Flight Safety Foundation assumes no responsibility for material submitted. The publications staff reserves the right to edit all published submissions. The Foundation buys all rights to manuscripts and payment is made to authors upon publication. Contact the Publications Department for more information.