***About the Commentary*:** The Commentary addresses selected issues within the Code of Conduct to elaborate on their meaning, provide interpretive guidance, and suggest ways of adopting the Code of Conduct. It is intended primarily for implementers, policy administrators, aviation association management, and pilots who wish to explore the Code in greater depth, and will be updated from time to time. Please send your edits, errata, and comments to <PEB@secureav.com>. Terms of Use are available at <http://secureav.com/terms.pdf>.

COMMENTARY TO
AMCC I.a – *GENERAL RESPONSIBILITIES*

a. Make safety their number one priority

Safety is indeed no accident . . . it must be intentionally pursued.
Howard Fried[1]

Safety: A Priority for All Seasons
Ed Bolen[2]

General – AMCC Section I, addressing the general responsibilities[3] of aviators, serves as a preamble to the AMCC. It seeks to advance flight safety by emphasizing heightened diligence, effective attitudes, and appropriate pilot conduct for all phases of flight, including pre- and post-flight procedures.[4] Its provisions go beyond legal requirements and promote ethical precepts and rigorous practices.[5]

This commentary to AMCC I.a addresses safety in broad terms, discussing its applications to aviation as well as its limitations. It introduces various supporting safety mechanisms, including safety management systems (SMS), with an emphasis on single-pilot and small aircraft operations. The commentary also addresses the standard of care with respect to safety.

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Safety Defined – For the purposes of the AMCC, safety is *not* characterized in absolute terms because flying involves certain inherent risks.[6] Neither the FAR nor the AIM expressly defines safety, and in many respects it is an *indefinite* term.[7] The FAA adopts a Department of Defense definition of safety that is relatively strict: "[f]reedom from those conditions that can cause death, injury, occupational illness, or damage to or loss of equipment or property, or damage to the environment."[8] Nonetheless, the FAA SYSTEM SAFETY HANDBOOK recognizes "that absolute safety is not possible because complete freedom from all hazardous conditions is not possible. Therefore, *safety is a relative term* that implies a level of risk that is both perceived and accepted. . . . *Nothing is safe*."[9] The International Civil Aviation Organization (ICAO) defines safety as "the state in which the risk of harm to persons or of property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management."[10]

The AMCC characterizes safety realistically and practically, reflecting both real-life challenges confronting aviators and the varying concepts of safety embraced by aviation-related groups and authorities.

Safety and the AMCC – The AMCC presents safety ahead of all other considerations to underscore the imperative of safety in aviator conduct.[11] Indeed, safety lies at the core of an aviator's responsibilities and is a primary expectation of passengers and the public.[12] "In the larger sense, safety is [also] a major determinant of the viability of aviation[13] – not only as a transportation mechanism, but the social acceptance of aviation is totally dependent on safety."[14] The propriety of the AMCC's emphasis on safety becomes most evident when examining accidents that result from a cascade of discrete unsafe acts.[15]

Prioritization of the Safety Principle – Although the principles in AMCC Section I are neither rigorously prioritized nor hierarchical, many AMCC reviewers urged the adoption of an overriding safety principle.[16] AMCC Principle I.a serves that purpose. Moreover, since safety is a desired outcome, it is logical that the AMCC present principles concerning safety before presenting processes or tools used to achieve safety goals, such as risk identification and management.

All GA pilots can and should aspire to the same or better levels of safety and professionalism as their counterparts in corporate and commercial air transport.[17] One airline posits four concurrent "top priorities": "Safety, Security, Regulatory Compliance, and Quality. These are our top priorities—at all times and at all levels."[18] Another airline asserts, "[s]afety is our bedrock value. It is the fundamental promise we make, and keep, to our customers and crew members."[19] Safety can also be viewed as the first and most rudimentary skill level and the foundation upon which to build other skills.[20]

Some reviewers urged that because AMCC Principle I.b (*seek excellence in airmanship*) is widely accepted as an umbrella concept, and because safety permeates most decisions a pilot must contemplate, AMCC Principle I.b should lead the Section. Other reviewers urged that "judgment" and "professionalism" become seminal provisions. Still others suggested that AMCC Principles I.b through 1.h be subordinated to Principle I.a, to underscore safety as the primary goal.

The net result is that the AMCC presents safety as an aspirational priority in any consideration of preferred aviator conduct.[21] Because the AMCC is a voluntary *model* code of conduct, implementers may reorder the principles at their discretion.

Safety Culture – Pilots are frequently urged to "learn and live the safety culture."[22] Nonetheless, "[f]ew things are so sought after and yet so little understood.[23] "Safety Culture is that assembly of characteristics and attitudes in organizations and individuals which establishes that, as an overriding priority [safety] issues receive the attention warranted by their significance"[24]—"not just for the pilot but all involved; the FBO, flight instructor, refueler, mechanic, ATC, local FSDO, passengers, etc."[25]

Perceptions of and about safety are often culturally determined – "culture influences nearly everything we do[26] Consequently, both organizations and individuals must give ample attention to fostering the right culture to promote safe operations."[27] Richard Santulli, CEO of NetJets asserts, "safety is our first and only culture–and there is not even a close second."[28] It is anticipated that safety management systems (discussed below) will foster "stronger safety cultures."[29] The FAA's Nicholas Sabatini has remarked,

> Getting the culture right is as important — perhaps more important — than the systems you use. An organization with a safety culture is always striving to achieve maximum attainable safety, regardless of commercial pressures or who is in the executive suite. An organization with a safety culture recognizes and

expects people and equipment will fail. It develops defenses and backup plans.[30]

Because "an informed culture *is* a safety culture,"[31] safety information, including practices such as those presented in the AMCC, can serve an important function. Moreover, the culture in aviation must be organizationally flexible to accommodate complexity and technology.[32]

Finally, safety culture has been characterized as "a *leadership* attitude that ensures a hazardous technology is managed ethically, so that individuals and the environment are not harmed."[33]

Safety Leadership – Every pilot has a strong responsibility to exercise a leader's role in the area of safety.[34] Indeed, "[l]eadership may be the single most important element in ensuring safe operations and continuing awareness of the elements comprising safety. Without an enlightened and credible leadership, safety principles and values will have a hard time penetrating the day-to-day operational tempo or competing for time between the press of making the flight schedule and completing next year's budget."[35] "Leadership in safety requires an understanding of the situation, an acceptance of responsibility, a commitment to action and clear strategies and targets."[36] Each pilot should set a positive example to other pilots and the community. The solo pilot is, in effect, his own team leader in exercising safety. [See discussion of single-pilot operations, below]. Leadership also underlies creating and maintaining a viable safety culture.

Safety Management Systems – Despite numerous safety initiatives, there has been little improvement in the GA accident/fatalities record over the past few decades.[37] This has led to a reexamination of how to improve safety throughout aviation and the adoption by ICAO, and most civil aviation authorities, of an approach called Safety Management Systems (SMS) that advocates buttressing traditional reactive strategies[38] for preventing accidents with a *proactive systems approach*.[39] Both the public and private sectors are increasingly embracing a systems approach to aviation safety by implementing SMS.[40] This Commentary to AMCC I.a focuses on the voluntary[41] implementation of SMS principles for small organizations and single-pilot operations.

SMS is defined by ICAO as "an organized approach to managing safety, including the necessary organizational structures, accountabilities, policies and procedures."[42] As described by the FAA, "[an] SMS is essentially a quality management approach to controlling risk. It also provides the organizational framework to support a sound safety culture."[43] It includes systematic procedures, practices, and policies for the management of safety . . . includ[ing] risk management, safety policy,[44] safety assurance, and safety promotion."[45] In sum, "SMS is an organization-wide, risk-based program that uses reactive, proactive and predictive tools, on a continuous basis, to identify and mitigate hazards."[46]

The FAA identifies four "pillars" or components of an SMS:[47]

  i. **Policy** - Safety management should become a matter of policy for any operator, and should be incorporated into all operating phases including flight operations, ground operations, maintenance and training. Safety processes should be documented, monitored, measured and analyzed.

  ii. **Safety Risk Management** - In order to adequately control risks, an operator should establish a formal system of hazard identification and safety risk management.

iii. **Safety Assurance** - Once risk controls are in place, an operator should ensure that they are continuously practiced and continue to be effective in a changing environment. Processes should include provisions for internal audit, evaluation, and employee feedback.

iv. **Safety Promotion** - An operator must promote safety as a core value with practices that support a sound safety culture.

ICAO has provided global leadership in developing an SMS framework and associated tools.[48] Other important SMS models include the authoritative International Standard for Business Aircraft Operations (IS-BAO),[49] and the FAA's SMS Advisory Circular[50] which presents a *functional* outline stressing "what" must be done rather than "how" to accomplish it.[51]

SMS and Single-Pilot Operations – Beyond their benefits to large aviation organizations,[52] SMS principles can enhance safety for both small aircraft *and* single-pilot operations.[53] Within small organizations, SMS can "realistically address those deficiencies that available resources allow. Instead of just ticking off boxes, sensibly allocate [always meager] resources, do more with less, safety-wise, and improve the relationship with the regulator."[54] For single-pilot operations, implement SMS with *proportionality*—that is, with the appropriate "degree of formality and rigidity in the SMS [to] reflect . . . the pilot's needs, rather than blind adherence to doctrine . . . ."[55] Individual pilots should concentrate on adopting core SMS principles of safety risk management, internal evaluation, and self-audit (see below).

"The term 'system' is intended to address every element of a flight operation from conception to completion; from the time the flight planning begins to the time a pilot leaves the airport after reaching his or her destination."[56] Indeed, SMS as an organizational tool can be applied to every type of operation within aviation: maintenance, supply, FBO, etc. "[S]ystem safety in aviation involves embracing disciplines such as risk management, aeronautical decision-making, single pilot resource management, and situational awareness, thus reducing risk to the lowest possible levels."[57]

GA pilots (under Part 91) wear multiple hats: CEO, head of flight operations and maintenance, and director of passenger services. Yet, in one industry expert's view, "pilots forget about all the hats they are wearing – all to the detriment of good decision-making and safety. SMS can help you recognize all the hats you are wearing – and then it is easier to manage."[58] So, for example, SMS principles may be particularly helpful where the individual aircraft owner unwittingly disavows participation [through delegation] in the aircraft maintenance system[59] because SMS can help keep the pilot "in the loop," communicating as an intimate, responsible part of the system.

SMS Focus on Risk Management – SMS has been characterized as "a structure of systems to identify, describe, communicate, control, eliminate and track risks."[60] "The objective of an SMS is to provide a structured management system to control risk in operations. . . . Effective safety management is . . . risk management."[61] Emphasis on risk management is essential, and a particularly useful SMS tool, including for single-pilot operations.

One expert asserts, "The toughest nut to crack with single-pilot operations is decision-making—particularly error and threat management in a busy flying environment."[62] Risk management in small aircraft and single-pilot operations is generally less sophisticated than in larger operations, but still highly valuable. For example, "[i]f you look at the

system safety model and identify hazards, hazard analysis [can be accomplished by simply] going through [one's] flight plan and identifying *what could go wrong*."[63] A diverse risk analysis scaffolding—or toolbox—is under development, including a voluntary program for single-pilot and small aircraft operations.[64] Risk management is addressed further in AMCC I.d, *Recognize and manage risks effectively*. Single-pilot operations are addressed below.

       SMS and Audit – Pilots should undergo a *de facto* audit during a (biennial) flight review. But under SMS, pilots engage in a purposeful, continuous[65] self-audit on every flight—at "a minimum pilots should accumulate data . . . retrospectively summarizing the chances they took, the things they neglected to do, and the actions which might have eliminated some risks."[66] "Every accident, incident or operational anomaly, no matter how insignificant, should be documented and investigated."[67] Additionally, a "gap analysis" should be completed to determine which elements of the SMS are in place and what additional elements should be implemented.[68]

One aviation expert urged, "do a risk assessment during flight, before an approach, or entering the pattern; run thru a risk assessment checklist for the next phase of flight and evaluate *what does the environment have in store for me and how will it affect me*."[69] For example:

> Pilots should, at the end of each flight, evaluate the flight with a list of 'did I?'/'have I' questions. For example: Did I make sure all required documents were on board? Did I have a written W&B document on board? Was my preflight planning complete and adequate? Was my takeoff and climb segment safe, efficient and did I consider my noise signature? Was my preflight determination of the most dangerous aspect of the flight correct? Did I make the safest approach, landing and taxi in? Did I correctly plan fuel management? Did I conduct the flight like I would have if an FAA examiner was sitting beside me?, etc. And most important, was I pleased with myself as to how I conducted the flight?[70]

A pilot can easily develop a checklist with such questions for use after each flight to aid effective safety audits and should conclude with an understanding of what went well, where improvement is needed, and how to improve in that area.[71] *Mentors* (discussed below) can also embellish audits and assessments during flight debriefings.

SMS underscores the critical need for auditing and assessment,[72] even for single-pilot operations. Indeed, "if you can't measure it, you can't manage it."[73] "To be effective, metrics must be collectable and measurable, and must reflect the current situation accurately."[74] Various AMCC principles and practices encourage reflection, assessment, and metrics.[75]

SMS "should not be any more complex than the rest of the organization's operation or management processes. The objective is to weave SMS into the fabric of the organization, to fully integrate SMS into its management methods."[76] In this regard, individual pilots should concentrate on adopting the core SMS principles of safety risk management,[77] internal evaluation, and self-audit.[78] Moreover, "[j]ust as professionals adhere to an operations manual, the owner-pilot also should have his or her own ops manual that includes procedures for flight planning and personal dispatch, aircraft airworthiness, weather considerations, pilot currency, standard operating procedures, minimums, fatigue awareness, systematic training, and ready access to professional resources to address special situations. It need not be long or involved. But the document should identify the way you approach aviation and your flying record should reflect adherence to such self-imposed procedures."[79] In fact, "FBOs and Flight Schools

should already have most facets of the SMS in place, (risk analysis performed, safety reporting mechanisms, a safety information newsletter or safety information distribution media etc.). They may not call it SMS yet and that is not what's important."[80] In any event, to develop good judgment (and diminish unreflective adherence and its potential consequences), pilots should understand the reasons behind the ops manual's provisions.

        SMS Single-Pilot Tools – The following suite of tools provides an example of how SMS can help small aircraft and single-pilot operators to mitigate recognized risks. The implementation of such tools should reflect the particular profile of each pilot, organization, mission, equipment, and environment. In a systematic, continuing, and rigorous fashion:

> ➢ Review the flight plan and ask "what could go wrong."[81]
>
> ➢ Complete a hazard checklist.[82]
>
> ➢ Establish and adhere to *no-go* criteria.[83]
>
> ➢ Use an autopilot (at least in IMC) and do so proficiently.[84]
>
> ➢ Write a post-flight "lessons learned" statement/self-audit for each flight.[85]
>
> ➢ Contribute to NASA's Aviation Safety Reporting System (ASRS).[86]
>
> ➢ Complete proficiency training focused on single-pilot operations.[87]
>
> ➢ Use mentors or "dispatcher-like" services – Well-situated to serve as a safety net, competent mentors and dispatchers can help provide pilots with invaluable perspective,[88] expertise, encouragement, structure, and process in support of SMS.
>
> > o *Mentoring*: Mentoring has gained considerable attention as enabling low-time and less-experienced pilots transition to Very Light Jets (VLJs),[89] and increasingly for transition to high-performance technically advanced aircraft.[90] Among other initiatives, the FAA-Industry Training Standards (FITS)[91] has formally recognized the importance of mentoring. The value of mentors includes "objective, unvarnished advice"[92] based upon their experience and demonstrated success, and is described as "the cornerstone of the National Association of Flight Instructors."[93]
> >
> > o *Dispatch*: A recognized staple of commercial operations and larger business GA, dispatchers play an important role in assuring safe operations.[94] Dispatchers can not only contribute to effective preflight planning, but help pilots to "stay ahead of the plane—the pilot has someone working on his/her side—someone keeping the pilot abreast of changing conditions, particularly at the height of workload saturation."[95] Certified dispatchers adhere to a *Dispatchers Creed* that embodies responsibilities sharing many of the AMCC's underlying precepts.[96]
> >
> > A voluntary dispatcher-like service might offer a valuable safety buffer to single-pilot operators, especially for low-time and less

experienced pilots transitioning to more sophisticated aircraft and operations. While further study is needed, including the threshold for its economic viability,[97] such tools deserve attention in support of SMS.

SMS and Safety Promotion – An effective SMS requires that safety be promoted as a core value.[98] Safety promotion helps communicate the importance, benefits, and operation of SMS.[99] "[L]essons learned must be communicated effectively."[100] The AMCC is frequently the subject of safety promotion.[101]

SMS and the AMCC – An SMS can be viewed abstractly as an embodiment of four attributes: philosophy, policy, procedures, and practices.[102] The AMCC corresponds to SMS in several important ways:

➤ Philosophy: The AMCC embraces a philosophy of responsible free-agency—treating the individual pilot as an active safety agent rather than as a mere rule-follower.[103]

➤ Policy: The AMCC offers high-level principles that advance and serve as the underpinnings of a safety policy.

➤ Procedures and Practices: The AMCC provides procedures and practices in the form of *Sample Recommended Practices* (SRPs).[104]

One government SMS expert exclaimed, "The *big kicker* is a guide to applying SMS principles."[105] This Commentary's APPENDIX (below) presents a table comparing some essential functional requirements from the FAA's AC on SMS and corresponding AMCC provisions, highlighting the relationship between the respective core components presented in these two safety documents. This table is designed to help pilots and organizations ascertain the extent to which the AMCC may contribute to SMS for small aircraft and single-pilot operators.

Limitations of SMS – Any agent of change will invariably face resistance and criticism, and SMS is no exception. Nonetheless, this critical review suggests neither that SMS is inappropriate nor ineffective. Rather, the PEB recognizes that critical analysis can enhance a practical understanding of SMS, particularly for small aircraft and single-pilot operators. This section includes some of the material concerns and arguments deserving consideration by implementers.[106]

➤ *Claim:* Limited Benefit to Small GA: SMS benefits are primarily intended for larger, institutional settings/organizations and may be of limited benefit in single-pilot and small aircraft operations—and yet, it is claimed, SMS is being promoted for universal application.[107]

One PEB member cautioned:

> As I see it, SMS is primarily designed for an institutional application, and NOT for the single-pilot operator. This needs to be acknowledged at the outset, and that, yes, certain SMS *principles* may be used to good advantage by the average private pilot, and the conscientious pilot may adopt an SMS 'approach', but the *mechanisms* of the program as outlined in [AC] 120-92 are specifically designed for organizations, not individuals . . . (After all, the Feds published the AC under 121 rather than 91 or 61.)

Importantly, SMS may be appropriately adopted by FBOs, and certainly by 141 flight schools and corporate flight departments, and it is in this context that an individual pilot may realistically encounter the processes outlined in 120-92, e.g., internal safety reporting, auditing, and review. In fact, it is this context—helping small GA institutions like FBOs and flight schools adopt SMS—that we might want to concentrate on, rather than focusing on the single pilot.

Again, I do believe that single pilots can, and should, adopt SMS principles. But I want to avoid the perception that we're pounding a round peg into a square hole in promoting SMS for single pilots.[108]

➢ *Claim:* Prohibitive Cost: The cost of implementing an SMS may be excessive for the small and individual operators.[109] Ray Rohr, IBAC Standards Manager presents a countervailing perspective:

> The cost of implementation of an SMS can vary from a few person days to several thousand dollars depending on the size and complexity of the operation and how the operator goes about doing it. [An SMS model] can be implemented in a few person days and then built on to reach a required degree of maturity.

> I always recommend that operators keep things very simple to start, but make sure that they have a framework that can be built upon. Then as they use their SMS they can mature it so that it always remains appropriate and effective. The most frequent error that I see is to try to do too much at the initial development stage.[110]

While there is arguably a direct correlation between expenditures on safety and improvements to safety,[111] safety is properly viewed as good business rather than as a cost of business. Simply stated, safety makes economic sense. "Beyond saving lives, the military, like any other business, is often driven by the so-called 'bean counters'. Yet even the bean counters have to be smiling when you consider the cost savings realized as a result of improvements in aviation safety."[112] Additionally, the successful implementation of "positive attitudes towards safety culture" and SMS are recognized as cost effective.[113]

➢ *Claim:* Regulation Already Provides an Adequate Safety System: The FAR themselves have been characterized as a "safety system [d]esigned for safe flight."[114] Nonetheless are the FAR sufficient? One industry expert asserts:

> NO. But why?

> Because GA is by and far, a self-regulating - self-policing industry. The FAA simply does not have the resources to police every Part 91 operation.

> Although most pilots fly very safely, most pilots do not know all of the rules and regulations that they have committed to when they became an aircraft operator.

> So the first step of any safety initiative is to know the rules.

> Only then can an organization, even an organization of one, implement "risk management." You have to know the safety rules, know what you are supposed to do, know the impact of what you're supposed to do, know the safety benefit of what you're supposed to do before you can perform a risk assessment and either comply with the "law of the land"

or develop an equivalent level of safety that better fits your organization.

But most importantly, one cannot look at SMS in a vacuum. Any discussion of SMS must begin with knowing and understanding our proven safety system: the Federal Aviation Regulations, the Aeronautical Information Manual, the applicable Advisory Circulars, and the publications of the aircraft and equipment manufacturers such as the aircraft flight manual, equipment operations manuals, and the aircraft and/or equipment maintenance manuals.

As you can see, we already have a very robust safety system.[115]

SMS and the Future of Aviation Safety – "The best approach . . . is to bring safety efforts into the normal management framework of aviation operations [to achieve] sound management of safety."[116] "If safety is to be taken to the next level of achievement, more attention must be given to 'breaking the accident chain.' Identification and correction of events that adversely affect air safety are essential to ensure that unusual events do not become incidents and incidents do not become accidents. The air safety committee (ASC) within each operator is a vital part of this process."[117] SMS has been characterized as "the first major effort to bring structure to safety programs in a standardized way."[118] In addition to airlines, charter, corporate flight departments and flight schools, SMS have been implemented airport-wide – recognizing that the achievement of safety improvements may need to reach "hundreds of other transients and occasional users of the airport"[119] who will also need to voluntarily commit to SMS implementation. Individual operators and pilots play an essential role in this process. "In other words, safety is a responsibility that extends beyond organizational boundaries."[120]

Effective SMS has various subsidiary requirements, such as top-management support (note that the single pilot-operator *is* top management), auditability, appropriate documentation, and reprisal-free "reporting of information that may impact safety."[121] As a practical matter, SMS facilitates and encourages management to "bring it all together," [122] and to address "critical connections between operators, management systems and production systems."[123] "[I]n aviation, an SMS is an evolutionary – not a revolutionary – development."[124] In any event, while there may be some disagreement on the application of SMS in aviation, one message [is] well-communicated: "SMS is coming"[125] and "we'll see a lot more of SMS."[126] This message is echoed widely in aviation leadership circles, including by one recognized ICAO observer who asserts, "it has arrived."[127]

Standard of Care for Safety – How much effort, care, and diligence should a pilot exercise in order to satisfy safety requirements and to act safely? Generally speaking, the legal standard of care to which any given pilot is held is that of a "reasonably prudent pilot in like circumstances."[128]

In a litigated case, whether a pilot satisfied the standard of care is determined by a judge or a jury – nearly always non-pilots – *after the fact*. The pilot's legal liability is determined in a courtroom far removed from the realities of actual flight.[129] In determining the pilot's liability, the court may allow consideration of countless factors that someone contends the pilot should have thought about and weighed during flight and that should have dictated wholly different conduct.[130] This is one reason that ethical conduct[131] is so important.

Flying an aircraft calls for a great degree of care because of the serious injury an airplane can inflict. Thus, *from an ethical perspective and in the interest of safety,* there is compelling support for exercising far greater care in aviation than a minimum legal standard would require.[132] Many courts have held that pilots should know and adhere to the FAR and applicable safety rules because a violation thereof constitutes negligence as a matter of law.[133] Nonetheless, adherence to the FAR alone may be insufficient to absolve a pilot from liability. For example, one court held that the issue for the jury was not whether the pilot had performed a landing maneuver in compliance with the FAR—which he apparently had—but rather "whether the pilot exercised due care in weighing the risks of the maneuver" before performing it.[134] One reasonable inference is that the FAR, as a safety regulation, constitutes no more than the minimum standard of care which the pilot may be required to exceed.[135]

Although the legal standard of care may place a "very heavy burden on a pilot,"[136] the AMCC's focus is *not* primarily the applicable legal requirements but is instead the pursuit of safety as an ethical matter.[137] Such an approach will help a pilot pursue the appropriate standard of care *and* utilize skills and risk management to improve safety.

   Custom and Practice – Custom and practice may provide evidence of reasonably prudent behavior. Custom and practice, however, is not conclusive in establishing negligence as custom and practice may lag behind what constitutes reasonably prudent behavior.[138] A pilot's scrupulous adherence to widespread custom and practice, therefore, does not necessarily conclusively establish that he met the standard of care; rather, his adherence to custom and practice (when or if it is safe) is merely evidence of reasonable conduct under the circumstances.[139]

Consider that most passengers expect nothing less than a pilot's best efforts[140] to protect their safety[141] regardless of the applicable standard of care. In fact, they expect whatever standard of care and safety and flying skills that are needed to deliver them safely and comfortably to their destination. Pilots can expect juries to judge them on the same basis. For the purposes of an ethical code, a pilot should always aspire to fly as safely as possible rather than merely seek to satisfy the legal standard of "ordinary care."

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   CODE EXAMPLES:[142]

- ❑ "I WILL OPERATE MY AIRCRAFT USING THE *SAFEST POSSIBLE METHODS* THAT ARE AVAILABLE TO ME." *Code of Conduct,* Georgia Sport Flyers Association[143]

- ❑ "We instill a dedication to safety, to maintain general aviation's excellent safety record . . ." *Flight School Code of Conduct*, National Air Transportation Association[144]

- ❑ "Safety in everything we do is our first obligation to customer[s] and employees. Without it, nothing matters." *Core Values*, JetBlue[145]

- ❑ "[S]crupulously adhere to safe practice . . ." *Code of Ethics*, National Association of Flight Instructors[146]

- ❑ "NASA will take *all necessary actions* to prevent loss of life, personal injury, property loss, mission failure, or test failure."

Policy Directive, National Aeronautics and Space Administration[147]

❑ "I will at all times observe the highest standards of my profession." *A Code for Professional Pilots,* Jerome Lederer[148]

❑ "An Airline Pilot will keep uppermost in his mind that the safety, comfort, and well-being of the passengers who entrust their lives to him are his *first and greatest responsibility.*" *Code of Ethics,* Air Line Pilots Association[149]

❑ "Safety, Security, Regulatory Compliance, and Quality. These are our top priorities -- at all times and at all levels." *Flight Operations Manual,* US Airways[150]

DRAFTING CONSIDERATIONS:[151]

✓ *Safety of Flight:* AMCC Principle I.a adopts the term *safety* rather than *safety of flight*[152] or *flight safety*. Notwithstanding, one AMCC reviewer explained:

> There seems to be an industry preference for the term "safety of flight" versus "flight safety." Although I cannot give you any grammatical basis for this, it appears to me that the former places specific emphasis where it belongs, whereas the latter is susceptible of more than one interpretation. This reveals more of my "nuts and bolts" mentality versus aspirational goals. [The AMCC] pertains to many facets of aviation, from training though execution. I do not believe it to be a bad thing to remind the reader every so often what the ultimate goal is: safety-of-flight. You might want to hyphenate it as well to give it the emphasis it deserves.[153]

> Another reviewer posits: "Safety-of-flight limits safety to the in-flight portion. The pilot is responsible for far more than just the portion of each operation that begins when the wheels leave the ground. Therefore, the wonderful old term 'flight safety', or just 'safety' properly covers the subject."[154]

✓ *Prioritization of Safety:* Implementers are free to reorder or otherwise modify the AMCC content to satisfy its particular requirements. This flexibility is underscored in *Prioritization of the Safety Principle* (above).[155]

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APPENDIX – SMS-AMCC COMPARATOR

AIR OPERATOR SMS STANDARD: FOUR "PILLARS" OF SMS (From FAA, AC 120-92 Appendix 1)	AVIATORS MODEL CODE OF CONDUCT
1. Policy--General Requirements ➢ Safety management will be included in the complete scope of the operator's system. ——————— **Policy--**Safety – ➢ Shall be defined by top management. ➢ Includes commitment to SMS, continual improvement of safety, risk management, reg. compliance, reporting, acceptable behavior, mgt. guidance for setting/reviewing safety objectives, documentation, review, responsibility for safety performance. ——————— **Policy--**Quality, Safety Planning, Org. Structure and Responsibilities –.	➢ Addresses many SMS principles within the scope of basic flight operations; provides Commentary to AMCC I.a to introduce and support SMS implementation. ——————— ➢ AMCC's Introduction states that it is committed "to excellence" and "to improve airmanship [and] flight safety;" offering guidance for managing safety risks, establishing documented safety objectives and practices with provision for continuous improvement. ➢ Urges documentation, assessment, and analysis. Offers broad guidance to set, maintain, and review safety objectives. ——————— ➢ AMCC implementation accommodates both the individual pilot and organizational management. *See, e.g.,* "About the Commentary."[156]
2. Safety Risk Management ➢ Process must be included for system and task analysis, hazards identification, to analyze, assess and control safety risk. ➢ Process applied to initial design of systems, orgs. and/or products, op. procedures, hazards identified in the safety assurance function, etc.	➢ The AMCC is oriented generally towards risk assessment and risk management. ➢ AMCC I.d states, "Recognize and manage risks effectively." ➢ AMCC commentary identifies many risk management tools and processes. ➢ Various AMCC provisions and SRPs advance hazard identification and risk assessment/control. ➢ The AMCC is a *living document* that encourages reassessment and revision to respond to perceived, actual and changing risks.

3. Safety Assurance and Internal Evaluation ➢ Includes identification of new hazards, measuring the effectiveness of safety risk controls, and compliance. Considers continuous monitoring, internal audits and evaluation, and other assessment mechanisms.	➢ Various AMCC principles and practices encourage reflection and assessment, *e.g.:* "Invite *constructive* criticism from your fellow aviators."[157] ➢ The AMCC helps to establish and maintain procedures (with ample measurable criteria) to accomplish safety policy objectives via Sample Recommended Practices (modifiable "to satisfy the unique capabilities and requirements of each pilot, mission, aircraft and GA organization.")
4. Safety Promotion ➢ Includes commitment to a safety culture, communication and awareness, competence, training, and promotion of lessons learned.	➢ The broader AMCC Project includes promotion-related initiatives, including those listed at **<www.secureav.com/newdevelopments.html>** ➢ Safety culture is addressed, *inter alia*, in AMCC VII.e, and the Commentary to AMCC I.a.

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[1] HOWARD FRIED, BEYOND THE CHECKRIDE 81 (McGraw-Hill 1997).

[2] Ed Bolen, Pres. & CEO, NBAA, *Safety: A Priority for All Seasons*, J. OF BUSINESS AVIATION SAFETY, Vol. 21 (2006), at p. 1.

[3] There is no attempt to make this ethical code a factor in litigation as adopters neither expect nor desire such a consequence. Moreover, formulating an ethical code with an eye toward litigation could dissuade people from adopting it. Consideration of various definitions, such as the legal definition of responsibility, is intended merely to inform an ethical code.

The term *responsibilities* was adopted in preference to more prescriptive and controversial terms such as *duties* or *obligations*. Among other things, the term responsibilities reflects the position taken by the United Nations with respect to certain model rules and codes which seek to accommodate the varied requirements of diverse practices and jurisdictions. *See* UN, General Assembly doc. A/CN.9/467, ¶ 97 (proceedings of the 36th session of the Working Group on Electronic Commerce (NY, Feb. 14-25, 2000)), *available at* <http://www.uncitral.org>. The use of the term *responsibilities* is also not inconsistent with the Federal Aviation Regulations (FAR). For example, "The pilot in command of an aircraft is directly *responsible* for, and is the final authority as to, the operation of that aircraft." FAR § 91.3, *Responsibilities and authority of the pilot in command, available at* <http://www.faa.gov>, *also available at* <http://www.risingup.com/fars/info/part91-3-FAR.shtml> (emphasis added).

[4] There is a compelling argument for the AMCC to cover a pilot's general conduct. The argument is that, as a practical matter, pilots cannot compartmentalize their actions (separate strictly personal versus professional actions—that is, separate those actions affecting their flying versus those actions that do not), and therefore pilot conduct should be viewed holistically—as an integral component of an aviator's life and interactions. In fact, some aviation codes (notably military codes) tend to take such a holistic approach. *See, e.g.,* Gen. Douglas MacArthur, *The Farewell Address to the Corps of Cadets of the U.S. Military Academy, 'Duty, Honor, Country!,'* in West Point, N.Y. (May 12, 1962), *available at* <http://www.west-point.org/real/macarthur_address.html>.

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[5] *See, e.g.,* IATA, *Global Aviation Safety Roadmap*, at p. 2, *available at* <http://www.iata.org/NR/rdonlyres/D440B2E7-1DE8-4130-A796-F66BB5DDB451/0/GlobalAviationSafetyRoadmap.pdf> (acknowledging the "moral imperative for action to reduce the accident rate").

[6] One of the many definitions of *risk* is "an expression of possible loss over a specific period of time or number of operational cycles. It may be indicated by the probability of an accident times the damage in dollars, lives, and/or operating units. [*Risk analysis* is the] development of qualitative and / or quantitative estimate of risk based on evaluation and mathematical techniques." FAA, SYSTEM SAFETY HANDBOOK, App. A9 (Dec. 30, 2000) (FAA HANDBOOK), *available at* <http://www.faa.gov/library/manuals/aviation/risk_management/ss_handbook/>. *See* DOT/FAA Order 8040.4, *Safety Risk Management* (June 26, 1998), *available at* <http://www.faa.gov/library/manuals/aviation/risk_management/ss_handbook/media/app_g_1200.PDF>; and DoD, MIL-STD-882D, *DOD Standard Practice for System Safety* (Jan. 19, 1993), *available at* <http://www.safetycenter.navy.mil/instructions/osh/milstd882d.pdf>.

See also Industrial Union Dep't v. American Petroleum, 448 U.S. 607, 653 (1980), *available at* <http://www.publichealthlaw.net/Reader/docs/IndustUnion.pdf> ("safe" not the equivalent of "risk-free"). "FAA statements that it won't tolerate risk are pandering to ignorance and are self-destructive because they set up impossible expectations." Interview with John King, King Schools, in São Paulo, Braz. (Sept. 30, 2002). "If you are looking for perfect *safety*, you will do well to sit on the fence and watch the birds. But if you really wish to learn, you must mount the machine and become acquainted with its tricks by actual trial." Wilbur Wright*, Some Aeronautical Experiments*, Presentation to the Western Society of Engineers, in Dayton, Ohio (Sept. 18, 1901), *available at* <http://www.ias.ac.in/resonance/Dec2003/pdf/Dec2003Classics.pdf> (emphasis added).

Consider, for example, that "New Zealand loses about 10% of their helicopter fleet per year. That is an acceptable level of safety. A similar accident rate in Australia would cause an uproar. However, without changing the geography of New Zealand, it is unlikely that the accident rate could be changed. The definition of safety, and the understanding of it, has to agree from the outset that having accidents is an acceptable state, lest we cease operating all together." Email from Frank Hofmann, Sec'y, IAOPA (April 5, 2006).

[7] "There is no definition out there for safety itself. So, if you talk about it you are talking about, I hate to say it, an indefinite term . . . and once you define it, how do you develop performance indicators?" Email from Cathy Fazen, Research Program Mgr., FAA Safety Analysis and Information Center, AFS-900 (Aug. 29, 2003), *see* <http://aar400.tc.faa.gov/Flightsafety/ProgramAreaDescription.htm#StudyPrecursors>. *See also* ICAO, SAFETY MANAGEMENT MANUAL, Doc. 9859, AN/460, § 1-2-1, *Concept of Safety* (2006), *available at* <http://www.icao.int/anb/safetymanagement/Doc%209859enSMS.pdf> (recognizing that "Depending on one's perspective, the concept of aviation safety may have different connotations." *id.*).

[8] FAA HANDBOOK, s*upra* note 6, at App. A-13.

[9] FAA HANDBOOK, *id.* at pp. A-11, A-14 (emphasis added). The FAA HANDBOOK further states that "associated risks that have been identified have been accepted provided that all identified controls [and corrective strategies] are implemented and enforced." *id. Cf.,* Jerome F. Lederer used "risk management" in place of "safety," because he considered that "[r]isk management is a more realistic term than safety. It implies that hazards are ever-present, that they must be identified, analyzed, evaluated and controlled or rationally accepted." Stuart Lavietes, *J.F. Lederer, 101, Dies; Took Risk Management to the Sky*, N.Y. TIMES, Feb. 9, 2004, at p. A25, *available at* <http://www.nyt.com>. *See* Int'l Air Transport Ass'n (IATA), *Operational Safety Audit - Auditor Handbook*, at p. xiv (1ˢᵗ ed. Oct. 2003), *available at* <http://iata.org/NR/ContentConnector/CS2000/SiteInterface/sites/ps/iosa/file/IAH_Oct_2004_wit

h_disclaimer.pdf> (defining safety as a "condition in which the risk of harm or damage is limited to an acceptable level"); Email from Michael Lenz, FAA, May 17, 2007 ("Something is safe when knowledgeable stakeholders believe the risks are acceptable and manageable."); Interview with John Sheehan, in Palm Springs, Cal. (Nov. 11, 2006) (defining safety as "the active pursuit of risk reduction day in and day out" and noting that "safety is not just risk management—there are many dimensions of safety."); AMCC I.d (addressing risk management).

See Bruce Landsberg, Exec. Dir., AOPA Air Safety Foundation, *The great airplane chainsaw massacre,* AOPA PILOT, Aug. 2005, at p. 54, *available at* <http://www.aopa.org/asf/asfarticles/2005/sp0508.html> ("How safe is general aviation? . . . It's as safe as you want it to be."). *Cf*., RICHARD COLLINS, FLYING SAFETY 263 (Delacorte Press 1977) ("Flying any kind of plane is just as safe as the pilot wants it to be."); and Kevin Clover, FAA Nat'l Safety Program Mgr., *previously at* <http://www.faasafety.gov> ("We can make aviation as safe as we choose. What level of safety do you choose?").

As a historical matter, see HAROLD E. BAUGHMAN, AVIATION DICTIONARY AND REFERENCE GUIDE – AERO-THESAURUS 812 (Aero Publishers 2nd ed. 1942) ("Flying is one of the safest modes of travel and especially the safest method of traveling at high speed. Statistics show that the human element is the chief offender so each and every pilot has the power of adding to or subtracting from the safety records of air travel.").

[9] Pres. and CEO (emeritus), Flight Safety Foundation, *President's Message,* AVIATION SAFETY WORLD, Oct. 2006, at p. 1, *available at* <http://www.flightsafety.org/pubs_home.html>.

Consider "Lenz's Five 'Laws' of Safety:"

1. *Safety is Technical.* We install railings on stairs and wear our safety belts while traveling. These types of things are what has become part of our western civilization safety culture. They are all of the common sense, cost-effective and convenient safeguards in place today. . . .

2. *Safety is Economic*. "We'd like to do that to make the (product, project, procedure – pick one) safer, but we just can't afford it." Here the decision-maker has performed a risk assessment that includes cost, public perception, company policy (written or unwritten). . . .

3. *Safety is Political/Emotional.* Politics and emotions are the same thing. Media and emotionally-driven hype enter into prominent issues to drive safeguards, sometimes counter to safety science.

4. *Safety doesn't sell unless the blood is flowing, then it oversells.* After an accident, we've got to "do something." And "something" will get done. . . . Society will not tolerate the same mistake twice. . . .

5. *Overall things are designed well, but accurately forecasting the effects of time is nearly impossible.* We live in an extremely safe world (even after 9/11). . . . When a poor design causes an accident, the fault is usually well publicized and the event becomes infamous. As a result, we think design flaws are common. We should focus on the importance of maintaining a dialogue between the system designers and those who use and maintain the systems. There's much to be gained here.

   In conclusion . . . Safety professionals need to recognize and be prepared to address the human nature of factors that drive safety. They usually occur in combination. Those of us who can accommodate the five laws and practice sound safety science at the same time, are able to reduce risk, even if the accomplishments are not what a safety purist would have done.

Email from Michael Lenz, FAA (May 17, 2007).

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[10] ICAO, SAFETY MANAGEMENT MANUAL, *supra* note 7, at § 1-2-3.

[11] As a practical matter, safety is best considered holistically, including by developing an understanding, commitment, and adherence to the principles included in the AMCC generally.

[12] JOHN J. SHEEHAN, BUSINESS AND CORPORATE AVIATION MANAGEMENT 8.13 (McGraw Hill 2003) (presenting safety first, followed by reliability and good service, in that order). *See* ICAO, *Strategic Objectives of ICAO for 2005-2010* (Dec. 17, 2004), *available at* <http://www.icao.int//icao/en/strategic_objectives_2005_2010_en.pdf> (listing safety as the first of five objectives – "*A: Safety - Enhance global civil aviation safety*"). *See also* Commentary to AMCC II.a, *available at* <http://www.secureav.com/Comment-AMCC-II.a-Passengers.pdf> (emphasizing passenger safety); *Cappello v. Duncan Aircraft Sales of Florida, Inc.,* 79 F.3d 1465 (6th Cir. 1996), *available at* <http://caselaw.lp.findlaw.com/cgi-bin/getcase.pl?court=6th&navby=case&no=960102p> (pilot in command has ultimate responsibility for the safety of the plane and passenger). *Cf.*, FAR § 91.3, *supra* note 3 (pilots responsible for the "*operation* of the aircraft" rather than the "*safe* operation of the aircraft".)

[13] Or, is it economics? *See, e.g.,* RICHARD H. WOOD, AVIATION SAFETY PROGRAMS – A MANAGEMENT HANDBOOK 1 (Jeppesen 2003):

> Let's forget the emotional aspects of safety and look at some cold hard facts. Safety is not a moral problem or an ethical problem or a pain and suffering problem. It is an economic problem. Safety, by itself, generates a lot of sympathy, but very little action. Only the economics of safety generate action. In the entire history of safety, nothing good ever happened unless it was either economically beneficial or mandated by the government. Granted, we are sometimes forced to act on a safety problem for moral or ethical reasons. When that happens, though, it is frequently because we are confronted with a financial penalty if we do not act. Failure to anticipate that situation is usually the result of myopic vision on the part of the management. Sorry, but that's the way the system works. I learned that the hard way and there is no need for you to repeat my mistakes. This is one of those things that you don't have to like, but you do have to understand. Money talks. Sympathy doesn't.

Cf., Email from George E. Reed, Ph.D., Assoc. Prof., U. of San Diego (Apr. 16, 2007):

> I will concede the power of economic motivation, especially in a business milieu where success and failure are quite visible in the bottom line. Once basic needs are met, however, human beings in the larger sense are motivated by much more complicated mechanisms, ones that are both tangible and intangible. For example, I argue that an individual's association with any organization can be explained by the 4 F's: Funds (the economic element), Fun, Fellowship (cohesion) and Feeling (that one is part of something larger than oneself). Three of the four are intangible elements. It is still an economic equation in the sense that when the combination of the 4 F's add up to a sum that is 'not worth it' in the mind of the individual then it would not be rational for that person to stay in the organization.

Arguably many pilots are attracted to challenge, which by definition means risk. "Pilots fly BECAUSE it is challenging (thus risky) - that is the human condition. We do it at different levels - that is, at the very beginning, we enjoy the challenge of learning to land, then landing in a crosswind . . . we proceed to push our individual envelopes fast enough to be fun, but slowly enough to be (relatively) safe; there is challenge in knowing that some have done it too fast, and found the danger. Later, the challenge may shift, to attempting to manage risk through (for example) education. We need to understand not only that risk is an indefinite term, it is also an essential and integral part of GA, and in fact, of aviation and aerospace." Email from Michael Radomsky, Pres. Emeritus, Cirrus Owners and Pilots Ass'n (Sept. 19, 2007).

[14] Interview with Drew Steketee, Pres./CEO, The BE A PILOT Program, in Phila., Pa. (Nov. 1, 2003). Perhaps it is dependence on the public's perception of safety as well as safety itself.

See Remarks of Acting Chairman Rosenker, National Transportation Safety Board (NTSB) at the General Aviation Manufactures Ass'n (GAMA) Exec. Meeting, NTSB Press Release, No. SB-06-11 (Feb. 14, 2006), *available at* <http://www.ntsb.gov> ("Having a *safe* and efficient aviation transportation network is essential for the commercial viability, economic stability and security of the nation.") (emphasis added). *See* James K. Coyne, *Saving an Airport with Safety*, AVIATION SAFETY WORLD, Dec. 2006, at p. 43, *available at* <http://www.flightsafety.org> ("In the final analysis, safety is as important to airports as it is to pilots and passengers.").

[15] WOOD, *supra* note 13, at pp. 22-23 ("Causes may be categorized as either unsafe acts or unsafe conditions. . . . between eighty and ninety percent of all accident causes are unsafe acts; not unsafe conditions . . . . aviation safety is more of a 'people' problem than a 'thing' problem. . . . Today, safety professionals are in solid agreement with the theory of multiple causation. . . . attempting to explain an aircraft accident with only a single cause is an exercise in futility."). *See* JAMES REASON, MANAGING THE RISKS OF ORGANIZATIONAL ACCIDENTS 9 (Ashgate 1997) (presenting the "Swiss Cheese Model of Defenses"); Frank E. Bird, *Management Guide to Loss of Control* (Institute Press 1974) (presenting a domino theory of error); Scott A. Shappell & Douglas A. Wiegmann, *Unraveling The Mystery Of General Aviation Controlled Flight Into Terrain Accidents Using HFACS*, Presentation at the 11th Int'l Symposium on Aviation Psychology, in Columbus, Ohio - Ohio State Univ. (2001), *available at* <http://www.humanfactors.uiuc.edu/Reports&PapersPDFs/isap01/shappellwiegavpsy01.pdf>; DOUGLAS A. WIEGMANN & SCOTT A. SHAPPELL, A HUMAN ERROR APPROACH TO AVIATION ACCIDENT ANALYSIS 48 (Ashgate 2003) (recognizing that there are many different types of causation). *Cf.*, Jack W. London, Esq., and Donald M. Maciejewski, Esq., *Pilot Error,* LPBA JOUR., 24-28 (Winter 2006-7), *available at* <http://www.lpba.org> (providing a thoughtful analysis of pilot error and concluding "approximately half of all general aviation crashes are caused in whole or part by something other than pilot error." *id.* at p. 28); Jim Burin, *A Mixed Year*, AEROSAFETYWORLD, Feb. 2007, at pp. 16-21, *available at* <http://www.flightsafety.org/asw/feb07/asw_feb07_p16-21.pdf> (restating ICAO Dan Marino's urging that "The discovery of human error should be considered a starting point of an investigation, not the end point." *id.* at p. 21); WOOD, *id.* at p. 80 ("Errors are results, not causes."); REASON, *id.* at p. 127 ("Identifying an error is merely the beginning of the search for causes, not the end.").

[16] Additionally, prioritization in the literature is considerable. *See, e.g.,* Ed Bolen, Pres. and CEO NBAA, *Safety: A Priority for All Seasons*, J. OF BUSINESS AVIATION SAFETY, Vol. 21 (2006), at p. 1 ("keep safety at top of mind for every flight" *id.*); Stuart Matthews, Pres. and CEO (emeritus), Flight Safety Foundation, *President's Message,* AVIATION SAFETY WORLD, Oct. 2006, at p. 1, *available at* <http://www.flightsafety.org/pubs_home.html> ("There can be no higher calling than to ensure that safety is maintained and constantly improved."). *Cf.,* WOOD, *supra* note 13, at p.15 ("The slogan 'Safety First' has been around a long time and is probably the result of some long-forgotten safety manager's efforts to bring emphasis to the safety program. It sounds good, but, unfortunately, it isn't true and never has been. . . . Safety certainly fits into our objectives somewhere, but its role is that of supporting the primary mission or objective and helping to get the job done-safely, but done!").

[17] "Professionalism" is considered in the Commentary to AMCC I.f., *Aspire to professionalism.* Nonetheless, Capt. Dan Maurino distinguishes between commercial aviation where, he asserts, aircraft scheduling often takes priority over safety and, on the other hand, noncommercial GA where the same pressures do not (and should not) compete with safety. "If I own an airplane and fly on weekends, there is no compromise as to assurances of safety" (that is, I need not fly unless I am totally satisfied of the flight's safety). Telephone Interview with Capt. Dan Maurino, ICAO (Aug. 29, 2003). *Cf.,* "Thanks to the combined efforts of regulators, pilots through their unions, and enlightened managements, scheduling DOES NOT often take priority over safety, at least

among major carriers in the U.S. and Europe. This once common problem is now largely a thing of the past, or a thing of the third world or smaller fly-by-night operations. . . . The implication of this statement [above] is that GA ops are, in general, safer than commercial ops because the pressure to compromise safety in order to make the schedule is absent in GA. I think we all agree that the safety record of commercial ops is demonstrably better than GA." Email from Capt. Don Steinman, America West Airlines (Mar. 8, 2006). "Reducing costs must never compromise safety. We are constantly trying to keep the cost down for flying especially in GA, but safety must always be the first priority. Fees, fuel, training and maintenance are getting more and more expensive, so the cost of flying is escalating. If you attempt to maintain existing costs by compromising training or maintenance, you will diminish safety." Email from Claus Petersen, Chairman, Danish Flight Safety Council (Mar. 24, 2006).

One educator stated, "The concept [of safety as the number one priority], while great in theory, just does not happen in reality. The mission is always first however, safety must play a most important role in ensuring that the mission is not only completed, but completed in the most safe and efficient manner possible. Safety supports the mission . . . what ever that mission might be!" Email from Prof. Grant Brophy, Ph.D., Dir. of Safety and Security, Embry-Riddle Aeronautical University (Jan. 24, 2006). Capt. Steinman responds: "In my view, the phrase 'safety supports the mission' is wrong-headed for any operation whether GA, commercial or military. Effective planning and airmanship support the mission, along with good equipment. As for safety, it is the overarching priority: if the mission can't be completed safely, it should not be attempted in the first place. If the unsafe condition commences after launch, the mission should be aborted." Email from Capt. Don Steinman, America West Airlines (Mar. 8, 2006).

[18] US Airways *Flight Operations Manual*, reprinted with permission.

[19] JetBlue Spokesperson, *quoted in* Andy Pasztor & Susan Carey, *Pilot-Fatigue Test Lands JetBlue In Hot Water*, WALL ST. J., Oct. 21-22, 2006, at pp. A1-A7, *available at* <http://www.wsj.com>. *Cf.*, Email from George E. Reed, Ph.D., Assoc. Prof., U. of San Diego (Apr. 16, 2007) ("In practice, in some airlines, safety isn't a priority based on distribution of resources and decision making power in the corporate hierarchy. The point is that rhetoric and espoused values are sometimes not enacted.").

[20] *See* TONY KERN, REDEFINING AIRMANSHIP 52 (McGraw-Hill 1997) (presenting four ascending skill levels: safety, effectiveness, efficiency, and precision and continuous improvement).

[21] This prioritization is consistent with many aviation codes, including the Air Line Pilots Association's Code of Ethics. *Available at* <http://www.alpa.org>. Moreover, the editors of FLYING MAGAZINE have noted that "the huge majority of pilots do understand that general aviation needs to be safer; and when we survey the reading interests, safety is always number one." *Code of Conduct*, FLYING MAGAZINE, Mar. 2006, at p. 42, *available at* <http://www.flyingmag.com>.

[22] Interview with John W. Olcott, Pres., General Aero Co., in Phila., Pa. (Nov. 1, 2003). *See* AMCC VII.d, *Advance a general aviation culture that values openness, humility, positive attitudes, and the pursuit of personal improvement*. (emphasis added). *See generally*, Behavioural-Safety.com, *at* <http://www.behavioural-safety.com/cgi/update.pl?page=reference&sub=Safety_Culture#TOP> (providing an extensive anthology of resources on safety culture).

[23] REASON, *supra* note 15, at p. 191.

[24] The Int'l Atomic Energy Agency (IAEA), *Safety Culture – A Report by the Int'l Safety Advisory Group*, Safety Series, No.75-INSAG-4 (1991), at p. 4, *available at* <http://www-pub.iaea.org/MTCD/publications/PDF/Pub882_web.pdf>.

[25] Letter from Larry D. McCarroll, CEO, CAPACG LLC, Daytona Beach, Fla. (Jan. 21, 2007) (on file with author).

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[26] TONY KERN, CULTURE, ENVIRONMENT AND CRM 185 (MCGRAW-HILL 2001) ("[P]ilots across companies and countries share some common cultural characteristics. In short, pilots have a culture all their own, but that doesn't mean that they are immune to the effects of organizational cultures, quite the contrary. . . Culture is fuzzy and inexact. It shifts, evolves, and can be unpredictable, just like humans that make it up. It can be healthy or unhealthy. It can help—or occasionally contribute to lethal attitudes." *id*. at p. 187).

[27] FAA, AC 120-92, *Introduction to Safety Management Systems for Air Operators* (June 22, 2006), at p. 4, *available at* <http://www.faa.gov>, *also available at* <http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/6485143d5ec81aae8625719b0055c9e5/$FILE/AC%20120-92.pdf>.

[28] Richard T. Santulli, Presentation at the 52nd Annual Corporate Aviation Safety Seminar CASS, Flight Safety Foundation, in Tucson, Ariz. (May 9, 2007).

[29] Transport Canada, *Safety Management Systems – Small Operator Pilot Implementation Project*, *at* <http://www.tc.gc.ca/CivilAviation/SMS/SmallOperator/menu.htm>.

[30] Nicholas A. Sabatini, Keynote Address, 18th FAA/ATA Int'l Symposium on Human Factors in Maintenance and Ramp Operations, in Orlando, Fla. (Sept. 6, 2006), *available at* <http://www.faa.gov/news/speeches/news_story.cfm?print=go&newsId=7423>. *See* FAA, FAASTeam, *at* <http://faasafety.gov/about/mission.aspx> ("The FAASTeam uses system safety techniques to shift the safety culture. New risk management tools will be created for individual airmen. A product to deliver safety management system tools to air groups is in the development process.").

[31] REASON, *supra* note 15, at p. 195.

[32] REASON, *id.* at p. 213.

[33] David Collins, Engineering Analyst, Dominion Nuclear CT, *Managing Safety Culture*, Presentation (June 2004) (emphasis added), *available at* <http://http://nuclearsafetyculture.freeyellow.com/ManagingSafetyCulture.ppt> (Collins further stated that the "determinants of safety culture are the ethical attitudes of trust, care and commitment to excellence."). *See* Behavioral-Safety.Com Website, *at* <http://www.behavioural-safety.com>, *and at* <http://www.behavioural-safety.com/cgi/update.pl?page=reference&sub=Safety_Culture#TOP> (providing an anthology of safety culture publications).

Just Culture: A Safety Management System (SMS) is often characterized as requiring a *just* culture. "A just culture refers to a way of safety thinking that promotes a questioning attitude, is resistant to complacency, is committed to excellence, and fosters both personal accountability and corporate self-regulation in safety matters. A just culture, then, is both attitudinal as well as structural, relating to both individuals and organizations." Flight Safety Foundation, *A Roadmap to a Just Culture: Enhancing the Safety Environment,* FLIGHT SAFETY DIGEST, Mar. 2005, at p. 5, *available at* <http://www.flightsafety.org>. A just culture provides "an atmosphere of trust in which people are encouraged and even rewarded for providing essential safety-related information, even if self-incriminating . . ." ICAO, Industry Safety Strategy Group (ISSG), *Implementing the Global Aviation Safety Roadmap* (Dec. 4, 2006), *available at* <http://www.flightsafety.org/pdf/roadmap2.pdf>. A just culture also demands recognized and agree-upon principles or rules that articulate acceptable conduct to provide transparency, predictability, and fairness in administering sanctions.

[34] "I like to think of leadership as occurring in all directions: top, lateral and downward. We can lead our supervisors, our peers, and our subordinates. Indeed we are obligated to do so in this most important area of safety. I mention this because many seem to conceive of leadership as merely a superior-subordinate kind of relationship. Safety is everyone's business. If someone other than the pilot in command identifies a hazard or situation that endangers the flight, don't

they have an obligation? I also believe this to be true because leadership clearly exists outside of the leader-subordinate relationship. One can positively influence others to accomplish something even if they do not have the formal authoritative position to do so. This is an informal form of leadership." Email from George E. Reed, Ph.D., Assoc. Prof., U. of San Diego (Apr. 16, 2007).

[35] SHEEHAN, *supra* note 12, at § 8.4.

[36] IATA, *Global Aviation Safety Roadmap*, *supra* note 5, at p. 2.

[37] In fact, the fatality rate increased (in 2004 compared to 2003) by 10.3 percent. AOPA Air Safety Foundation, *2006 Nall Report*, at p. 4, *available at* <http://www.asf.org>. "General aviation accidents increased from 1,617 in 2004 to 1,669 in 2005. Of these, 321 were fatal accidents, up from 314 in 2004. The general aviation accident rate increased from 6.49 per 100,000 flight hours in 2004 to 6.83 in 2005. The fatal accident rate increased from 1.26 to 1.31. The number of fatalities rose slightly from 558 to 562." NTSB, *NTSB Reports Increase in Aviation Accidents in 2005*, NTSB NEWS, SB-06-14 (Mar. 17, 2006), *available at* <http://www.ntsb.gov>.

[38] IATA, *Global Aviation Safety Roadmap, supra* note 5, at p. 2 (asserting that the "aviation industry currently adopts a somewhat reactive approach to managing safety").

[39] *See generally, Unlocking the Potential of a Safety Management System*, FLIGHT SAFETY DIGEST, Nov.-Dec. 2005, at p. 1, *available at* <http://www.flightsafety.org/fsd/fsd_nov-dec05.pdf> ("[C]onstant catching up is required to match human inventiveness for new types of errors," *citing* George Firican, *An Introduction to ICAO Safety Management Systems* and *Safety Management Systems*, Presentation to the ICAO Safety Mgt. Seminar/Workshop, in Almaty, Kazakhstan (Sept. 5-9, 2005)). *See also* Transport Canada, Civil Aviation Directorate, *SMS*, *at* <http://www.tc.gc.ca/CivilAviation/directives/dir31rev2.htm> (describing SMS as "pro-active management rather than reactive compliance with regulatory requirements"); ICAO Safety Management Manual; Operator's Flight Safety Handbook, Issue #2, Global Aviation Information Network (GAIN), *available at* <http://www.icao.int/icaonet/dcs/9859/9859_1ed_en.pdf>; *at* <http://204.108.6.79/index.cfm> (providing GAIN resources); Transport Canada, TP 13881, *Safety Management Systems for Flight Operations and Maintenance Organizations*, *available at* <http://www.tc.gc.ca/CivilAviation/SMS/guidance.htm>. *See generally,* Mitre Corporation, SMS Website, *at* <http://www.mitrecaasd.org/SMS/>; FAA, GUIDEBOOK FOR DEVELOPING A SAFETY MANAGEMENT SYSTEM (SMS) FOR FLIGHT TRAINERS (Aug. 2007), *available at* <http://www.mitrecaasd.org/SMS/doc/Guidebook_for_Flight_Trainer_SMS_August_2007.pdf>.

Proactive programs including in-house programs modeled after NASA's Aviation Safety Reporting System (ASRS) are now standard at most air carriers, and can be set up at FBOs, flight schools, and flying clubs. *See also* FOQA (Flight Operations Quality Assurance program) and consider its potential contribution to SMS, *at* <http://www.flightsafety.org/foqa.html>; Chris Solan, *Shifting Paradigms: Manufacturer-based Safety Programs to Support Very Light Jet (VLJ) Operators*, Eclipse Aviation (2007), *available at* <http://www.eclipseaviation.com/files/pdf/EAC_PR_CASS_Paper.pdf>; FAA, AC 120-82, *Flight Operational Quality Assurance* (Apr. 12, 1004), *available at* <http://www.faa.gov>, *also available at* <http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/40c02fc39c1577b686256e8a005afb0a/$FILE/AC120-82.pdf>. *See generally* Frances Fiorino, *Global Safety Challenge*, AVI. WEEK & SPACE TECH. (Oct. 1, 2007), at pp. 52-53 (describing the broad movement from "post-accedent diagnostic method[s]" to prognostic accident analysis on a world scale" such as the Aviation Safety Information Analysis and Sharing program*); Data Monitoring for Light Aircraft,* AEROSAFETY WORLD (Oct. 2007), at pp. 10, *available at* <http://www.flightsafety.org/asw/oct07/asw_oct07_p8-10.pdf> (describing the FAA STC'd Aircraft Logging and Event Recording for Training and Safety (ALERTS) system.

Col. George E. Reed, U.S. Army, *Leadership and Systems Thinking*, DEFENSE AT&L (May-June 2006), at p. 5, *available at* <http://www.dau.mil/pubs/dam/05_06_2006/ree_mj06.pdf>, provides a compelling perspective on systems—urging that a systems approach implicates *synthesis* rather than only analysis:

> Systems thinking is no panacea. There is no checklist to work through that will guarantee someone is thinking in a way that will capture the big picture or identify root causes of difficult problems. There are some concepts and approaches embedded in the systems thinking literature, however, that can be very helpful when considering why a situation seems to be immune to intervention, or why a problem thought to be solved has returned with a vengeance. Here are some of the concepts:
>
> - Focus on the purpose for which a system was created over the processes and procedures of a system.
>
> - Simple cause-and-effect relationships are insufficient to understand or explain a complex social system. Patterns over time and feedback loops are a better way to think about the dynamics of complex systems.
>
> - Think in terms of synthesis over analysis; the whole over the parts.
>
> - Busyness and excessive focus on short term gains interferes with our ability to use a systems approach.
>
> - Leaders must see what is actually happening over what they want to see happen.
>
> - Thinking about systems and their dynamics suggests alternative approaches and attunes leaders to important aspects of organizational behavior, especially in military organizations that value tradition and standardization.

[40] James K. Coyne, *Saving an Airport with Safety*, AVIATION SAFETY WORLD, Dec. 2006, at p. 40-43, *available at* <http://www.flightsafety.org>. *See generally,* FAA, AC 120-92, *supra* note 27.

[41] *See* FAA, *Fiscal Year 2006 Business Plan - Aviation Safety*, at p. 6, *available at* <http://www.faa.gov> (urging the "widespread adoption of *voluntary* safety management systems") (emphasis added); *see also* FAA, AC 120-92, *supra* note 27, at p. 7 ("The FAA is seeking to increase the use of *voluntary* programs in the process of safety management, particularly use of the Aviation Safety Action Program (ASAP) and internal evaluation programs (IEP). Both of these programs have strong relationships to the functions of safety assurance and safety promotion in an SMS." *id.*) (emphasis added).

[42] ICAO, SAFETY MANAGEMENT MANUAL, *supra* note 7, at § 1-4-2.

[43] FAA, AC 120-92, *supra* note 27, at p. 2.

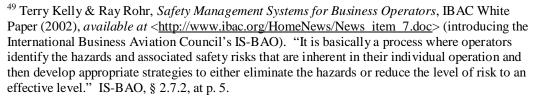[44] *See, e.g.,* Transport Canada, *SMS Safety Policy, at* <http://www.tc.gc.ca/civilaviation/general/flttrain/SMS/TP14135-1/section9.htm>.

[45] FAA, AC 120-92, *supra* note 27, at p. 3, *available at* <http://www.faa.gov>.

[46] David Hutzinger, Ph.D., *SMS, Arriving for Keeps*, BUSINESS & COMMERCIAL AVIATION, Sept. 2007, *available at* <www.aviationweek.com/bca>.

[47] AC 120-92, *id*.

[48] *See, e.g.,* Vince Galotti, Arun Rao, & Daniel Maurino, *ICAO Initiative Promotes Global Approach to SMS Implementation,* ICAO J. (Nov.-Dec. 2006), *available at* <http://icao.int/cgi/goto_m.pl?icao/en/jr/2006/6106_en.pdf>.

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[49] Terry Kelly & Ray Rohr, *Safety Management Systems for Business Operators*, IBAC White Paper (2002), *available at* <http://www.ibac.org/HomeNews/News_item_7.doc> (introducing the International Business Aviation Council's IS-BAO). "It is basically a process where operators identify the hazards and associated safety risks that are inherent in their individual operation and then develop appropriate strategies to either eliminate the hazards or reduce the level of risk to an effective level." IS-BAO, § 2.7.2, at p. 5.

IS-BAO includes the following SMS components: a company safety-risk profile, safety policy, safety management strategy (stating safety management approach and rationale), a technical management system (largely mechanisms to ensure regulatory compliance), hazard identification and tracking system (diverse mechanisms to address proactively deficiencies in safety management), change management process, safety management audit, and operational safety reviews.

See IBAC, *Business Aviation Safety Strategy* (Sept. 2007), *available at* <http://www.ibac.org/Library/ElectF/saft/Business%20Aviation%20Safety%20Strategy%20_Web site%20Release_%209%20Septemberv2.pdf> (recognizing SMS as "the cornerstone for IS-BAO" and highlighting the import of codes of practice).

[50] FAA, AC 120-92, *supra* note 27, at App. 1.

[51] FAA, AC 120-92, *id.* at p. 9.

[52] *See, e.g.,* William Voss, Dir., Air Nav. Bureau, ICAO, *Safety Management Systems*, Presentation Slides (Mar. 1, 2004), *available at* <www.icao.int/anb/safetymanagement/SafetyManagement.ppt> (citing Air Transat as having had "a 72% decrease in irregular operating costs (over $1m per month saved)" and response to loss of business, time lost by injured persons, legal fees and damage claims, and increased insurance premiums); Civil Aviation Authority (UK), *Safety Management Systems for Commercial Air Transport Operations*, CAP 712 (Apr. 2, 2002), at p. 1, *available at* <http://www.caa.co.uk/docs/33/CAP712.PD> (SMS "as important to business survival as a financial management system").

[53] Terry Kelly & Ray Rohr, *supra* note 49 (asserting that SMS "can be effectively used by a person operating a small, simple aircraft or by a flight department with several state-of-the-art large aircraft." Traditionally the "smallest scenarios for SMS have been two aircraft/one pilot, or one pilot/ two aircraft.") Telephone Interview with Capt. Don Steinman, America West Airlines (Dec. 10, 2006). The "lowest common denominator for SMS is the single-pilot operator." Telephone Interview with Michael W. Brown, Mgr., AFS-810, FAA (Oct. 12, 2006). The small operator "might be the person looking in the mirror." Telephone Interview with J.A. Brad Fowles, Project Manager, SMS, Small Operator Pilot Project, Transport Canada (Mar. 7, 2007).

See Transport Canada, SMS Website, *at* <http://www.tc.gc.ca/CivilAviation/SMS/SmallOperator/Final/AppendixD.htm> (providing a "SMS complexity continuum tool" to help determine the requirements for operators – recognizing that per *Canadian Aviation Regulation* 107.04, "A safety management system shall correspond to the size, nature and complexity of the operations, activities, hazards and risks associated with the operations…" and that an organizations complexity must be considered in addition its size.). *See also* Transport Canada, SMS Website, *at* <http://www.tc.gc.ca/CivilAviation/SMS/SmallOperator/Final/Menu.htm#Summary> (providing testimonials about the cost saving of SMS).

[54] William R. Voss, Dir., Air Navigation Bureau, ICAO, Presentation at the 23rd World Assembly, IAOPA, in Toronto (June 19, 2006), *available at* <http://www.iaopa.org/info/assembly23/ppts/voss2.swf>.

[55] Simon A. Witts, *Safety Management in Engineering – A Regional Airline View,* Paper presented at the IASS, in Dublin (Nov. 4-7, 2002), at p. 117, *available at* <http://flightsafety.org/pdf/iass02_toc.pdf>.

[56] Michael W. Brown, *System Safety in Modern Flight Training*, FAA AVIATION NEWS (Jan./Feb. 2006), at p. 2, *available at* <http://www.faa.gov/news/aviation_news/2006/media/JanFeb2006.pdf>.

[57] Brown, *id*. *See* William R. Voss, Pres. & CEO, Flight Safety Foundation, *President's Message, Unnatural Acts,* AEROSAFETYWORLD, Feb. 2007, at p. 1, *available at* <http://www.flightsafety.org/asw/feb07/asw_feb07_p1.pdf> ("At every level, we have to build mechanisms that allow for the exchange of data and the development of solutions that cross disciplines . . . it needs to be part of our new culture.").

[58] Telephone Interview with Ric Peri, VP, Aircraft Electronics Ass'n (Jan. 2, 2006).

[59] Peri, *id.* (Oct. 26, 2006).

[60] *Unlocking the Potential of a Safety Management System*, FLIGHT SAFETY DIGEST, Nov.-Dec. 2005, at p. 1, *available at* <http://www.flightsafety.org/fsd/fsd_nov-dec05.pdf>.

> SMS is essentially a quality management approach to controlling risk. It also provides the organizational framework to support a sound safety culture. For general aviation operators, SMS can form the core of the company's safety efforts. . . .
>
> Development and implementation of an SMS can give the aviation service provider's management a structured set of tools to meet their legal responsibilities but they can also provide significant business benefits. The SMS incorporates internal evaluation and quality assurance concepts that can result in more structured management and continuous improvement of operational processes. The SMS outlined in this AC is designed to allow integration of safety efforts into the operator's business model and to integrate other systems such as quality, occupational safety, and environmental control systems that operators might already have in place or might be considering.

FAA, AC 120-92, *supra* note 27, at p. 2, *available at* <http://www.faa.gov>. Earlier, the FAA issued a policy statement regarding SMS as FAA Order 8040A, *Safety Risk Management* (June 26, 1998), *available at* <http:www.faa.gov>.

[61] FAA, AC 120-92, *id*., at § 5(a)((1). *See generally,* WOOD, *supra* note 15, at pp. 57-65 (presenting risk management).

[62] Larry D. McCarroll, *The Empty Seat*, NAFI MENTOR, Oct. 2006, at p. 16 (proposing to reduce "stress with true SPRM [single-pilot resource management]; creating a timeline/profile of the flight and associated expectations; and to "Pick a tool or a mix of tools to be your own personal resource-management toolbox." *id,*). Alternatively, could it be that pilots make good decisions cognitively but fail to implement them due to a lack of self-mastery?

[63] Telephone Interview with Don Arendt, Ph.D., FAA (Oct. 12, 2006). [*Ed*. – Dr. Arendt is the primary author of FAA, AC 120-92, *supra* note 27].

[64] *See, e.g.,* Susan Parson, *Risk Management Teaching Tips* (April 2005), *at* <http://www.faasafety.gov/gslac/ALC/libview_normal.aspx?id=6107>; Eric Shappee, MCFI, *Grading to Go – Using a Risk-Assessment Form*, NAFI MENTOR (Mar. 2006), at pp. 12-13 (presenting the risk-assessment form developed and used by the aviation department at Kansas State U.-Salina); King Schools, *Practical Risk Management for Pilots*, *available at* <http://www.kingschools.com>.

[65] IATA, *Global Aviation Safety Roadmap*, *supra* note 5, at p. 4 (A "*continuing cycle* of analysis, identification, action, measurement and revision is a core feature of any safety improvement programme."). David Huntzinger, *supra* note 46, at 58 (SMS "is not a fire-and-forget program . . . [i]t is a 'living' program that will change as your flight department evolves…[y]ou will be altering the program, at one level or another, for the rest of your aviation career. SMS will, literally, change the way you work, forever.").

[66] Email from Frank Hofmann, Sec'y, IAOPA (Oct. 10, 2006).

[67] Darol Holsman, *Auditing Management*, AVIATION SAFETY WORLD, Nov. 2006, at p. 39, *available at* <http://www.flightsafety.org/asw/nov06/asw_nov06_p38-39.pdf>.

[68] *See, e.g.,* Transport Canada, TP 14343 - *Implementation Procedures Guide for Air Operators and Approved Maintenance Organizations, at* <http://www.tc.gc.ca/CivilAviation/SMS/tp14343/guide.htm>.

[69] Interview with John Sheehan, Sec'y, IAOPA, in Palm Springs, Cal. (Nov. 11, 2006).

[70] Email from Prof. Dale DeRemer, Ph.D. (Oct. 20, 2006).

[71] Email from Prof. Bill Rhodes, Ph.D. (Nov 3, 2006).

[72] *See, e.g.,* FAA, AC 120-59A, *Air Carrier Internal Evaluation Programs* (Apr. 17, 2006), *available at* <http://www.faa.gov>, *also available at* <http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAdvisoryCircular.nsf/0/fd8e4c96f2eca30886257156006b3d07/$FILE/AC%20120-59a.pdf>.

[73] Interview with John Sheehan, Sec'y IAOPA, in Palm Springs, Cal. (Nov. 11, 2006). Nonetheless, consider that "*measure* may lead some to the fallacy of misplaced precision. One crazy-making aspect of such systems is the tendency to concentrate on metrics at the expense of reality. A body-count is a poor metric for victory. Fewer complaints about unsafe practices could be explained by any number of realities (e.g., fear of reprisals)." Email from Prof. Bill Rhodes, Ph.D. (Jan. 10, 2007).

[74] IATA, *Global Aviation Safety Roadmap*, *supra* note 5, at p. 4. Audits for small operations and single-pilots need not necessarily be extensive. *See, e.g.*, The Medallion Foundation, *Annual Audit Checklist, Medallion Flyers Program for General Aviation Pilots*, *available at* <http://www.medallionfoundation.org/Flyer_Program.htm>.

[75] For example, AMCC VII, SRP ("Invite *constructive* criticism from your fellow aviators"), and AMCC III.e ("Accurately log hours flown and maneuvers practices to satisfy training and currency requirements.").

[76] Transport Canada, *Let's be practical,* TP 14135 - *Safety Management Systems for Small Aviation Operations - A Practical Guide to Implementation* (Nov. 9, 2004), *available at* <http://www.tc.gc.ca/civilaviation/general/Flttrain/SMS/TP14135-1/section5.htm>.

[77] FAA, AC 120-92, § b(2)(d), at App. 1, *available at* <http://www.faa.gov> (defining SRM as "a formal process within the SMS composed of describing the system, identifying the hazards, assessing the risk, analyzing the risk, and controlling the risk").

[78] Consider that "internal evaluation" can be done by a formal inside audit organization whereas self-audit can be personal/direct.

[79] John W. Olcott, *The 'Professional' Approach, Obtaining insurance for very light jets,* AOPA PILOT, Mar. 2007, at p. 99, *available to members at* <http://www.aopa.org/members/files/pilot/2007/turbine0703.html>.

[80] Email from Larry McCarroll, CAPACG, LLC (May 8, 2007).

[81] *See supra* text accompanying note 63.

[82] *See, e.g.,* Commentary to AMCC I.e (addressing prudent operating practices, including checklists). *See also* Hutzinger, *supra* note 46, at p. 56 (presenting a *Threat & Error Management Predeparture Checklist*).

[83] Michael W. Brown suggests asking, "Do you have the ability to safely complete this flight, if everything were to go wrong?" Brown, *supra* note 56, at p. 3. (Brown also presents a sample scenario-based lesson plan using system safety principles). For Part 91 operations, perhaps such criteria could (at least) take into consideration some of the more stringent relevant requirements of Part 135 and 121 operations. Telephone Interview with Jim Anderson, VP, AIG (May 4, 2007) ("Anything we can do in the Part 91 world to replicate the processes in the 135 and 121 environment will hopefully improve safety."); *see* Jim Anderson, VP, AIG, Presentation at NBAA 2005 (Nov. 9, 2005), *available at* <http://web.nbaa.org/public/cs/amc/2005/videos/vls05faa/index.php> (underscoring the value of 135 and 121 procedures for Part 91 operations).

[84] From a resource management perspective, consider *delegation* to the autopilot to relieve workload. *See, e.g.,* the SRP to AMCC VI, "In IMC and at night, operate with an operational autopilot or a qualified second pilot if practicable."

[85] For each flight, ask "what would I do differently?" Discuss your results with a CFI, mentor, or safety counselor. *See infra* note 100 (concerning the efficacy of *lessons learned*).

[86] *At* <http://asrs.arc.nasa.gov/main_nf.htm>.

[87] *See, e.g.,* NBAA, *Guidelines for Single Pilot Operations of Very Light Jets and Technically Advanced Aircraft* (Jan. 2005), *available at* <http://web.nbaa.org/public/ops/safety/vlj/VLJ_Training_Guidelines.pdf> (presenting CRM/SRM training guidelines and listing the following CRM/SRM elements: communication, decision making, situational awareness, workload management, and resource management); *Single-Pilot Training,* FLYING, Nov. 2006, *at* <http://www.flyingmag.com/article.asp?section_id=15&article_id=734>; David Freedman & Michael Nendick, U. of Newcastle, *Crew resource management in general aviation for single-pilot operations*, Presentation at the 4th Austl. Aviation Psychology Symposium, in Manly (Mar. 16-20, 1998), *available at* <http://www.crm-devel.org/resources/paper/spcrm/spcrm1.htm>.

[88] "A huge number of people—as many as half—that think they are doing the right thing are actually not." Interview with Robert A. Wright, Eclipse Aviation, in Palm Springs, Cal. (Nov. 11, 2006) (remarking on the compelling need for, and value of mentors).

[89] *See, e.g.,* Eclipse Aviation, *The Eclipse 500 Mentor Process. Why?, at* <http://www.eclipseaviation.com/ownership/training/mentor.html>; FAA, *2007 Aviation Safety Business Plan* (2006), at p. 5, *available at* <http://www.faa.gov>, *also available at* <http://www.faa.gov/about/plans_reports/business_plan2007/media/AVS%20FY2007%20Business%20Plan%20for%20Publication.pdf> (presenting the FAA's strategic initiative on mentoring guidance).

See Thomas P. Turner, *Transition Training*, AVIATION SAFETY MAGAZINE, Jan. 2007, at p. 9, *available to subscribers at* <http://www.aviationsafetymagazine.com> (considering mentor pilots – whose role is to "teach and counsel, resisting the urge to 'do it all him/herself' or to campaign to be hired as a corporate pilot instead of training the owner." *id.*).

[90] *See, e.g.,* Press Release, Cirrus Design Corp., *Cirrus Removes Barriers to Aircraft Ownership,* (July 21, 2006), *available at* <http://www.cirrusdesign.com/downloads/pdf/pr/CDNR06-12.pdf>. Cirrus Exec. VP Sales & Marketing, John M. Bingham said,

> CIRRUS has created an entirely new ownership experience - for individuals or groups. CIRRUS ACCESS turns every flight into a training session opportunity. A CIRRUS Professional Pilot (CPP) is assigned to a specific

airplane and owner. As a Certified Flight Instructor (CFII), this professional can oversee a training flight or serve as the pilot-in-command at the owner's election. The CPP also serves as the aircraft manager; ensuring maintenance is appropriately scheduled and completed.

[91] *See* FAA, FITS Webpage, *at* <http://www.faa.gov/education_research/training/fits/> ("a partnership between FAA, Industry, and Academia designed to enhance general aviation safety. This is accomplished by developing flight training programs that are more convenient, more accessible, less expensive, and more relevant to today's users of the National Airspace.").

[92] Amy Barrett, *Why You Need A Mentor and How To Find One,* BUSINESSWEEK SMALLBIZ (Feb./Mar. 2007), at p. 72, *available at* <http://www.businessweek.com/magazine/toc/07_18/B4032magazine.htm>. Barrett also notes the importance of personal chemistry and the need to first identify one's "weak spots" in order to find the right mentor.

[93] Telephone Interview with Sandy Hill, VP, NAFI (Jan. 2, 2007) (further stating that "we really hang our hats on mentoring."). "Knowledge and lore passed down is at the heart of every profession – that is the image upon which NAFI was founded." Telephone Interview with Rusty Sachs, Exec. Dir, NAFI (May 3, 2007). *See generally,* FAA, *Best Practices for Mentoring in Aviation Education* (Sept. 2007), *at* <http://www.faa.gov/education_research/training/media/mentoring_best_practices.pdf>.

[94] Recognizing that dispatchers existed in Part 121 operations long before SMS, the assistance of a dispatcher doesn't necessarily equate to a "systems approach" to safety in either Part 121 or single-pilot operations.

[95] Telephone Interview with Fred Towers, Universal Aviation and Weather, Inc. (Oct. 19, 2006). *See generally*, NBAA General Aviation (GA) Desk, *at* <http://www.nbaa.org/gadesk> offering diverse resources including the following tools to GA pilots:

- Meteorologist participation in the collaborative convective forecast product
- Participation/representation in daily operations planning telcons
- Access to the diversion recovery web tool
- Access to the route management tool
- Ability to be a pathfinder volunteer flight
- Access to the reroute monitor
- Flight-specific information on the impact and necessary actions required for traffic management initiatives such as playbook routes, coded departure routes, airspace flow programs, flow-constrained areas, ground stops and ground-delay programs
- Access to tail-number-specific flight delay information and other airport-specific arrival and departure information in the flight schedule monitor
- Representation of critical subscriber issues to the tactical customer advocate (TCA) for resolution
- Access to the TCA web page
- Real-time flight schedule data integration and information exchange into the NAS through the use of CDMNet.

[96] The *Dispatchers Creed* provides:

> Upon my honor I pledge that I shall conscientiously exercise the rights and duties conferred upon me as a certified dispatcher with primary concern for the safety of the lives and preservation of the property affected by my decisions. In the performance of my duties I shall never approve the operation of a flight which in my considered opinion is hazardous.

> I PLEDGE, also, to follow with unremitting attention the progress of each flight under my control. I shall be alert to warn the captain of unforeseen

meteorological developments, unexpected losses of navigational aids or sudden changes in traffic and field conditions which might adversely affect the successful completion of his trip. In addition, I shall be prepared to offer, unsolicited, an alternative plan of action to him when the original plan cannot be followed. In an emergency, I shall be prepared to make full and immediate use of the facilities available to me to aid the stricken flight.

I PLEDGE, finally, to keep pace with the latest advances in the science of aeronautics and supplementary fields of study relevant to my responsibility so that my competency as a dispatcher which depends upon knowledge of such subjects will be maintained.

Airline Dispatchers Federation, *available at* <http://www.dispatcher.org/print.php?id=100016>.

[97] "You can't take a guy in a Cirrus and ask him to call a dispatch service – rather, you have to reduce it to checklist form. A [dispatcher-like service] may only be viable (economically) with turbines. At one-half million and $200/hr. to operate, a Cirrus can't tolerate $50/hr for a dispatcher-like service. Even if it adds only 10 percent to cost – but it is getting close. But if insurance could go from 15K to 10K, you're getting somewhere. Eclipse will have aerial concierge service that may fill some of these needs." Interview with Robert A. Wright, Eclipse Aviation, in Palm Springs, Cal. (Nov. 11, 2006).

"Dispatch-like" services could be fashioned from a "stripped-down" version of services offered in programs such as Eclipse Aviation's *JetComplete* and serve as a "virtual co-pilot." Interview with Jack Harrington, VP Business Affairs, Eclipse Aviation, in San Diego, CA (Mar. 2, 2007). *See* <http://www.eclipseaviation.com/ownership/jetcomplete/>:

With JetComplete/JetComplete Business, a single call to Eclipse Aviation provides flight-planning services, maintenance support, Aircraft-On-Ground (AOG) support, pilot training, electronic navigation and weather data, insurance and fuel discounts, and more. Operators can reduce their operating costs by up to 30% and enjoy the convenience and predictability of JetComplete/JetComplete Business.

JetComplete/JetComplete Business offers all these features for a low fixed price per flight hour, so there are no surprises. JetComplete is offered for operators who fly between 100 and 1,000 hours per year who want comprehensive coverage for maintenance and operational support.

A dispatcher-like program could underlie insurance discounts (such as announced by AIG for JetComplete participants, above), and potentially help "close the insurance gap" for some pilots with a history of incidents, accidents, or violations.

[98] FAA, AC 120-92, *supra* note 27, § b(2)(d), at p. 10.

[99] There is extensive literature on safety promotion generally, and in support of SMS. *See, e.g.,* FAASTeam, *at* <http://faasafety.gov/about/mission.aspx> (describing its mission to include "actively promote safety"). Correspondingly, the AMCC Project aspires to advance these concepts.

[100] Civil Aviation Authority (UK), *Safety Management Systems for Commercial Air Transport Operations*, CAP 712, at Ch. 3, p. 7 (Apr. 2, 2002), *available at* <http://www.caa.co.uk/docs/33/CAP712.PD>.

Conceptually, of course, having a 'lessons learned' function is a good idea. In the real world, though, I think effective leaders learn lessons best on their own/through discussion with their peers more or less on the fly well prior to the lessons being introduced back to the field through the DoD 'system.' Personal accountability drives this learning. Those engaged directly with issues are often

in the best place to diagnose and fix them. The big system can look at long-range issues and do helpful analysis for the issues that have a long lead-time (Joint-Vision type-stuff), but it is often overcome by events at the operational levels. And, it can serve the cultural purpose of fostering good conversation/criticism in a 'learning organization.' But I suppose the lesson I learned is that no office, system, or document can substitute for decent character, honest confrontation of facts, and professional competence.

Email from Bill Rhodes, Ph.D. (April 25, 2007).

[101] *See* <www.secureav.com/newdevelopments.html> (listing various AMCC-based safety promotions).

[102] Transport Canada, *Introduction to Safety Management Systems*, TP 13739 E (Apr. 2001), at pp. 1-2, *available at* <http://www.avhf.com/html/Publications/Outside_Pubs/TC%20Intro%20to%20SMS.pdf>. *See* Transport Canada, *SMS Implementation, available at* <http://www.tc.gc.ca/CivilAviation/SMS/implementation.htm>.

[103] *See* Commentary to AMCC VII.e, *at* <www.secureav.com/Comment-AMCC-VII.e-Ethics.pdf> (considering the AMCC's ethical and philosophical issues).

[104] The SRPs provide *recommended practices,* encourage *personal minimums,* and present techniques that pilots can use to integrate the AMCC's principles into their own practices. They can serve as templates to help pilots and organizations develop practices tailored to their own activities and situations. For example, relative to safety, <u>AMCC I</u> contains the following SRP: "Recognize, accept, plan for, and do not underestimate the costs of implementing proper safety practices." *See* supplemental materials at <www.secureav.com> (providing additional practice and procedural aides).

[105] Telephone Interview with J.A. Brad Fowles, Project Manager, SMS, Small Operator Pilot Project, Transport Canada (Mar. 7, 2007). "A document such as the AMCC, if personalized and internalized by the individual aviator, can . . . serve as their personal safety policy, providing a vital underpinning for their operational risk management and safety assurance activities. It's an essential start to a personal safety management system." Email from Don Arendt, Ph.D., FAA (Nov. 2, 2007).

[106] Consider that "Hard data to demonstrate the existence of safety (the absence of risk) is not easy to produce other than by accident and injury statistics. Given the short time that SMS has been in use we do not have a large enough data base to do that. Consequently, at this point I believe we have to rely on the opinions for those who have implemented a SMS." Email from Ray Rohr, IBAC Stds. Mgr. (Dec. 29, 2006).

[107] Telephone Interview with Ric Peri, VP, Aircraft Electronics Ass'n (Jan. 2, 2007). ("SMS is too complex and overkill for small GA. We can't arbitrarily take a concept out of its scope and make it fit somewhere else." *id.*)

[108] Email from Capt. Don Steinman, America West Airlines (Nov. 3, 2006). *Cf.*, Email from Larry McCarroll, CAPACG, LLC (May 8, 2007) ("What is so amazing about AC 120-92 is that it has offered the same safety enhancements and incentives to corporate flight departments and flight schools that have been utilized with much success at the transport level (ASAP, IEP, FOQA, Voluntary disclosure). As to whether the 120 designation denies individual utilization I would state the individual pilot should promote the utilization of the SMS concepts by his FBO, flight school, repair station or flight department. Here the individual can make a difference.")

[109] For example*,* "[T]he value to smaller organizations, particularly maintenance and avionics AMOs [aviation maintenance organizations] already operating in stringent regulatory and QA

environments, is not commensurate to the cost." Barry Aylward, Vice Chairman, Aircraft Electronics Ass'n, *Point of Communication,* AVIONICS NEWS (Nov. 2006), at p. 4.

[110] Email from Ray Rohr, IBAC (Dec. 29, 2006).

[111] Consider, for example, that when airlines enter bankruptcy, the FAA automatically accelerates its oversight of carriers. *See* John Crawley, *FAA keeping close eye on struggling air industry*, REUTERS (Oct. 8, 2002), *available at* <http://www.reuters.com>.

Nonetheless, society does not view the costs of safety purely from economic and quantifiable perspectives. There are material political and emotional aspects of safety which are "quite squishy." Telephone Interview with Michael Lenz, FAA (Jan. 29, 2007) (highlighting lawmakers decision to mandate ELTs, as an example, and the extreme costs/risks of many search and rescue missions.).

For future study – "Regarding the value of safety, consider comparing the relative cost of the world-wide aviation authorities (CASA, CAA, DGAC, etc.) to the number of operations in their respective countries. Of course, few have the traffic count for GA that the U.S. does. If there's an easy answer, I can't put my finger on it. Divide annual number of TO and landings into the safety budget. . . . but this does not take the uniqueness of operations into account.". Email from Michael Lenz, FAA (Jan. 29, 2007).

[112] DOUGLAS A. WIEGMANN, *supra* note 15, at p. 7. "At the end of the day, it's not a SMS, it's the way you should do business. We've been able to grow 250% in the last 6 months and our incident rate has not changed." Capt. Mike Doiron, Principal & CEO, Moncton Flight College, Presentation at the Univ. Avi. Ass'n 2007 Fall Education Conference, in San Jose (Oct. 19, 2007). *See* James Ott, *A Way of Life*, AVI. WEEK & SPACE TECH. (Oct. 1, 2007), at p. 56 (claiming a cost decline "to single-digit millions from double-digit millions").

[113] *See* FAA, AC 120-92, *supra* note 27, at p. 2 ("Operators in other countries and in other industries who have integrated SMS into their business models report that the added emphasis on process management and continuous improvement benefits them financially as well."); *see* WOOD, *supra* note 13, at p. 20 ("A dollar well spent on accident prevention is still one of the best investments a company can make."); WOOD, *id*. at p. 15 ("Safety is actually a method of controlling costs []. It allows us [to] do whatever we're doing repetitively with minimum damage to our equipment or injury to our personnel.").

[114] Email from Ric Peri, VP, Aviation Electronics Ass'n (Mar. 25, 2007).

[115] Peri, *id.*

Peri also claims that SMA is "rehashed" business theory—primarily "recycled" total quality management (TQM) and other organizational reengineering theory that requires implementation in GA: "It is the current buzzword, both internal and external in the FAA; it is being promoted by people that promote buzzwords, and I pretty much reject most of it." Peri, (Oct. 26, 2006). To the extent that this viewpoint is representative of industry skepticism, new approaches to SMS promotion will be needed for successful GA implementation.

It has also been claimed that SMS requires pervasive implementation, and in its absence, SMS's potential "has not been realized." Wayne Rosenkrans, *Common Route Ahead,* AEROSAFETY WORLD, Jan. 2007, at p. 30, *citing* ICAO, Industry Safety Strategy Group (ISSG), *Implementing the Global Aviation Safety Roadmap* (Dec. 4, 2006), *available at* <http://www.flightsafety.org/pdf/roadmap2.pdf>. *See contra,* Email from George E. Reed, Ph.D., Assoc. Prof., U. of San Diego (Apr. 16, 2007) ("This perspective underlies the "futility argument." It goes something like this: We can't implement the program the way it should be, so why do it at all? It is a cynical view that paralyzes action toward a worthy goal by focusing on the difficulties and not the gains.").

Finally, concerns have been expressed that shifting responsibility (via an SMS) for safety audits to owners and operators "could increase risks to the public and undermine the [] aviation industry. . ." Carly Weeks, *Transport Canada fears ending regular airline safety audits could be risky,* NAT'L POST, Apr. 13, 2007, *available at* <http://www.canada.com/nationalpost/news/story.html?id=1a70a2e3-8401-4cc6-850e-ff973d9b0739&k=83029&p=1>.

[116] FAA, AC 120-92, *supra note 27*, at p. 2; *see* FAA, AC 150/5200-37, *Introduction to Safety Management Systems (SMS) for Airport Operators* (Feb. 28, 2007), *available at* <http://www.faa.gov>.

[117] Mike Ambrose, Dir. Gen., Euro. Regions Airline Ass'n, *Safety Independence*, AVIATION SAFETY WORLD, Oct. 2006, at p. 12, *available at* <http://www.flightsafety.org/asw/oct06/asw_oct06_p11-12.pdf>. *Cf.,* WOOD, *supra* note 13, at p. 123 ("You don't have to have an aviation safety committee. There are other ways to achieve action on problems.").

[118] Michael Overall*, Managing and Regulating Aviation Safety: A New Emphasis and a New Relationship,*" Paper presented at IASS, Nov. 6-9, 1995, cited in *Unlocking the Potential of a Safety Management System,* FLIGHT SAFETY DIGEST, Nov.-Dec. 2005, at p. 1, *available at* <http://www.flightsafety.org/fsd/fsd_nov-dec05.pdf>.

[119] James K. Coyne, *Saving an Airport with Safety*, AVIATION SAFETY WORLD, Dec. 2006, at p. 42, *available at* <http://www.flightsafety.org> (describing the Teterboro [airport] Safety Initiative); *see* Press Release, *NATA Announces New Air Charter Safety Initiative, NATA Safety 1st Management System for Air Charter Operators is unveiled at Teterboro Town hall Meeting* (July 11, 2005), *available at* <http://www.nata.aero/pressroom/releases/pressrelease_detail.jsp?NEWS_ID=1621>. Teterboro Airport's operations are 70% transient, most of which is business aviation. To inform transients of this initiative, the Airport is "utilizing the major aviation associations." Telephone Interview with Lanny Rider, Teterboro Airport Mgr. (Jan. 3, 2007).

[120] Email from George E. Reed, Ph.D., Assoc. Prof., U. of San Diego (Apr. 16, 2007) (further noting that "when we designate a safety office or officer, that can sometimes inadvertently send the message that safety is 'their' responsibility (stovepiping) leaving the others to focus on the real business at hand. Such relegation to a subsection of the organization doesn't relieve the rest from their safety responsibilities. It would seemingly be more effective if safety is 'our' responsibility.").

[121] US Airways, *Flight Operations Manual*, reprinted with permission. Email from Frank Hofmann, Sec'y, IAOPA (April 5, 2006) ("An important addition here is transparency, the need and willingness to share, to disseminate discovered shortcomings. That exchange of information, to be effective, must be institutionalized and not left to discretion."). *See supra* note 33 (considering a "just culture"); FAR 91.1021, *Internal safety reporting and incident/accident response, available at* <www.faa.gov>, *also available at* <http://risingup.com/fars/info/part91-1021-FAR.shtml> ("(a) Each program manager must establish an internal anonymous safety reporting procedure that fosters an environment of safety without any potential for retribution for filing the report.").

"Reporting, however, doesn't mean that those observations reach the hands of those who can use them to improve operations. The proof in the pudding is when the observations and recommendations are put into practice. Without that we are simply filing reports." Email from George E. Reed, Ph.D., Assoc. Prof., U. of San Diego (Apr. 16, 2007) (noting formal guidance from the Chairman of the Joint Chiefs of Staff Instruction, *Joint Lessons Learned Program,* CJCSI 3150.25A (Oct. 1, 2000), *available at* <http://www.dtic.mil/doctrine/jel/cjcsd/cjcsi/3150_25a.pdf>, the Center for Army Lessons

Learned (CALL), *at* <http://call.army.mil/>; and CALL's "lessons learned" page, *at* <http://call.army.mil/links/lessons.asp>.

[122] Telephone Interview with Ric Peri, VP, Aircraft Electronics Ass'n (Oct. 26, 2006).

[123] William R. Voss, Pres. and CEO, Flight Safety Foundation, *President's Message-Connections*, AEROSAFETY WORLD, Jan. 2007, at p.1, *available at* <http://www.flightsafety.org/asw/jan07/asw_jan07_p1.pdf> (Voss also notes that SMS "doesn't deal with the new relationship that must exist between the regulator and the operator." *id.*). *See generally* ICAO, Safety Management Publications, *available at* <www.icao.int/anb/safetyManagement/Documents.html>.

[124] Terry Kelly & Ray Rohr, *supra* note 49.

[125] Rick Peri, VP, Aircraft Electronics Ass'n, *Don't Be Afraid of Safety Management Systems*, AVIONICS NEWS (Aug. 2006), at p. 20, *available at* <http://www.aea.net>.

[126] Telephone Interview with Lanny Rider, *supra* note 119.

[127] Interview with John Sheehan, Sec'y, IAOPA, in Palm Springs, Cal. (Nov. 11, 2006).

[128] *Beck v. Thompson*, 818 F.2d 1204, 1216 (5th Cir. 1984). Courts have recognized that being a competent pilot requires specialized knowledge, skill, and care. *See, e.g., First of Am. Bank-Cent v. United States,* 639 F. Supp. 446, 455. One court which considered whether a pilot was negligent noted that "courts have long recognized that one who engages in a business, occupation, or profession must exercise the requisite degree of learning, skill, and ability of that calling with reasonable and ordinary care . . . [and that] the specialist within a profession may be held to a standard of care greater than that required of the general practitioner." *Heath v. Swift Wings*, 252 S.E.2d 526 (N.C. App. 1979).

[129] Jurors will not be asked to refly the accident. Instead, counsel will teach the jury what they need in order to properly evaluate the case. Moreover,

> Few pilots would recognize the world of aviation that is created out of whole cloth in the course of an average aviation accident tort trial. What is or is not due care or even reality in a cockpit may become quite attenuated in court. In several cases controllers were saddled with responsibility for failing to communicate relatively inconsequential weather information to pilots who crashed, according to the Court, because they were so shocked and dumbfounded by not seeing what they expected to see at MDA or DH. . . . Thus, while the legal consequences of one's behavior are not to be trivialized, even experienced trial counsel cannot always predict which of the myriad issues in play in any particular aviation accident trial will wind up being the linchpin. Accordingly, prudent pilots pay attention to those factors most likely to get them thru their flight safely and securely and must of necessity let the legal ramifications work themselves out in the rare instance where that becomes necessary.

Email from Gary W. Allen, Esq., Dir., Avia. & Admiralty Div. (Ret.), U.S. Dept. of Justice (April 25, 2007).

[130] *See Lightenburger v. Gordon*, 407 P.2d 728 (Nev. 1965) (a wrongful death action arising out of the crash of a Cessna 310, as an example of a case where expert witnesses clashed sharply over whether Gordon met the standard of care in deciding to land in inclement weather); Leonard M. Ring, *Effective Opening And Closing Statements In Air Crash Litigation*, LITIGATING THE AVIATION CASE: FROM PRETRIAL TO CLOSING ARGUMENT, Am. Bar Ass'n (Desmond Barry Jr., ed. 2nd ed. 1998).

[131] *See* AMCC VII.e, *Promote ethical behavior within the GA community*.

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[132] *See, e.g., Administrator v. Nelson*, 2 N.T.S.B., at 1900, 1902 (1975), *available at* <http://www.ntsb.gov> (NTSB requiring pilots to exercise a high level of care and attention in taking a clearance); *Lightenburger v. Gordon,* 407 P.2d 728 (Nev. 1965). A pilot may need to exercise far greater care than the minimum standards of the FAR, FAA Advisory Circulars, or custom and practice. The requirements for "due care" really are not just a "minimal" standard and, in fact, can be quite demanding depending on the attendant circumstances.

[133] *See Southern Pac. Co. v. Castro,* 498 S.W.2d 491 (Tex. 1973), *cited in Associated Aviation Underwriters v. U.S.,* 462 F.Supp. 674, 680 (N.D. TX 1979), *Rudelson v. United States*, 431 F.Supp. 1101 (C.D. Cal 1977), and *Todd. v. United States*, 384 F.Supp. 1284 (N.D. Fla 1974).

[134] *Lightenburger v. Gordon,* 407 P.2d 728 (Nev. 1965).

[135] As one expert says: "Under the governing state law, the circumstances of a particular accident *may require more of a pilot of a small airplane than compliance with applicable FARs,* a jury must be so advised, and failure so to instruct renders the instruction in contravention of applicable law. This follows where, under applicable state law, compliance with administrative regulations is evidence for the fact finder and does not alone absolve a defendant from liability–compliance being a fact which the jury may weigh in deciding the issue of a pilot's due care." KENT KRAUSE, AVIATION TORT AND REGULATORY LAW § 13:12 (West Group 2002-) (emphasis added). *See Lightenburger v. Gordon,* 407 P.2d 728 (Nev. 1965) ("[C]ompliance with an administrative safety regulation, though evidence for the jury to weigh in determining the issue of care, does not absolve the defendant from negligence." *Id*., at 738 (Opinion of the court). "The circumstances of a particular accident may require more of a pilot than compliance with applicable regulation." *id*., at 745 (Concurring opinion)); *see also Bush v. Southern Pacific Company*, 289 P. 109 (Cal. App. 1930), a railroad case cited in *Lightenburger v. Gordon, supra*, to support its holding, which expressly stated that a railroad safety regulation is a "minimum" standard which might need to be exceeded in the exercise of due care; *see also Worthington v. U.S.*, 807 F. Supp. 1545, 1565 (S.D. GA, 1992) ("[The FARs] prescribe the minimum requirements for safety in the operation of the aircraft, and prudent airmen strive to exceed these minimums to provide themselves a greater margin of safety."), *rev'd on other grounds*, 21 F.3d 399 (11th Cir. 1994). "To determine the 'standard of care' in a given case, documents such as the Aeronautical Information Manual and FAA Advisory Circulars are sometimes admitted into evidence." FAA Chief Counsel Opinion (3-31-78).

[136] KENT S. JACKSON ET AL., FEDERAL AVIATION REGULATIONS EXPLAINED 91-33 (Jeppesen Sanderson 2000). *See* FRED A. BIEHLER, AVIATION MAINTENANCE LAW 89 (Jeppesen Sanderson 1975); *see also* FAR § 91.103 *Preflight Actions, available at* <http://www.faa.gov>, *also available at* <http://risingup.com/fars/info/part91-3-FAR.shtml> (emphasis added) (requiring the pilot in command to be "familiar with *all* available information concerning the flight . . . .").

[137] *See* IATA, *Global Aviation Safety Roadmap*, supra note 5, at p. 2 (expressing the moral imperative for action.

[138] *See, e.g.*, *The T.J. Hooper*, 60 F.2d 737, 740 (2d Cir.), *cert. denied*, 287 U.S. 662 (1932).

[139] Consider the case of *Osborn v. Irwin Memorial Blood Bank,* 5 Cal. App. 4th 234 (1992) (holding that an instruction stating that evidence of custom is not controlling on the issue of standard of care should not be given in professional malpractice cases in which expert testimony is used to set the standard of care).

"*Good Operating Practices*, such as those contained in a Flight Information Manual published by the federal agency, are merely advisory in nature. A violation thereof does not give rise to a presumption of negligence." KRAUSE, *supra* note 134, at § 13:12.

[140] The law recognizes *best efforts* as a higher standard of care than *reasonable efforts.* This higher standard requires the individual to utilize all of his or her capabilities to achieve the objective (in the case of pilots, flight safety). Such a standard would place a significantly higher

burden on pilots than does the standard of *reasonable efforts.* Although such a higher standard of care might appear beneficial to an "aspirational" ethical code such as the AMCC, it was not adopted because some reviewers feared that there might nonetheless be (at least *de facto*) liability implications and might impede adoption and implementation of the AMCC.

[141] *See generally* AMCC II, *Passengers and Parties on the Surface*, and corresponding commentary. *Cf.,* A common carrier [as distinguished from non-commercial GA] is required to observe the highest degree of skill, care, and diligence, or the utmost care and diligence. *Ferguson v. Trans World Airlines, Inc.,* 135 F. Supp. 2d 1304, 1309-1311 (N.D. Ga. 2000); *McCusker v. Curtiss Wright Flying Service, Inc.,* 269 Ill. App. 502 (1972). *Katamey v. Chicago Transit Auth.*, 289 N.E.2d 623, 625 (Ill. App. Ct. 1972) ("[T]he degree of care should be commensurate with the danger to which the passenger is subjected . . . ."). This standard diminishes to an ordinary standard of care when an individual is no longer a "passenger" or when non-passengers are injured. *Jones v. Chicago and Northwestern Transp. Co.*, 563 N.E.2d 1120, 1122 (Ill. App. 1990), *appeal denied*, 571 N.E.2d 149 (Ill. 1991). Note that the FAA Administrator, when prescribing a regulation or standard, is required to "consider . . . the duty of an aviation carrier with the highest degree of safety in the pubic interest." 49 U.S.C. § 44701(d) (2003).

[142] Code Examples are examples from relevant codes of conduct that are presented for background, perspective, and comparison. Code Examples are not necessarily endorsed by the AMCC Commentary.

[143] *Code of Conduct,* Georgia Sport Flyers Association, *at* <http://www.georgiasportflyers.com/pages/gsfa.pdf> (emphasis added). Adopting the "*safest* possible methods" could unnecessarily encumber flight operations and create dangerous litigation risks. (emphasis added).

[144] *Flight School Code of Conduct*, Nat'l Air Transport. Ass'n, *available at* <http://www.nata.aero>.

[145] JETBLUE, *Core Values,* MANUAL ON MANUALS (2000).

[146] *Code of Ethics*, National Association of Flight Instructors, *available at* <http://www.nafinet.org/who/code.html>.

[147] NASA AIRCRAFT OPERATIONS MANAGEMENT, NPD 7900.4B, at § 1.f (Apr. 27, 2004), *available at* <http://nodis3.gsfc.nasa.gov/displayDir.cfm?t=NPD&c=7900&s=4B> (emphasis added).

[148] Jerome Lederer, *A Code for Professional Pilots, Ethics are inculcated by example and experience,* CORPORATE FLYING, Dec. 2001, *available at* <http://www.gulfstreamcontractpilot.com/professional_pilots_code.htm>.

[149] (emphasis added), *available at* <http://www.alpa.org>.

[150] US Airways *Flight Operations Manual*, reprinted with permission.

[151] *Drafting Considerations* are included in selected portions of the commentary to highlight drafting choices and issues and to assist implementers in resolving them.

[152] *E.g.,* FAA, AIM, Preface, *available at* <http://www.faa.gov/airports_airtraffic/air_traffic/publications/atpubs/aim/Preface/aim-bscflight.html> (NOTAMS "considered essential to the safety of flight"). *Cf.,* ASSEN JORDANOFF, SAFETY IN FIGHT 160 (Funk & Wagnalls Co. 1941) (emphasizing that "flying is safe only when it is carried out with knowledge and a full realization of the limitations of the airman, the particular type of plane and its equipment, and the limitations imposed by weather and its effects.")

[153] Email from Gary L. Evans, Esq., ATP, COATS & EVANS, P.C. (Oct. 6, 2003).

[154] Email from Prof. Dale DeRemer (Jan. 7, 2007).

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[155] *See supra* text accompanying notes 16-21.

[156] "It is intended primarily for implementers, *policy administrators, aviation association management*, and pilots who wish to explore the Code in greater depth." (emphasis added).

[157] AMCC VII, SRP 7.

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