

6th Annual FAA International Aviation Safety Forum

Remarks by Captain Chesley B. Sullenberger III

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Good evening. Welcome to the National Air and Space Museum and to the 6th Annual FAA International Aviation Safety Forum. I want to thank FAA Administrator Randy Babbitt for inviting me to speak to you tonight. I also want to recognize Captain Babbitt's long service to the cause of aviation safety as an airline pilot and industry expert. I want to acknowledge Margaret "Peggy" Gilligan, Associate Administrator for Aviation Safety, who has been at FAA serving the cause of aviation safety since 1980, the same year I began my airline career. I recognize, also, Raymond Benjamin, Secretary General of the International Civil Aviation Organization, whose 33-year career in civil aviation began in 1976 with the French Civil Aviation Administration.

When I look around this theater, I see what a special audience we have tonight, people from around the world who have long experience in aviation, by my calculations, our combined total is probably 10,000 years of experience. How fortunate I am to be able to share my experiences with you tonight, to have been able to spend my entire adult life pursuing a passion that has given me such purpose and satisfaction. How fortunate also that I chose a profession in which long experience is valued. You see, what that means is, it's a good thing to have gray hair!

I understand that I have been invited to speak to you tonight because of the events of January 15, 2009. But the subject of my talk is what I have learned over the course of over 40 years of flying and almost 30 years of airline experience. During that time I have been a safety advocate and accident investigator. I believe that all of that experience helped my crew and me face the challenges of Flight 1549 over New York in January.

We have made great strides in aviation safety over the last half century. In the 1950s and '60s, improvements in propulsion technology made possible the replacement of piston engines with much more reliable jet engines. Technology and training were able in the 1970s and 80s to tackle several longstanding causes of airline accidents: controlled flight into terrain, mid-air collisions and windshear, and those issues are now, thankfully, mostly in our past. In fact, modern jet engines are now so reliable that it is possible for an airline pilot to complete an entire career without ever experiencing an actual engine failure. The development of effective flight simulators has made much better, more realistic and much safer training of airline pilots possible. We no longer have to suffer the training accidents of a time when all training, including simulated engine failures, had to be accomplished in an actual aircraft.

In addition, having an independent and effective National Transportation Safety Board has allowed us to learn important lessons from seminal accidents, including the vital need for a safety reporting system that identifies deficiencies and incidents before they lead to an accident. For over

thirty years, the NASA Aviation Safety Reporting System has effectively served that purpose. By deidentifying data and giving incentives to report, we have collected a large database that can be used to issue safety alerts and highlight issues of concern. We can effectively build on this existing national reporting system by developing and adopting an integrated global safety data sharing system that will allow us to better anticipate what are becoming increasingly rare and unique accident causes in commercial aviation throughout the world.

In addition to expanding our ability to collect and share information, we must also focus on improving the human performance element. We first began to address this in the 1980s with the implementation of Crew Resource Management – or CRM – training that made crews more effective by encouraging them to share a common responsibility for the successful outcome, to be more effective leaders and teammates, to better communicate, make better decisions and manage risk.

The Safety Management System – or SMS – concept stands to be the next major step forward. SMS calls for safety to be fully integrated into an organization’s normal business practices – in modern terms, we would say that SMS seeks to make safety “transparent” to the users. It holds all levels of management accountable for maintaining and encouraging high levels of safety and performance. It requires finding a balance between protection and production that acknowledges financial constraints while still putting a premium on safety. Pilots intuitively understand this search for balance – being an airline pilot requires a fine balance between confidence and caution. On each flight we conduct, we must weigh the options available to us against their associated risks, and ultimately make what we believe to be the safest decisions possible. On January 15th, my First Officer and I were faced with a dire situation – landing an airplane that had lost thrust in both engines over a densely populated metropolitan area – but we also had resources available to us. By strategically managing risks and resources, by finding that balance, we were able to bring about a successful outcome for all 155 passengers and crew aboard the airplane.

More simply, SMS controls the outcome by concentrating on the process. Just as in manufacturing automobiles, where quality must be designed and built in, not inspected in – in aviation, safety must be designed and built into the very fabric of the process, not inspected in after the fact. But in order for this to be possible, the organization must support a sound safety culture. So when we talk about implementing SMS appropriately, what we’re really talking about is a broad restructuring of organizational culture.

Which begs the question: what is culture? Essentially it means “how we do things here.” It is our organization’s attitudes and behaviors. But of course, it’s more than that. It is how we view our work world and our fellow employees. It is our paradigm. Is there effective two-way communication? Do people exhibit cooperative behavior? Are management and employees partners in this enterprise? Do we share common goals? Does trust exist? What kinds of behaviors

are rewarded? What are the incentives and disincentives in your organization? What are the barriers to cooperative behavior? What is the nature of front-line supervision? Are supervisors disciplinarians, or mentors? Are they able to enculturate new-hires with the values of the organization? What is the nature of news in your organization? Is there such a thing as bad news? Or is the only bad news, news that is not acted upon in a timely fashion?

To date, much of the work on safety issues in the aviation industry has been done on an ad hoc basis – programs like FOQA, ASAP, AQP, etcetera – but these are stand-alone initiatives that address a particular department or a specific concern. They are aligned by function and do not seek to solve problems in a systemic fashion. What SMS will do for the first time is to create a system that crosses departments, breaks down silos, and finds integrated solutions to safety challenges. SMS requires a well-structured, formalized protocol for integrating safety into the normal course of doing business – where it is integral to the very culture of an organization. Safety is too important to be managed by exception. If SMS is treated as an adjunct process to normal business operations, it won't be effective. Because the potential benefits of effective SMS implementation are so extraordinary, it is worth the time, the effort, the training, and the resources necessary to make them happen.

Our industry's executives – who by experience and training are often from the field of finance – must also seek out and accept technical safety advice from senior flight department managers and others in the industry, and expend the appropriate resources to continuously improve safety for the flying public. All the key decision makers in aviation organizations and regulatory authorities must be trained in SMS so they will be equipped with the skills and knowledge to fulfill their new obligations. We should build on the ICAO guidelines and the important work done by Dr. James Reason to ensure that safety is a normal, regularized, day-to-day part of all our processes.

And this institutionalization across organizations and their processes is what makes SMS so different, what makes it so innovative. SMS establishes safety as one of our core business functions. It requires us to be committed to developing, implementing, maintaining, and improving our safety processes so that we find that ideal balance between protection and production, and we achieve the highest industry standards of safety performance. This work necessarily starts at the top of the organization, but it is the responsibility of each of us to make this a reality.

Like many in this room, I have dedicated my life to aviation. And based on my years of experience, I believe that we must approach safety issues with the same attention to results with which we approach financial management. We must provide our industry professionals with the human and financial resources necessary to build a well-trained and capable workforce, and we must hold ourselves accountable to reach the highest standards of safety performance, starting at the top.

We must also keep in mind that safety reporting is the fuel that powers the entire SMS system. A well-functioning safety reporting system provides the raw data that allow SMS to flourish, but without a supportive and structured organizational culture that not only allows self-reporting but encourages it, SMS will never reach its full potential. Coincidentally, I was reading Sidney Dekker's book, *Just Culture*, on my trip back in January. He demonstrates the critical importance of creating a culture where learning and accountability are fairly and constructively balanced, a philosophy I wholeheartedly embrace.

So why is there so much concern about the cost of safety? Granted, our world is experiencing a global economic downturn with a very competitive cost environment, and there are tremendous pressures to aggressively cut costs in every part of our organizations, but I think much of the concern about the cost of safety is that we as an industry have not done a good enough job of accounting for the costs of not having an effective, cooperative, and just culture. There are costs associated with lack of cooperation. There are costs associated with not having effective partnerships between management and employees.

During Flight 1549 in January, First Officer Jeff Skiles, Flight Attendants Donna Dent, Doreen Welsh and Sheila Dail, and I all worked together in an urgent yet cooperative fashion to ensure a safe outcome for all of our passengers. The cost of the alternative would have been too much to bear. We need to remember that accidents, whether major crashes involving fatalities or work-related mishaps that only damage ground equipment, are incredibly costly. And since accidents are hardly ever the result of a single cause, but the last link in a causal chain, developing and maintaining an effective and cooperative culture is an integral part of preventing them.

One of the reasons that we as an industry have been able to attain such a good safety record so far is that many operators have chosen to exceed the regulatory minimums in almost every way. Now we are seeing movement closer to the minimums across the board, whether it is in training, crew rest or other areas. When decision makers choose a course of action for economic reasons that has the potential to decrease the margins on which we have relied, I think sometimes it may be because they are somewhat removed from the possible implications of that choice. It is all the more important now, as we implement SMS, to have key decision makers clearly hear solid advice from senior experienced flight department managers who have the expertise to provide perspective on these choices and their effects.

Another way that SMS breaks new ground is that it requires a higher standard of care in aviation. Instead of a simple cost/benefit analysis, risks will now be managed so that they are as low as reasonably practicable. This concept of ALARP means that safety benefits will be adopted except in the case where the costs are grossly disproportionate to the benefits.

Organizations that already have – or work to develop – a robust safety culture will be the ones that fully benefit from SMS. And the benefits are not limited to safety. The emphasis on process

control and continuous improvement through reporting and learning in a just culture improve quality as well as safety and provide the operator with business benefits. Just as in health care, quality and safety improve the outcome and the bottom line. An effective culture promotes cooperative behavior. In every organization, coordination across functions is necessary in major processes. Operating between silos is needed, not just in them. A just culture is not only good for the safety of our passengers and fellow employees, it's good for business.

No matter what lens we use to look at safety – whether it is SMS or some other viewpoint or practice – safety always requires a confluence of factors. I'll identify the four I believe are most important:

- ✓ An absolute commitment to safety at every level of the organization, but especially at the very top.
- ✓ A robust system that identifies and mitigates risks.
- ✓ A culture that supports safety reporting and encourages cooperative behavior.
- ✓ Effective training that provides professionals with well-learned fundamental skills, in-depth knowledge, and the judgment to handle the unanticipated.

Again, I cite the incidents of January 15: Jeff Skiles and I had mastered the fundamental skills, possessed in-depth knowledge of the aircraft we were flying, and had years of combined experience, allowing us to face an unanticipated and potentially overwhelming challenge successfully. I hope that we are all able to learn from the events of that day to reinforce and build on the safety practices currently in place throughout the industry.

After all, an effective safety culture is one of reporting, learning, and continuous improvement based on that learning. But if the continuous improvement is not well managed, practitioners can start to feel that procedural compliance is difficult because procedures are a moving target. As frustration caused by constant change rises, procedural compliance will decrease. To address this issue, let us borrow a concept and a term from evolutionary biology: punctuated equilibrium, loosely defined as continuous improvement, implemented in a phased manner, with periods of stasis. This allows practitioners to learn new procedures, comply with them, and effect change – and at some point, the team as a whole redefines the process, learns the improved procedures, and becomes expert at them. Punctuated equilibrium facilitates continuous improvement while keeping procedural compliance high.

Attitudes and behaviors are also important – in fact, over the long run, they're essential. When our corporate leaders look at employees as expensive nuisances, or cost centers, employees won't feel like they're part of the solution and often respond in kind. Here's one small but powerful example. Your airline's payroll department prints thousands of paystubs each month. What message do they send to the employees who receive them? Every paystub includes a box that contains an employee's departmental accounting code. Is that box labeled "cost center" or "value

center?” Seemingly minor, mundane things like how you account for your employees can set the tone for an entire organization. The words we use to describe each other have meaning, and help people determine whether they are respected as a valued member of your team. If we really are to improve our systems using SMS, we must consider the effect of our words and our actions and make sure our actions match our words.

In the final analysis of the linkage of economics and safety, I am reminded of the advice that my U.S. Air Force Academy classmate and former space shuttle commander, retired U.S. Air Force Colonel Sid Gutierrez had for two NASA administrators: “Nothing is more expensive than an accident.” He’s right. Our industry values safety, and it should. If implemented correctly and tended to thoughtfully, SMS will take the safety advances realized over the past decades and will leverage and multiply them. As an industry and as aviation professionals, I am hopeful that we will choose to adopt these measures – and if we choose to do so, I believe it will be for three reasons:

- ✓ Our passengers deserve it.
- ✓ Our co-workers expect it.
- ✓ Our profession demands it.

Thank you for your time and attention.