



Federal Aviation
Administration

Speech – "Tangible Benefits"

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Sixth Triennial Fire and Cabin Safety Research Conference

Good afternoon, and welcome. Thank you for the invitation to the Sixth Triennial Fire and Cabin Safety Research Conference. With 30-plus countries present, this very well may be the largest conference of its kind *ever*. I think that reflects on the importance of the subject and content of what brings us here. And when you look at the work on lithium batteries done by the people of the Tech Center *et al.*, there's no question that this is *the* place to hold this conference. The Safety Alert for Operators was pulled together in very short order, so kudos to you for that.

But let me start out by saying my hope is that one day we won't need to have a conference on fire safety and cabin survivability. Let me also say that goal is well within our reach. The track record of this group for making technological advances that make a difference is simply outstanding.

Steadily, the definition of survivability has been changing. The discussion has to start with work aimed at the continued reduction of the accident rate itself. The hull loss rate in the 1980s was cut 50 percent in the 1990s. And that was cut in half *again* in just the past decade. The picture for the *fatal* hull loss rate is even more impressive, decreasing by more than two-thirds in the past decade.

I'd point to several recent accidents as testament that we're making real gains in occupant safety and survivability: Air France A340-300 in Toronto in 2005; China Airlines 737 in Japan in 2007; British Airways 777 in London in 2008; Continental Airlines 737 in Denver in 2008; the US Airways A320 miracle on the Hudson in 2009; Turkish Airlines 737 in Amsterdam in 2009; American Airlines 737 in Jamaica, also last year; and the Aires 737 in Colombia two months ago.

All of these involved a total hull loss with very high survival rates. In fact, five of them ... Air France, BA, China Airlines, Continental and US Airways ... were without a single fatality. There was a time when we wouldn't have been so fortunate, but it shows that our work to make accidents survivable has had some very tangible benefits.

In addition to reducing the accident rate itself, survivability also has to consider a defense against on-board injuries in post-impact survival. Good measures are in place, and that helps to explain why the fatal hull loss rate has improved even more rapidly than the hull loss rate.

Let's focus for a moment on fire safety. In too many cases, passengers back in the day would survive an impact only to die in the aftermath. Three accidents in particular were turning points in bringing this issue to the forefront: a Saudi Airlines tragedy in 1980 where all 301 onboard died; the Air Canada crash three years later in Cincinnati where 23 of 46 onboard died; and British Air Tours in 1985 in the U.K. where 53 of 137 onboard died.

These types of accidents spurred a string of advancements, some of which began right here in Atlantic City. The rule requiring improved flammability of seat cushions hit the books in 1984. That rule gave passengers an additional 40-60 seconds to escape. In a scenario where flashover occurs in a matter of minutes 40 seconds is a

lot of time. That *is* a lifetime, indeed.

The work with floor proximity emergency escape path marking and lighting, lavatory smoke detectors and Halon fire extinguishers followed soon thereafter. And as a result of this cumulative effort, this morning I can deliver a litany of the lives that weren't lost in an accident. If you want some more details on any of this, Gus Sarkos and Dick Hill were right here back then ... and still plugging away today. Nicely done, gentlemen. If you want to see the face of fire safety, there they are.

I'd be remiss not to point out that not all of the FAA's work involved fire. For example, the regulations for 16g seats brought some much needed science into the survivability arena. Previously, seats were designed and approved to a *static* 9g standard with no occupant injury criteria. We used test dummies, dynamic testing and standards specifically designed for the aviation environment.

Other advancements are well worth mentioning: Built-in fire extinguishers for waste receptacles; protective breathing equipment for flight attendants; stronger fuel tanks to reduce rupture on impact; heat-resistant cargo and baggage liner panels; restrictions on carry-on luggage ... that was in 1987, by the way; placing all seats within 60 feet of an exit; improved access to exits, fire suppression systems in cargo holds; and fuel tank flammability reduction – usually using inerting – on all newly manufactured and older airplanes.

I take the time to list all of these accidents and advancements because they frame the context for events like the landing on the Hudson, which, hard enough to believe, took place 22 months ago. This accident is the poster child for all the improvements that have been made in survivability. The crew ... and the passengers ... performed admirably. When they make a movie about something you did, that's a signal that you've done something right.

But I think it's fair to say that in this audience, the unsung hero is the aircraft itself. That Airbus A-320 aircraft hit the water at 127 knots. Think about what a race car looks like when it hits the wall doing 127. But with the Airbus, while it wasn't perfect, the interior of the aircraft showed little sign of a serious impact. All the seats stayed in place. All of the passengers and crew were shaken but the story ending up well. .

So ... the "Miracle on the Hudson" was made possible by an entire industry ... the sheer hard work by the people in this room, the airlines, the manufacturers, the air traffic controllers on duty at the time ... and obviously, the flight crews themselves. As the years go by, the fact of the matter is that we're just flat out getting better and better at enhancing the safety of the system. The planes are better, faster and more resilient. The equipment is better. The training is better. We have the Sullys of the world flying at every airline and in every airport. They impart years of wisdom, and the newer pilots coming up benefit from their experience.

When you introduce safety management systems into the picture, you get people willing to step forward with data points ... knowing that they won't be penalized for raising their hand and saying, "Hey, I think we've got a problem here." When you've got so few data points to begin with, it's awfully hard to spot accident precursors. But when you see seemingly unrelated data points start to fall into line, first you have a shadow, then a full picture emerges. Reviewing a spread sheet makes a whole lot more sense than wading through a debris field.

When you put all of this type of advancement and leadership into one industry, you get the numbers we've come to expect from commercial aviation in the United States of America, and internationally as well. And the he hull loss numbers illustrate the point fairly well. Thirty years ago, U.S. airlines averaged 180 fatalities per year. In the 1990s ... even in the face of considerable growth ... the average dropped to 115. In the last 9 years ... the average is just 18 fatalities per year.

One is one too many. But 18 out of 700-plus million is an impressive feat.

I think NextGen is going to make a difference. The increased situational awareness from projects like ADS-B is going to give pilots, controllers and airlines a macro- and micro- view that will translate immediately into the next big leap in safety. When you take the advancements that are occurring on the airport surface, that's an extra layer. Now, you're boosting safety, efficiency and you're taking a slice out of the carbon footprint while doing it.

But beyond NextGen, there's much more to advancing safety ... specifically fire safety and cabin survivability ... than through the acquisition of new technologies. We need advancement in the standards. Advancements there mean research. The fatigue rule that we're proposing to change shows what happens when you try to operate with a firm scientific foundation. Advances in standards are the same way. It starts with research, and if you haven't started there, you haven't started at all.

Likewise, we need international cooperation to move forward. Safety standards result from experience and research, so harmonizing at the research stage ... or even sooner ... makes all the sense in the world. Moving forward in lockstep at the analysis of data stage is key to harmonized standards. And this cooperation is not limited to the Aviation Authorities.

Industry is a key player in enhancing safety, and industry research is needed to make substantive improvements as we move forward. This is especially true as we move toward delegated organizations. Safety standards are not a competitive issue, even though the technology to meet the standards might be.

None of this is a hurdle, but rather, a touchstone for success. We've moved forward far and we've done so fast. Given what I see here in this room today, I have all confidence that we'll continue to do so. Thank you.

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