Keynote Address — International Society of Air Safety Investigators Annual Seminar 2012

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Good morning.

It's nice to see all of you this morning.

Yesterday, Debbie Hersman spoke about the importance of building strong relationships as we do more and more international investigations. Today, I want to look at the domestic scene and draw on some good old Canadian experience. I want to examine the historical record, look at the positive news, and see what that means for our future.

So, let's begin: The good news is that, over the last 10 years, the number of fatalities in aircraft accidents has declined, especially for large aircraft. In fact, when it comes to large aircraft, the Canadian news is very good indeed: Up until last summer's 737 crash in the Canadian Arctic, the previous decade saw ZERO fatalities for large Canadian operators on Canadian soil.

There's more good news. This decline in fatalities isn't just in Canada. Here in the United States, that number has also come down *significantly*.

But why? Why are the number of deaths going down? A variety of reasons, really, no small part of which is the excellent work of investigators like you. You do your job well, identifying safety deficiencies and making recommendations to improve the system for everyone. Regulators and industry have listened, too. And we are doing a better job of learning from one another … So, together we have saved lives.

But here's a question: With the numbers in decline, where does that leave us—where does that leave *you,* as investigators? Will the numbers ever reach and *stay* at zero? Will we have to close up shop and go home?

I tell people in the transportation industries all the time that I want them to put *me* out of a job! And I do! But I know very well this is a pipe dream. The reality is, in this complex world, there will always be a need for accident investigators. Many of you will be investigating large aircraft accidents in the developing world as accredited representatives. And conversely, at home we will

be seeing fewer and fewer investigations that were once commonplace: the Valujets, the TWAs, the Swissairs.

So the question remains: what *kinds* of domestic accidents will we be investigating? More to the point, what kinds of accidents *should* we be investigating?

Here's what I think. We have to take a hard look at where the risk lies, where we have the most to learn, and where we should put the most effort to influence the greatest change. Which means our jobs are changing—or, if they haven't already, they're about to.

How?

Well, let's turn our focus to the kinds of accidents that now claim the most lives. In Canada, it's the smaller aircraft: They are involved in over 90 per cent of accidents, and they're responsible for over 90 per cent of fatalities.

These aircraft travel daily to smaller communities, servicing more remote airports where there is often less infrastructure. Often they're small turboprop or piston airplanes, and they may be equipped with less sophisticated navigation and warning systems. These are the aircraft used for aerial work: Medevacs, forestry work, and surveys. They're also used to transport workers or commuters, or ... as air taxis.

Let me give you an example of the kind of risks we see out there. It's a brief summary of a report that the TSB released a few months ago:

In December 2009, a King Air, operated by Exact Air, was approaching the Chicoutimi/St-Honoré airport in the province of Quebec. This air taxi was IFR, flying a non-precision approach at night, in adverse weather: clouds, blowing snow, and wind gusts to 31 knots. The plane descended below the minimum descent altitude and struck trees just three miles short of the runway. The aircraft was destroyed on impact, both pilots were killed, and the two passengers were seriously injured. Officially, it is recorded in our database as a CFIT: Controlled Flight Into Terrain. But for those involved, their families and loved ones, it is something else: a tragedy.

As investigators, you know that every accident is unique, a singular combination of causes and contributing factors—be they human, environmental, organizational, or mechanical. That being said, what happened with this accident is, in a sense, also very typical. *Sadly*, very typical.

Let me give you some more statistics to show you what I mean:

I said earlier that, prior to last summer's Arctic crash of a 737 in Resolute Bay, there had been no fatalities in the previous 10 years for Canada's large scheduled airliners. Going back further gives us an even bigger sample size, to really show the differences between operations. And those differences are stark. In the two decades from 1992 to 2012, there were a total of 7 fatal accidents involving Canadian scheduled airliners. For commuter airplanes, there were twice that; for planes involved in aerial work, 24. But for air taxis, there were *one hundred and fifty-two*.

So whether we are investigating an air ambulance service coming into Sandy Bay, Saskatchewan, or a float plane taking off from the Gulf Islands on Canada's West Coast … Whether it's a Beechcraft headed from Québec City to Sept-Îles, a PA-31 crashing on approach in North Spirit Lake, Ontario, or a Sikorsky S-92 helicopter en route to the oil fields of the Atlantic… In *all* of these recent accidents—and there are many many more—what we're seeing is a *pattern*.

Sadly, Exact Air fits that pattern all too well. Because what happened was a *typical* example of an approach and landing accident (ALA). And where do ALAs take place most often? At airports where only non-precision approaches are available (such as Chicoutimi/St-Honoré)—airports which are served most often by these smaller planes.

So. Let's say all of that is the background. Now let me pose two questions: First, what will we do? And by "we," I mean independent accident investigation *bodies*. And second, what will *you* do, as investigators?

I think the answer to the first part, "what will we do," is two-pronged. We've already started on it, too. In Canada, the TSB is pushing for wider implementation of Safety Management Systems (SMS). It's not a panacea, and I won't say that extending SMS to smaller operators is guaranteed to cut accident rates by a specific percentage … but … there is a reason why ICAO has led the charge and why Transport Canada has required it for the large carriers. And the reason is because SMS helps companies find trouble, before trouble finds them.

It is also the reason why we at the TSB have put SMS on our "Watchlist"—our list of issues that pose the greatest risk to Canada's transportation system. Because we want *all* companies, large *and* small, to have SMS.

In Canada, the regulator (Transport Canada)—to its credit—agrees that SMS is part of the solution. Implementing it, though, will depend on changing safety cultures, and that takes unrelenting commitment, time, resources, and perseverance. But—again—with smaller aircraft involved in 90 percent of all accidents, we need to do something, and we think SMS will definitely help.

What else are we doing? Several things, and here I want to take a moment and talk about technology.

It was back in 1995 that the TSB made its first recommendation for the installation of ground proximity warning systems. Concerned about the number of CFIT accidents, we saw this technology as a way to help crews who had lost situational awareness, and an obvious way to save lives. Here in the United States, the FAA was ahead of the curve with requirements for Terrain Awareness Warning Systems (TAWS). In Canada, the regulator has only recently caught up, announcing new regulations requiring TAWS in all private turbine-powered and commercial airplanes with six or more passenger seats.

From 1995 until now. Seventeen years. Some discussions go on longer than others … But it's done. And it will help. And that is *nothing* but good news.

On another technology note … As an investigation body, we want as much information as possible. All of us do. Not just flight plans, and wreckage, or even interviews with survivors or witnesses. We want hard data—objective facts that tell us what was going on in those final seconds, and when possible, even earlier. That is why we have called for, and will soon have, two-hour recorders on large aircraft. We want to know about the relationship between the crew, and between the crew and ATC: what they said, what they saw, what they did.

Not having the information we need makes it tougher to find out what happened; it may even preclude the identification and communication of safety deficiencies that can advance transportation safety. And even when we *think* we know what happened, not having the *evidence* to prove it … well, it gives us less ammunition when we're pushing for change.

Our large investigations have long demonstrated the value recorders bring to accident investigation. And the number of smaller investigations where the cause is undetermined, or we have barely been able to skim the surface in our findings, argues for wider use of recorders … because having this information will let us dig deeper, and find out why so many of our small carriers—the commuter operators, the air taxis—are having so many accidents.

We know, however, that the minute we bring this up, cost will be factored into the equation. Fair enough. Now though, technology is taking leaps forward. There are smaller, lighter, *lower cost* options—recorders that can capture cockpit image, audio, and other data for use in investigations. In other words, the time may now be approaching where we consider—where we ***re***consider—their feasibility. And I can tell you that debate is taking place right now at the Transportation Safety Board of Canada.

So that's what we're doing at an organizational level: we're talking to the change agents, and making the case for SMS across the board—*and* we have started the debate on recorders for smaller aircraft.

And that brings me to the second question I asked: "What will *you* do?" The answer to that involves something I said earlier: "taking a good hard look at where the risk lies, where we have the most to learn, and where we should put the most effort to influence the greatest change."

Determining *that* involves taking a very broad look, a very high-level look, at the work we do.

It's true that we can sometimes be guilty of tunnel vision, focusing only on our own investigations … finishing one and then getting on to the next. But accidents have *many* causes and contributing factors, some of them less obvious than others. What can start off as a "weak signal" in one occurrence, or in *several* occurrences, may be a symptom—a sign of greater trouble—down the road. This speaks to us being strategic about where to put our efforts. And once we've decided, we need to look deeper at all of the underlying factors to see if we can find some patterns—and from there perhaps some solutions.

Let me give you an example: CRM. Today, more or less everyone recognizes the importance of Crew Resource Management. But that wasn't always the case. It started out as an issue that popped up in maybe a single incident. Then two. Then it started popping up elsewhere. It was

getting *recognized*. Investigators started actively tracking it, recording those occurrences where CRM was a factor. Research began to happen. Its incidence was no longer anecdotal. People began gathering facts.

In time, they had enough ammunition to make their case. And a compelling case, too—*so* compelling that in Canada the regulator has made CRM mandatory for all large operators.

But it hasn't stopped there. As the evidence continues to mount, as the case has grown even stronger, the push for mandatory CRM has expanded, and it is now coming to air taxis and commuters, too. And we are looking not just at CRM but to raise the bar to *modern* CRM, and threat and error management.

Will that help? You bet. And *that's* what I'm talking about. *That's* what investigators can do: *You're* at the leading edge. *You're* in the field, gathering information, sifting through wreckage. *You* are the ones who see, again and again, first-hand, what the issues are. And sure, sometimes those issues start off as anecdotal, but as you look for them and find they occur over and over, and as they are recorded and measured, they become statistics. And statistics have weight; they have strength. They can be used to make arguments. And arguments bring change.

Let me be clear: I am not talking about trying to predict the future; rather I am talking about studying the details, recognizing those underlying factors, the ones that maybe haven't become full-fledged causes yet, but which are nonetheless important. And whether those issues are discovered by mathematical trend analysis, or by talking to other investigators and finding out what issues they're facing in their investigations … however it happens, it's vital. Because finding these issues, identifying them, and the risk they pose, can help us push for change—the right change, which can save lives.

I'd like to think that, if this had been five years ago, CRM would have been one of the issues we would have flagged on our Watchlist. Because that's the idea behind the Watchlist: bringing attention to the issues that need it the most—the issues that have been identified as posing the biggest risk—and then building momentum to address them.

The identification of emerging issues doesn't happen on its own, though: it takes someone to recognize a potential issue, and then wade through the data to confirm if this is a real concern. And then once the issue is recognized, it takes more people to champion that issue until it becomes *widely* recognized.

Accident investigation has a long list of issues like this, issues that are well-recognized *now* but that weren't so well-recognized not that long ago.

Today, as we move forward, with the accident rate for the big scheduled airliners at an all-time low, I want to point out that there is still a lot of valuable work to be done. Today is not the end of the future. In fact, when I look at the statistics, the trend is clear—because 90 percent is a hard number to ignore. It's the smaller aircraft—the ones used to transport commuters, or for aerial work or as air taxis—that have *far* more fatal accidents than other types of operations.

And so, over the next few years, *here* is where we have a chance to make the biggest difference, where we have a chance to save the most lives.

That's an opportunity we can't afford to miss. Thank you.

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