

Bird Strike '99 - Proceedings

Introduction

Bruce MacKinnon

My name is Bruce MacKinnon and I am the Wildlife Control Specialist for Transport Canada Civil Aviation Group. It's been my pleasure to be part of the organizing team that's put together this event and I want to thank all of you for going to the effort to come to Vancouver. Many of you have come from a long way away. I think we have close to fifteen countries represented here, so this has become very much an international event. I want to thank Dr. Yossi Leshem and Judy Shamoun-Baranes from Israel for bringing this wonderful video to us. It's extremely good and Yossi, you'll get a chance to talk about this later on. Thank you very much. Our purpose for being here is very simple. It's to share information on ways to reduce the number of aircraft wildlife collisions that occur every year. I believe that there is sufficient knowledge and experience within this room to significantly improve the way that we manage wildlife hazards throughout the world. I think our mission here should be to figure out a way of conveying that information to the decision-makers in the aviation industry. I would like to take this opportunity now to thank all of the people who have contributed to the organization of this event. It's been very much a team effort and without the contributions of the people that I am going to name, this would not have come about. First off, I would like to thank Carol Liber and her staff at Pacific Northwest Planners. For first of all putting up with me, and secondly dealing with all the queries that have come in from around the world. If anyone is planning a similar event, you can make your life a lot easier by getting Carol involved early on. Now Dave and I would like to make a presentation to Carol. [Presentation of flowers to Carol Liber] Thank you very much for everything. Dave Ball, Brett Patterson and Craig Richmond from the Vancouver International Airport Authority have done an incredible amount of work over the last six months, getting this event prepared. Craig will be hosting the reception tonight and I would appreciate it if you could get the chance to talk to Craig and thank him for all the work that he's done. Dave has done a tremendous amount of work over the last few months, getting the field trip organized and looking after a lot of the logistical details. So my thanks go out to the Airport Authority. Jeff Marley from Margo Supplies has organized the exhibitor program, and the exhibitors have all contributed to the refreshment fund. So the coffee breaks that you see out there have been provided by some of these folks. If you get a chance to talk to the exhibitors in their display next door, please take the opportunity to do so. Dave Fairbairn from Jacques Whitford Environment Limited and Dr. Rolph Davis from LGL Limited have also contributed to the refreshment fund, and I want to thank them for the contribution that they've made. Captain Sara Karcha, from our Department of National Defense Air Command headquarters in Winnipeg, has donated her time to help out with the registration process and she's also contributed to the refreshment fund. So if you see Sara, please thank her for the efforts that she's taken. Finally again, I want to thank Dr. Yossi Leshem and Judy Shamoun for the work that they have done, and also for putting together this lovely video that we just saw. Captain Michael Downey from Air Canada and Darryl Watkins from Canadian Airlines International have contributed to the program, and the refreshment break that you will get tomorrow on the field trip is courtesy of Air Canada. Finally, I would like to dedicate this conference to the memory of three people who have been involved in this business for a number of years but who are no longer with us. Dr. Henri Ouellet was a noted ornithologist and member of Bird Strike Committee Canada for many years. Henri was the individual who developed the Keratin Electrophoresis Feather Identification Process for Transport Canada. Henri died suddenly at his home in January of this year. He was a good friend and one of the kindest people I've ever known, and he's going to be missed. Robert O'Brian worked with me back in Airports Groups before Transport Canada reorganized, and he and I worked on the Bird Control Program. Much of the work that we've done in Transport Canada in bird hazard work was a result of the inspiration that Rob provided. Rob passed away suddenly in his office back in December, and I certainly miss the opportunity to talk to Rob about bird hazard issues on a daily basis. Dr. Edmund Hahn was the chair of Bird Strike Committee Germany, and Edmund died shortly after returning from the International Bird Strike Committee meeting in Slovakia, back in November. I'd had the pleasure of working with Edmund on a couple of international projects and I'm certainly going to miss him. So I would like to dedicate this conference to the memory of those three people. Finally, I hope that you all have a good week. I hope that you take home a lot of valuable information. I would now like to turn the podium over to Dr. Richard Dolbeer, from the United States Department of Agriculture and Chair of Bird Strike Committee USA. He has a few words to say. Thank you very much, and have a good week.

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Applause

Richard Dolbeer

Thank you Bruce. I too, on behalf of the Steering Committee of Bird Strike Committee USA, would like to welcome all of you as delegates and participants to this first joint meeting of Bird Strike Committee USA and Canada. But I would also like to note that today we have two officials representing the Mexican government here. These two people, who I will introduce to you shortly, have been working on this bird strike problem in Mexico. Their attendance makes this truly a meeting, you might say, of Bird Strike Committee North America. And this is only fitting because our three countries are signatories to perhaps the greatest piece of environmental and wildlife legislation ever passed. That legislation is the Migratory Bird Treaty Act of North America, which gives full protection to all migratory birds passing through our three countries. We have much to be proud of because of this act, and other legislation that has been passed. Because of the Migratory Bird Treaty Act and its legal ramifications, because of environmental legislation that our countries have passed, particularly in the area of pesticide regulation and other contaminant regulation, because of the foresight and discipline that our countries have had in setting aside millions of acres as critical habitat for nesting and feeding of birds and other wildlife, we have seen an unprecedented recovery in growth of many wildlife populations in North America. I mention White Pelicans, Brown Pelicans, Double-crested Cormorants, Turkey Vultures, Black Vultures, Ospreys, Eagles, bald and golden, the various Gull species, Sand Hill Cranes, and not the least, many waterfowl species, especially Canada and snow geese, as examples of these remarkable population recoveries. Today we have literally billions of birds migrating among our three countries, and this has been a great achievement that we should be very proud of. Now these birds know no boundaries. They move freely between our countries and neither should we know boundaries in developing solutions to the problems that they create for aviation. So for that reason I think having this joint meeting is very important. Working together, Canada, the United States and Mexico, with a lot of help from our colleagues around the world that are here, we can make safer skies, for all who fly, birds and people. Have a great conference. Thank you.

Applause

Craig Richmond

Good morning. Delegates, colleagues and visitors, on behalf of the Vancouver International Airport Authority, I welcome you to Bird Strike '99. My name is Craig Richmond, and I'm buying the drinks later. I'm very proud that the first combined meeting of the Canadian and American committees is taking place here in B.C. and also at our airport, because of the excellent results that we've had with our own wildlife control program. Later tonight I'll just give you a brief overview during the reception of what we do, but I would like to say that there is a component of every program that I think sometimes gets overlooked in the pyrotechnics, the biology and the experimentation. And that part is the people. The people, like you, who have traveled here from all over the world, I understand about fifteen countries, to listen to the distinguished speakers, to talk to your colleagues and hopefully bring back to your respective airports one more tool or one more technique that you can use to result in fewer bird strikes. People, like you, who have often felt like a voice in the wilderness, speaking up on wildlife control for years, slowly moving others from either complacency or fatalism to effective risk management. The science is crucial and the resources to do the job are critical, but it's the dedication of the people involved which is the key component. I applaud your dedication to this task. I would also like to thank Bruce MacKinnon from Transport Canada, who just drives this thing ahead, and our own Dave Ball, my wildlife officer, for all of the effort that they've put into this event. And in fact, this whole conference is worth it just to see Dave in a tie. That's all I want to say as you have many hours ahead of you, both today and during the week of remarkable speakers. Please try to take a little time to sightsee. The scenery in the city around you is one of the reasons that this is a very fast growing airport. So, don't miss out on the opportunity to enjoy Vancouver. Once again, welcome, have an enjoyable and productive conference, and I will see you tonight.

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Applause

Welcome

Bruce MacKinnon

I would now like to introduce Art LaFlamme, who is going to provide the official welcome on behalf of the Minister of Transport. Art is the Director General, Civil Aviation for Transport Canada. He is responsible for the regulations, standards and policies required for the safety of civil aviation in Canada. He's got thirty-one years of experience as a military pilot, accident investigator and manager. He has an Airline Transport Pilot License, and currently flies the Cessna C-550 Aircraft. Art, it's my pleasure to welcome you. Thank you very much for taking the time to come here. Art has a very, very busy schedule. He's involved in two conferences this week, and I think one opening, so he's a very busy man. Thank you.

Art LaFlamme

Thank you Bruce. It is a pleasure to be here this morning. So, hello and welcome, bonjour et bienvenue, and I'll try this in Spanish, buenos dias bien venidos. On behalf of the Minister of Transport, I wish to welcome you to this conference. This is the first combined USA, Canada Bird Strike committee meeting. I would also like to thank both organizing committees for the invitation to speak here today. The Minister sends his apologies. He would have liked to have been here, but his schedule just does not permit him to do so. I see from the agenda that there are a great number of valuable papers being presented, demonstrating the quality of the research work being conducted in the field of airport wildlife control. As well as the attention that is being devoted to finding ways of improving the management of wildlife associated risk at airports throughout the world. I'm encouraged to see the large turnout and quality of the papers because programs such as this one reinforce the goal of Transport Canada's Civil Aviation Group, which is to have the safest civil aviation system in the world. Canada has a long history of dealing with bird hazard issues. In the early sixties, Transport Canada encouraged the formation of the Associate Committee on Bird Hazards to Aircraft. The committee brought together a multi-agency group to review the problem, suggest solutions and to work with airlines and airports to implement solutions. The work done by the members of the Associate Committee produced positive results. For example, from 1958 to 1962, Air Canada spent \$238,000 per year on parts to repair damage to their fleets caused by birds. However, from 1963 to 1967, that figure dropped to \$125,000 per year. It is interesting to note that at today's prices, \$125,000 would likely not cover the costs of a couple of replacement fan blades on a large inlet turbo-fan engine. In 1977, the Associate Committee evolved into an Interdepartmental Committee, with members from Transport Canada, the Department of National Defense, Agriculture, and Environment Canada. I should just digress for a moment to say that I have more than an intellectual interest in this issue, I also have a personal one. When I was with the Directorate of Flight Safety in the Canadian Armed Forces I chaired the Interdepartmental Committee for two years, so I was very close to this issue, and I've been very pleased to see its progress over the years. In 1984 this committee became Bird Strike Committee Canada. This new committee is widely representative of the aviation industry, with greater participation by international members. Transport Canada has relied heavily on education and awareness programs in the management of wildlife issues. We have produced manuals, videos, posters, numerous bulletins and brochures which are distributed extensively to the aviation industry in Canada. We are currently writing a handbook on bird hazards, that we anticipate delivering to the aviation community next year. We have developed a number of systems that facilitate the reporting of bird strike incidents, so that we can maintain a more complete and accurate database. Our program is very proactive, and we are diligent in involving our industry partners in the management of the issue. In spite of our efforts, we still face many challenges. The remarkable increase in the population of Ring-billed Gulls in the Great Lakes region, the massive waves of Snow Geese migrating through parts of Canada in the fall, and the doubling of the resident Canada Goose population in the Greater Toronto area every three to five years are cause for concern. Again, as a Military Pilot in Baggotville, Quebec, I saw personally the damage that Snow Geese can cause to aircraft. It's truly incredible, the potential for damage or disaster. Combined with the fact that aircraft movement statistics are increasing every year, and nearly eighty percent of the world's aviation activity occurs in North America, I realize that we have

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much work ahead of us. In Canada we also face some new and unique challenges because of our relatively recent airport privatization initiative. To a great degree, Transport Canada no longer owns or operates airports, and we are now working as partners in safety with private sector airport authorities. Transport Canada now provides regulatory oversight to the entire Canadian aviation industry, and we are currently developing regulations and standards respecting wildlife control at airports. The potential value of this conference is reinforced when I examine the incident reports describing a bird strike on the evening of November 19, this past year. A British Airways Boeing 747 initiated a missed approach procedure on final approach to Montreal Dorval Airport. And while conducting the go around at approximately five hundred feet above ground level, the aircraft struck a large flock of migrating Snow Geese. Considerable damage was done to the aircraft, but it landed safely with emergency response staff responding after the captain declared an emergency. There are a number of interesting and challenging issues related to this event. Montreal airport has a state of the art bird control program, but the incident occurred outside their effective area of influence. We know that Snow Goose populations have increased at a dramatic rate in the past few years, and the weight of each bird, combined with the large number of birds in each flock during fall migration poses a considerable threat to any aircraft that intercepts their flight path. Missed approach procedures involving large transport category aircraft are relatively uncommon. In this case, the crew not only had to abort their landing, but had to do so during the passage of a large wave of migrating birds. There are technologies available that could have provided a warning to the flight crew and air traffic control staff. Waves of migrating waterfowl can be detected on Doppler weather radar. It is possible that large flocks of migrating birds can also be seen as anomalies on terminal control radar. Furthermore, biologists know when these birds will migrate south, and they also know the weather patterns that waterfowl use to assist in their migration. In a perfect world, all of this information could have been used to inform the flight crew on the Boeing 747 that there were large flocks of migrating birds in the local area. And they may have been able to use this information to their advantage while on approach to Montreal. It is likely that the technologies and knowledge currently exist to solve the bird hazard problem. However, there is a need to refine these technologies and knowledge into proven integrated systems. Once these systems are proven, those of us who are responsible for the maintenance of a safe aviation system can provide the regulatory structure that will allow these systems to be utilized. Not only to prevent rare occurrences such as the one that I just described, but to prevent the more frequent bird strike incidents that occur within airport boundaries. Conferences such as this bring together the people that have the knowledge and experience to identify, refine and develop technologies and systems that will ultimately enable us to solve the bird hazard problem. At the very least, the information that you impart to the aviation industry improves the decision-making process. We cannot underestimate the importance of this conference, and the work that you are doing. I really look forward, personally, to the results of this conference, and discussing them with Bruce, and seeing where we need to go in Transport Canada and Canada with respect to making the required improvements. I see from your agenda that it is very full, and you have many challenges ahead of you. I appreciate your efforts, and offer you my encouragement and support. On behalf of the Minister again, I wish you luck, and look forward to seeing the results of your work. Thank you, merci, gracias.

Applause

Bruce MacKinnon

Dr. Richard Dolbeer would like to speak for one minute here.

Richard Dolbeer

I would like to introduce, at this time, our two delegates from Mexico, who want to make a presentation to Mr. LaFlamme. Magdalena Colunga is an official with the Aeropuertos Y Servicios Auxiliares or ASA, which is the equivalent of FAA, or Transport Canada's Civil Aviation Division. And Patricia Ramirez is a professor of biology and ornithology at the National Autonomous University of Mexico, and works very closely with ASA. I've had the pleasure over the last three years, along with Ed Cleary, of the Federal Aviation Administration, of working with these two professionals, and other professionals in the Mexican government, in developing wildlife hazard management plans for Mexico City International Airport and

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working with them in the selection of a new airport site that will minimize bird hazards. They are very forward looking in developing an alternative site for their major national airport which is so critical for the economic development of their country. They are putting wildlife hazard management at the forefront in the selection process for this airport, so that they can foresee problems that happen. They told me when I first came there, they said "we want to look at what happened at John F. Kennedy International Airport, in the siting of a wildlife refuge next to the airport, and avoid that situation". At this time I would like to bring Magdalena Colunga and Patricia Ramirez up for a presentation.

Magdalena Colunga and Patricia Ramirez

Hello, good morning. This is on behalf of the Mexican Government. It's a book entitled Mexican Aviation History, and we hope to have a close relationship between Canada, USA and Mexico to reduce the bird strike problem. Thank-you.

Applause

Art LaFlamme

Gracias, thank you very much

Bruce MacKinnon

I would now like to introduce Major General Francis C. Gideon Jr., of the United States Air Force. Major General Gideon is the Chief of Safety in the United States Air Force, and Commander of Headquarters Air Force Safety Centre, Kirtland Air Force Base, New Mexico. He serves as the senior uniformed advisor to the Chief of Staff and Secretary of Air Force in all areas involving safety. He's also one of the fastest dressers I've ever known. Two minutes ago he was in blue jeans looking for his luggage.

Major General Francis C. Gideon

Yeah, I thought I was going to be the comic relief this morning, in my jeans up here. But thank you Bruce, I would like to thank Dr. Dolbeer also and the Bird Strike Committee for allowing me the opportunity to welcome you to Bird Strike '99. I would also like to recognize my friend, Dr. Yossi Leshem, over there, for all his work to reduce bird hazards in Israel, and for his efforts to foster public understanding about birds and aviation as we saw in his opening video. I met him about two years ago in Israel, where he plied me with a bottle of red wine for a couple of hours in a hotel lobby seeking funding, for many of his projects. Of course, he was unsuccessful, for the simple reason that I don't have any money. My experience both as Chief of Safety for the Air Force and as a pilot give me a pretty good perspective on the hazards of wildlife. I've been a pilot for many years, and although birds and wildlife weren't the focus of my mission, they were always a potential hazard to be considered. In fact, less than a year ago, I was flying out of Kirtland Air Force Base in New Mexico, on a night formation, C-130, low level mission in night vision goggles. I was the second aircraft in trail, right behind the other one. And at about five hundred feet over the Rio Grande River Valley, suddenly the windscreen about two feet in front of my nose exploded with the strike of a fairly large bird. It didn't do any damage to the airplane, but it did obscure vision out of that windscreen. It happens to everybody, and that's a danger. But today the hazard to safe flight remains as it always has, except now there are more complications and expenses to resolving wildlife related conflicts. I'm sure that most of you are all too familiar with the regulations that may be required to undertake even a simple wildlife control operation. Additionally, today's aircraft are more advanced, and with more advancement, usually, often, comes more expense. As our current level of operation places great demands on limited resources it is easy to see how our thirty-six million-dollar annual loss from wildlife strikes is unacceptable. Not only from the standpoint of safety, but just expense as well. Flight safety is a major component of the Air Force Safety Centre. From the attendance that I see here today, it's obvious to me that flight safety is an important part of all of your work as well. From experience, I've learned that this problem is complicated and it's often much more than just keeping wildlife away from our runways. It would be less difficult if all we needed to do was to keep the aircraft and the birds apart.

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However we also, these days, have to deal with the human and the legal dimensions of wildlife management. Wild animals have captured the hearts and the minds of the public, and these animals are a public resource, and so we're obligated to consider public opinion. So to be successful, we must represent ourselves professionally, and we have to gain public support for our programs. And so it's at meetings such as this that we learn to be better professionals so that we may better support flight safety through wildlife hazard reduction. The Air Force has maintained a strong presence in strike prevention for over twenty years. Our BASH team changed organizations several times, and is now part of the Air Force Safety Centre since 1994. Over the years the Air Force has compiled one of the largest, most complete databases of bird strikes in the world. And we continue to foster and support a feather identification contract with the Smithsonian Institution, which provides the most complete technique available in identifying species struck by aircraft. The Air Force pioneered a bird avoidance model, BAM, that is used to warn our pilots, operating in the low-level environment. And my team also takes time to make house calls to various bases around the states, as they experience wildlife hazards. We pride ourselves on the completeness of our BASH program, and will continue to remain diverse in our approach to wildlife hazard reduction. Although we share the air with the birds, just as civilian pilots do, our Air Force mission leads us to even more bird rich environments. National Defense, and the flying that we do, is not without risk, and one of the consequences of flying high performance on low level training missions, is that we lose more aircrafts to birds than the civilian community. Since 1985, we have lost fourteen aircraft to bird strikes. Whenever we do lose an aircraft for any reason, any reason, the Safety Centre provides a safety expert to help in the investigation. If the reason appears to be related to wildlife in any way, then additionally we add a person from our BASH team to the investigation. We look for causal factors, and then, of course the upshot of the whole investigation is to make a recommendation to change something to prevent a future mishap. The upshot of that process is that it supports the development of preventative measures. If the investigation points to a specific problem, say the airfield environment, then we make changes. We monitor the results. Through this learning process, we have identified low level flight operations as being our greatest exposure to birds, and we have pioneered that bird avoidance model to aid our pilots. This model has been improved through the years, and we are excited about the next upgrade. And it's already been mentioned this morning, we'll soon be incorporating information from the Nexrad weather radar sites in an attempt to provide almost real time advisories to our pilots. As they're planning their missions, they'll get the weather forecast and the bird forecast. That would be terrific. There is a presentation on that subject for you all on Thursday morning as well. And also if you would like to read a little bit more about those efforts, you can sign on to our website at the safety centre, and look for the April issue of the flying safety magazine. There's quite a good article there. So that mishaps are not the only means of learning, we continue to support research whenever funds are available. Early research efforts, for example, were successful in making canopies more resistant to bird strikes. To support our modeling efforts, we have studied the movements and distribution of birds such as Vultures, which is one of our greatest threats to low level flying, and Red-tailed Hawks. And, as mentioned earlier, we continue to support species identification, through our feather identification contract. This work is presently done by Dr. Carla Dove, from the Smithsonian Museum of Natural Science, and it's crucial to us because it allows our BASH team to accurately identify, to track and respond to those species that cause the greatest threat to our aircraft. Dr. Dove will be presenting a paper on that subject, also on Thursday morning. We're also interested in learning more about the airfield environment, and how to make it less attractive to local and migratory wildlife. Through our cooperative efforts with the FAA and the US Department of Agriculture, we hope to learn more about the best available tools and techniques to alleviate hazards in those areas. I wish I could report that everything that I see on the horizon is bright, but I cannot. The military is enduring reductions in manpower, much the same as the business world, and we certainly don't foresee any increases in manpower or funding to our BASH team at this time. However, in our case, we have had discussions with our sister service in the Navy, and we're hoping that will lead to some joint operations, some joint sharing of information there, to allow us to pool limited resources between the two services. In these times of doing more with less, education becomes a very valuable tool. Everyone involved with operations including maintenance, the air crews, the airfield management, tower controllers, must be educated about the potential threat of wildlife on our airfields. Understanding wildlife hazards allows us to mitigate those risks properly. Every time we launch an aircraft, we accept some level of risk. Unfortunately though, we often accept some risk unnecessarily. So as aviation professionals we absolutely cannot afford to jeopardize the safety of our aircrews and passengers by not recognizing and acting on those threats. In closing, I applaud your work towards the

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goal of safe flight. It is specialists, such as yourselves, that carry the burden of increasing the level of awareness to take us from where we are to where we want to be. And I certainly hope you all are successful in developing the tools and techniques required to do the job, and of course, then we need to gain public support for the use of those tools. I realize wildlife control on airfields isn't glamorous. It doesn't always get proper recognition, but rest assured that wildlife hazard reduction is an important aspect of aviation safety. So, I thank you all, and keep up the good work.

Applause

Keynote Address

Bruce MacKinnon

I would now like to introduce John Kern, from Northwest Airlines, who is going to provide the keynote address. John is currently Vice President, Regulatory Compliance and Chief Safety Officer for Northwest Airlines. He was previously Vice President Aircraft Operations, and prior to that, Vice President Flight Operations. Before coming to Northwest Airlines, John served twenty-one years with the FAA, where he rose through the ranks to become Director of Flight Standards in 1987, and then Deputy Associate Administrator until 1990. John.

John Kern

Thank-you very much. I really appreciate the invitation to speak this year to the first combined Bird Strike Committee USA and Bird Strike Committee Canada. It's truly an international issue that deserves some international solutions. I have to say, though, that this is an unusual crowd for me to speak to. I really feel like I'm a duck out of water, here. Traditionally, although I have had about thirty years in the aviation safety business, it's my first opportunity to speak to this group. But I have been told by several members of this group that there is no other group like this in the world, so I don't feel too bad about that. As I've said, I've dealt with a number of aviation safety groups and issues over the past thirty, thirty-five years, typically in the more traditional kinds of aviation problem areas. Human factors, minimization of human error, various operational problems, maintenance and engineering issues, but really have never focussed on the wildlife mitigation or the bird strike issue. I don't, and most people in my position at the airlines do not share your credentials. We don't understand your language. We may not even fully appreciate the issue that you are dealing with at this conference. For myself, I have to say that I'm just learning. However, like General Gideon, I have to say that I've had some personal experiences with this. The first experience that I remember was as a military trainee at a base down south where one morning taxiing the aircraft out for takeoff, I came face to face with a wild boar. The wild boar wasn't going to give up the taxiway. My instructor pilot didn't want to give up the taxiway, either. But I can tell you after about a fifteen-minute face-to-face standoff, we taxied off the taxiway and let the wild boar do what he had to do. We came back later to fly. Later, that year, as a matter of fact, in my first flight in Vietnam, the flight came to an abrupt end when something hit the radome of the aircraft. And as on my first flight, and the first night that I flew in Vietnam, I was very concerned. After we landed, we came to find out that it was something very large and feathery that had hit the radome of the aircraft. It cracked the radome, it didn't do any other damage. We were thankful that it wasn't something else. I can also recall, about six or seven years ago at Northwest Airlines, when I was Senior Vice President of Operations, a fully loaded 747 bound from Minneapolis to Narita, Japan, taking off and going through a flock of birds. The pilot experienced vibration in three of the four engines. The crew skillfully returned the aircraft for a landing. Three engines were replaced on that 747. My last experience was two or three years ago, flying a DC-9 on the river approach at Washington National Airport flying northbound. At the same time, there were some ducks flying southbound over the Potomac River and we hit right over the Wilson Bridge. I was very thankful for the rigorous certification standards that the FAA had at that time, and the way that MacDonald Douglas built their airplanes. The overall aviation safety record in the United States and in the world has been steadily improving. In fact, in the United States, during 1998, there were zero fatalities in the scheduled aviation airline business. Now that's a remarkable record, when you consider that we carried six hundred fifteen million passengers in 1998. Of course, things like that don't just

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happen. That record, is the product of the hard work of many people. Many people like the people in this room and our predecessors, who have relentlessly and continuously been chipping away at various safety problems for decades. We, in the aviation safety business, pay attention to detail. In this business in fact it is our business to pay attention to detail. The US FAA, under the leadership of administrator Jane Garvey, last year, began an initiative entitled Safer Skies. The Safer Skies initiative is a government and industry partnership to reduce the fatal commercial aviation rate by eighty percent by the year 2007. This is a data driven effort that began by identifying the largest aviation safety issues. In commercial aviation, four major areas were identified. The number one killer in our business, in aviation, is controlled flight into terrain. Actually, that is when a perfectly good aircraft, for one reason or another, is flown into terrain. Number two, are approach and landing accidents, unstabilized approaches. The third area that was identified were runway incursions, either by vehicles, other aircraft, or people. Another area that was identified has to do with uncontained engine failures, normally where some heavy rotating parts actually leave through the nacelle of the engine. Several of us in this room in fact are on the task force, and working on recommendations for the administrator. In one of the areas, uncontained engine failures, the FAA has already completed eight final rules. I believe they were airworthiness directives that were published in the Federal Register several weeks ago. Concerning controlled flight into terrain, all major US airlines have already begun installation of terrain awareness and warning systems on passenger aircraft. And in fact Boeing is installing advanced ground proximity warning systems on all new aircraft. In the last two areas, improving the approach and landing accident rate, and eliminating runway incursions, work is now underway and recommendations will be delivered to the administrator this fall. Well, that's how the FAA is dealing with the heavy hitters, the biggest killers in our business. And as a participant in this program, I am very optimistic that these efforts will have a large pay-off and will get us more than half way to the goal of eighty percent. But that leaves the other forty percent. What are we going to do to eliminate the other forty percent, to reduce that accident rate. I believe that the answer is somewhere in the area of human factors, continuing to work on human error and minimization of human error, improving training, and perhaps improvement in air traffic control, better radar, more accurate systems that more accurately separate aircraft. And then there's perhaps an area called bird strikes and wildlife mitigation. And that's where I believe this particular effort fits in. It's somewhere in this other forty percent of the issues that we need to identify. My friend John Goglia, who you all know, a member of the NTSB, first brought the issue of wildlife and bird mitigation to my attention several years ago, when I was chairman of the Airline Transport Association of America Safety Council. John spoke to us and presented some data. The charts I saw were startling. I can remember the charts showing the growth of the various populations of geese and other birds. It was truly startling, not only to myself, but the other twenty-eight members of the Airline Transport Association Safety Council. And the problem, I guess that we noted, was that it seems that most of these ducks and geese and other birds, either live or migrate just off the ends of a lot of our runways. Later, I met with Captain Paul Eschenfelder, a Northwest Airlines Pilot, and a leader of this group and other efforts in this area. Paul brought the issue of wildlife mitigation and bird strikes a little closer to home for myself. In fact, at that time, Northwest began supporting a group in Minnesota called Geese Unlimited, we also have started an effort at Northwest to document, report and provide a database on bird strikes. We started that last year. We're also starting an effort to try to relate this to the number of dollars that we spend every year in terms of fixing these kinds of issues. And I'll talk a little bit later about maybe bringing that effort to a national front. I mentioned we began to support Geese Unlimited, of Grand Rapids, Minnesota. I was startled to learn that even relocation, in many cases, was not an alternative. I told Butch Buchan, who is the executive director of Geese Unlimited, that I knew something of the goose problem, because of the increasing number of geese that seemed to stay in my lawn and on my dock and in the wetlands area behind my house in Chanhazan, Minnesota. It wasn't just my imagination. In fact, some mornings it's hard to get out of my driveway. They seem to be getting a little more aggressive, also. I believe the pilot groups when they say, "This could be the next big one". Much work has been done, but as Greg Taylor, who is the president of Geese Unlimited, says in the latest issue of Geese Unlimited Review, the lead article "where do we go from here?" I don't know. You're going to have to tell me. You're going to have to tell the other airline people in the United States. I have a series of questions that I wanted to lay out in front of the group this morning, and ask that, during your conference, that you talk about these, and in some orderly fashion, maybe be able to present this back to our industry and to the FAA. First of all, what else to we need to do? Do we need to do more in these areas? As the General said, we're in a period of tight budgets, declining personnel and resources. We need to identify exactly what we need to do. Do we need more research in this area? I noticed a

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number of the papers that will be presented over the next few days talk about research that has already been done. Do we need more? Do we need more data? As I said, Northwest has begun collecting some real data out there in the civil airline business. Do we need to take that and make it a common program throughout the airline industry? Do we need to better understand the dollars that are involved in this kind of damage and safety threat? Do we need better intra and inter governmental cooperation in this area? Does this effort, and this may be a key point, does this effort get the visibility and support necessary to accomplish the above? I think that's a very important question. Then figuring out how to do it is also quite complex. And then lastly, what can the airlines, and speaking on behalf of the Airline Transport Association in the United States, do? These are simply some questions that I throw out for your consideration during this conference. I believe that the answers should be well documented, thorough and practical if resources are necessary in today's environment. As a member of the Federal Aviation Administration's and NASA's Research and Development Advisory Committee, I would offer to help support some of these safety initiatives. I'm also a member of the Airline Transport Association Safety Council, as I mentioned, and I would support a thorough briefing to the entire council from representatives of this group. Now, I know that later this evening, Tommy McFall, from American Airlines, is speaking at your dinner. Tommy, as you may know, is the chairman of the Airline Transport Association Safety Council, so you should bring up some of these same issues to him. And I'm sure that he would agree with the kind of questions and issues that I've raised at this point in time. So with that challenge, let me thank you again for inviting me to this important conference, a kind invitation, and say that I'm looking forward to our next meeting. Thank you very much.

Applause

Bruce MacKinnon

We've managed to get a little bit ahead of schedule here. I'm very uncomfortable by the fact that Dr. Leshem hasn't had an opportunity to speak, and I would like to give him this opportunity to say a few words before we go to coffee break. Yossi.

Yossi Leshem

Thank you. Bruce, Mr. Art LaFlamme and Major General Francis Gideon, respected guests, and ladies and gentlemen. I thought that I talked before the film, but suddenly Bruce told me to say some more. I just want to tell you that it's a real privilege and great honour to show this video in an opening of such an important meeting. I was very delighted to see that Bird Strike Canada and Bird Strike USA decided to open this conference with a film from the Middle East, for two reasons. The first one, I believe that the message for the third millennium is that we start to think globally and not locally. So if we see a meeting in North America and opening film from the Middle East, I think this is exactly the point. The second point is that this film was produced for a very exciting meeting that about ten people who are joining this meeting attended two weeks ago in the Middle East. And for the first time we succeeded to bring together senior pilots from the Royal Jordanian Air Force, from the Turkish Air Force, from the Greece Air Force, and from the USA Air Force, and about ten countries' experts who developed together a new idea of working regionally in the Middle East. And I believe that we changed dramatically the idea, which was already said so many years ago by the prophet Isaiah, that we are changing our worlds, by using these Air Forces to join forces and putting a very important impact on the peace process in the Middle East. The film was based, as you have seen, from pieces of video that we got from the Jordanian, Turkish, American and Israeli Air Forces. And we were very delighted to find out at the end of this conference that not only did we decided to start to do the real work of joining forces in the Middle East, but the most important part, we became very good friends. You will see later in my presentation, I got a very exciting e-mail from the Jordanian delegates. We took them to Tel Nof Air Force Base, which is the biggest air force base in Israel. And we visited a squadron of F-15s. And they wrote me that the most exciting point for them in the seminar was not the knowledge that they got, but the point that suddenly they've been in the F-15 squadron, talking on joining forces. So, I believe that coming to the new millennium, as it was

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said by General Gideon and by others, we are doing the work together, and I'm sure we'll succeed. Thank you very much for the honour of this.

Applause