STATEMENT OF HANK KRAKOWSKI, CHIEF OPERATING OFFICER, AIR TRAFFIC ORGANIZATION, FEDERAL AVIATION ADMINISTRATION, ON RUNWAY SAFETY: AN UPDATE, BEFORE THE HOUSE COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE, SUBCOMMITTEE ON AVIATION, SEPTEMBER 25, 2008.

Chairman Costello, Congressman Petri, and Members of the Subcommittee:

Thank you for inviting me here today to update you on the Federal Aviation Administration's (FAA's) efforts to improve runway safety. Since I was last here in February of this year, I am happy to report that we have made some excellent progress in this arena, and I am confident that we will continue on this path.

Current Status of Runway Incursions

At the FAA, safety is our first priority, and as I have mentioned to this Committee before, a commitment to safety is part of my DNA. While 2007 was the safest year yet for aviation in our Nation's history, when we last testified in February 2008, we had experienced one of the worst quarters for serious runway incursions – 10 between October 2007 and December 2007, and two more in January 2008. Based on our response to this unacceptable situation, as of September 15, 2008, we are on track to equal or slightly improve on the safest year on record.

The National Transportation Safety Board (NTSB) and the Government Accountability Office (GAO) have issued recommendations on areas where the FAA could make improvements in runway safety. In November, the NTSB announced that improving runway safety will remain on the Board's "Most Wanted" list of improvements for 2008. FAA believes that the technologies we are now testing and deploying will be responsive to address the problem of runway incursions. Also, the GAO reported on how the FAA

has taken steps to address runway and ramp safety. We appreciate the work that the GAO and NTSB have done, and we welcome their analysis and feedback. While runway safety has received more public attention in recent months, it is important to remember that for many years, the FAA has actively invested in programs and technology development to address this serious aviation safety issue.

As a reminder to the Members, let me explain the categories of runway incursions. Category A incursions are the most serious incidents, in which a collision was narrowly avoided. Category B incursions are incidents in which separation decreases, and there is a significant potential for a collision, which may result in a time critical corrective or evasive response to avoid a collision. Category C incidents are characterized by ample time and/or distance to avoid a collision, and Category D is an incident which meets the definition of runway incursion, such as the incorrect presence of single vehicle/person/aircraft on the protected area of a surface designated for the take-off or landing of an aircraft, but with no immediate safety consequences.

Beginning with Fiscal Year (FY) 2008, the FAA adopted the definition of runway incursion as used by the International Civil Aviation Organization (ICAO), the United Nations organization charged with promoting safety and security in international aviation. This new definition, which FAA helped develop for ICAO, is much more inclusive and counts every single mistake made on the airport operational surface, even if another vehicle, pedestrian or aircraft is not involved. As a result, we will have more data to analyze trends and improve safety.

By redefining what a runway incursion is, the total number of what we now report as a runway incursion is expected to triple. This explains the spike in Category C incidents beginning in October 2007. Category C now includes data that we used to classify as Category C and D incursions. The new Category D accounts for incursions which we

previously tracked as surface incidents. However, Category A and B incidents, the most serious incursions, continue to be defined and tracked as before.

An aggressive and effective FAA runway safety program has reduced the number of serious runway incursions by 55 percent since 2001. In FY 2007, we saw a 25 percent reduction in serious runway incursions from 2006. There were 24 serious runway incursions (Category A and B incursions) during 61 million aircraft operations, a significant reduction from the 31 incursions in FY 2006, and the 53 incursions in FY 2001. We have only had 23 serious runway incursions as of September 15th of FY 2008, as compared to 24 last year.

What is significant about this number, however, is the quarterly comparison. During the first quarter of FY 2008, there were 10 Category A and B runway incursions, as compared to two in first quarter FY 2007. During the second quarter of FY 2008, there were five Category A and B runway incursions, as compared to five in second quarter FY 2007. In third quarter FY 2008, there have been four Category A and B runway incursions, while third quarter FY 2007 saw 10 of these. And, as we approach the end of the fiscal year, there have been four (with a possible fifth pending) Category A and B runway incursions, in comparison to the seven in final quarter of FY 2007. As you can see, the trend is towards continued improvement every quarter.

But while we have made improvements with the most serious of the runway incursions, overall runway incursions increased in FY 2007 to 370, up from 330 in FY 2006, and they continued to increase in 2008. If we use the prior definition for comparison purposes only, we have already had 388 runway incursions so far this year. To understand the impact of the new runway incursion definition, last year there would have been 891 runway incursions and so far this year we have had 953. So far, seven of the

23 serious incursions involved a commercial airline and there was one collision involving a general aviation airplane and a grass mowing tractor.

As you know, the FAA investigates every reported runway incursion and assigns a reason for the incursion. We send a team to the facility to review the airport information; radar data and voice tapes, if they are available; and interview the individuals involved, often controllers, pilots and/or vehicle operators. In 2008 we are seeing about 65 percent pilot error, 25 percent vehicle/pedestrian errors, and 10 percent controller errors. The shift between Operational Errors (OEs) and Vehicle or Pedestrian Deviations (VPDs) is a result of the new definition. Previously, Pilot Deviations (PDs) or VPDs that did not involve a loss of separation were not counted as runway incursions. Under the new definition, they are, which is causing the increase in our count. By contrast, this decreases the percentage of OEs in our database.

Update on Technology Installations

As I reported to you in February, we are working to install runway surveillance technology that improves controller situational awareness on the airport movement area at our nation's busiest airports. The FAA has spent over $404 million to date to acquire and deploy the next generation of ground surveillance technology, known as Airport Surface Detection Equipment – Model X or ASDE-X for short. The FAA will commit more than $806 million over a 30-year period on equipment, installation, operations and maintenance of the 35 operational and three support ASDE-X systems. I am pleased to report that we are rolling out ASDE-X even faster than we had originally anticipated. Seventeen towers are now using ASDE-X operationally and 16 additional towers are scheduled to be operational by the end of October 2010, with the remaining two scheduled to be operational by Spring 2011.

Runway Status Lights, which were developed as a result of the NTSB's "Most Wanted" list of safety improvements, are a fully-automated system that integrates airport lighting equipment with surveillance systems to provide a visual signal to pilots and vehicle operators when it is unsafe to enter/cross/or begin takeoff roll on a runway. Airport surveillance sensor inputs are processed through light control logic that command in-pavement lights to illuminate red when there is traffic on or approaching the runway. The contract is scheduled to be awarded this fall.

There are two types of Runway Status Lights currently being tested: Runway Entrance Lights and Takeoff Hold Lights. Runway Entrance Lights provide signals to aircraft crossing or entering a runway from an intersecting taxiway. Takeoff Hold Lights provide a signal to aircraft in position for takeoff that another aircraft is crossing or entering the runway. These systems are scheduled to be installed at 22 of the nation's busiest airports by FY 2011. We recently announced accelerated installation and testing at Los Angeles International Airport (LAX) and Boston Logan International Airport (BOS). BOS will be testing a third type of light system designed to warn pilots of potential conflicts on intersecting runways. We have also initiated Memoranda of Understanding at 18 airports, which contain the agreements for the light configuration and construction and installation timetables.

We are also testing a system at the Long Beach Airport, known as the Final Approach Runway Occupancy Signal (FAROS), which will further enhance runway safety. This system is similar to Runway Status Lights in that it provides immediate information to pilots on approach to land that the runway is occupied or otherwise unsafe for landing. The FAROS system determines the occupancy of the runway by detecting aircraft or vehicles on the runway surface. If a monitored area on the runway is occupied, FAROS activates a signal to alert the pilot that it is potentially unsafe to land. We are developing a plan for implementing FAROS at larger airports, and expect to begin operational trials at Dallas-Fort Worth later this fall.

The FAA is also evaluating low-cost ground surveillance systems for potential application at airports that are currently not programmed to receive ASDE-X technology. At present, we are evaluating two such systems at Spokane, Washington and we believe that basic ground surveillance capability, increasing controller situational awareness, can be provided at a cost less than the more sophisticated ASDE-X technology that is needed at larger, more complex airports.

Since I last appeared before you in February, we have taken the process a step further. Based on what we have learned at Spokane, we have issued a request for proposal inviting industry offers of candidate low-cost ground surveillance products for FAA consideration. Our intent is to install these selected low-cost products at various airports as part of a pilot project to determine which products satisfy minimum operational and safety requirements. We will use the results of the pilot project to determine the feasibility and cost-effectiveness of implementing a low-cost surveillance product, and if deemed feasible, develop a plan for acquisition and deployment. Several industry offers are currently under review and we expect to complete our evaluations in the near future.

The FAA recognizes that technologies that increase situational awareness and provide direct alerting to aircrews offer great potential to address some of the human factors that contribute to runway incursions. Our decision to deploy runway status lights is just one example of our increased emphasis on direct aircrew alerting. We are also aware that industry has stepped up to the plate to offer avionic product solutions that may further enhance aircrew situational awareness and thus increased runway safety. To facilitate operational assessment of these solutions, the FAA recently announced a “Cooperative Agreement for Improving Runway Safety.” Under this program, the FAA intends to enter into Funded Cooperative Agreements with users who agree to equip their aircraft with equipment which can display approved Airport Moving Maps or with equipment

approved to provide aural situational awareness runway information to pilots. The FAA will offer participants federal funds in an amount commensurate with the type of equipment proposed and the extent of the user's installation and participation in the FAA's operational evaluation program. In exchange for the federal contribution, the users must agree to equip their airplanes within a specified period and participate in FAA tests detailed in a Test and Evaluation Master Plan. The FAA is initially committing $2 million to this initiative.

Twenty of the busiest airports in America were identified for targeted Runway Safety Action Team visits based on a combination of a history of runway incursions, wrong runway events and wrong runway risk factors. Last year, these 20 airports accounted for 33 percent (8 of 24) of the serious runway incursions. So far this year that number is 17 percent (4 of 23).

The Runway Safety Action Team visits involved surface analysis meetings with air traffic control, both management and controllers, safety inspectors from FAA and the airports, and airport managers and operators. Just through the interaction and discussion among these groups, action plans to mitigate identified risks were finalized. These meetings identified over 100 short term fixes that could be accomplished within 60 days, including new or improved signage, improved marking, driver training, and other actions. This proves that "common sense" opportunities for curbing runway incursions exist.

Not all measures to improve runway safety will involve fielding expensive equipment and new systems. Quick and relatively inexpensive solutions include improving airfield markings, adding targeted training for controllers and aircrews, and fine-tuning air traffic procedures. Incorporating the lessons learned through the meetings with the initial 20 airports, FAA identified a second tier of 22 airports and we completed the focused surface analysis at these 22 airports in July 2008.

FAA has also continued to make progress in improving Runway Safety Areas (RSAs). RSAs enhance safety in the event of an undershoot, overrun, or excursion from the side of the runway. In FY 2000, FAA started an ambitious program to accelerate RSA improvements for commercial service runways that do not meet standards. The FAA developed a long-term completion plan that will ensure that all practicable improvements are completed by 2015.

When the RSA improvement initiative began in FY 2000 there were a total of 454 RSAs requiring improvement. Since then, significant progress has been made and 68 percent of the RSA improvements have been completed. By the end of 2010, 86 percent of RSA improvements will be completed, leaving only 59 to meet the 2015 goal. Twenty-four airports have improved safety areas using Engineered Materials Arresting Systems (EMAS), a relatively recent technology of crushable material placed at the end of a runway, and designed to absorb the forward momentum of an aircraft. EMAS offers a significant RSA improvement where the land off the ends of the runway is constrained and a conventional RSA is not practicable. To date, four aircraft overruns have been caught by EMAS applications with a 100 percent success rate.

As part of the Administrator's "Call to Action" last year, the FAA required all airports with enplanements of 1.5 million or more (75 airports) to enhance airport markings by June 30, 2008, and urged airports to provide recurrent training to contractors and service providers that drive on aircraft movement areas. All 75 airports completed the marking upgrades by June 2008 and most did so well in advance of the deadline. More than half of the commercial service airports not currently required to upgrade their markings have voluntarily agreed to do so. In addition, roughly 85 percent of all commercial service airports currently have or plan to provide recurrent training for all who have access to the aircraft movement area. Our Airports office at the FAA has completed rulemaking

requiring the enhanced markings at all Part 139 certificated airports by 2009 for medium and 2010 for small airports.

Human Factors

While the FAA has made great strides in advancing and implementing technologies to reduce runway incursions, technology is only as good as the people who use it. To this end, we are concentrating a great deal of effort into the human factors elements of runway incursions. As I reported to you in February, the FAA is seeking input from NATCA on revamping policies for issuing taxi clearances. The requirement to issue explicit taxi instructions was implemented in May 2008 and the requirement for an aircraft to cross all intervening runways prior to receiving a takeoff clearance was implemented in August 2008. Both of these requirements address NTSB recommendations on runway safety.

We are also working with NATCA to implement a voluntary reporting system for air traffic controllers similar to the Aviation Safety Action Program (ASAP) with airlines, pilots, airport operators and the FAA. This program is know as the Air Traffic Safety Action Program (ATSAP) and marks the beginning of a demonstration program to encourage voluntary safety reports from the ATO controllers. The program offers individual controllers an opportunity to provide valuable inputs to improve safety.

Voluntary safety reporting has proven very successful as sources of additional information that can be used to target safety risks that may not have been identified through existing audits, inspections, and automated tools. In my role at United, I was responsible for four ASAP programs for pilots, dispatchers, mechanics and flight attendants. Because of this work, I am convinced that information from a voluntary reporting system will help us to spot trends and prevent future runway incursions. We

have implemented voluntary reporting in our Chicago area facilities and receive valuable safety information daily regarding events and incidents that previously might have gone unreported. We will continue to expand this program without delay to additional facilities.

Recently the FAA conducted our first-ever Fatigue Symposium. This symposium brought together leading fatigue scientists; representatives of the airline industry and its employee groups, representatives of the NTSB, and representatives of the FAA and its employee groups. At the symposium, fatigue scientists and industry experts presented the most current scientific and industry-relevant fatigue information to a broad audience representing both flight operations and shift-work operations, including air traffic control, maintenance, ramp operations, and aircraft dispatch. The intent of the conference was to present information that would lead to improved understanding of fatigue in aviation and increased awareness of fatigue mitigation strategies, which the aviation industry can voluntarily adopt. By all accounts that conference was extremely successful and resulted in a great deal of information, ideas, and strategies.

Following up on that, we are preparing the proceedings of the Fatigue Symposium for posting on the FAA homepage, so that all operators, not just those in attendance, may access the wealth of information the conference produced. We have already applied some of the information, ideas and strategies in its evaluation of air carrier-specific proposals for ultra long range (ULR) operations (operations with a flight or flights in excess of 16 hours). The FAA is observing the effectiveness of the fatigue mitigation strategies employed in ULR operations, for any "lessons learned" that may be applied to other, non-ULR operations. We continue to examine the information from the Fatigue Symposium to determine what next steps we may be able to take.

The FAA is committed to designing an end-to-end system that seeks to eliminate runway incursions while accommodating human error. In February, I mentioned to you that the FAA plans on creating a standing Runway Council Working Group to look at the data and address root causes, and continue to involve all who play a part in runway safety. The Runway Council is scheduled to begin this fall, and will have dedicated human factors expertise to address this aspect of runway incursions.

Conclusion

The FAA continues to seek ways to improve awareness, training, and technologies and we look forward to our collaboration with airlines, airports, air traffic control and pilot unions, and aerospace manufacturers to curb runway incursions. I want to thank personally all of the stakeholders that have been working with the FAA on our efforts, including the Office of the Inspector General, the GAO, NATCA, the National Business Aviation Association, the Airline Pilots Association, the airlines, the Aircraft Owners and Pilots Association, and many others. We could not do what we do without their incredibly valuable input.

We also value the Committee's interest in this arena, and welcome your counsel and assistance in our efforts to reduce runway incursions and improve safety in our nation's aviation system. Your oversight has kept us on track to continue to improve safety, on the ground and in the air, and I appreciate that.

This concludes my remarks, and I would be happy to answer any questions the Committee may have.