National Transportation Safety Board

Airport Runway Accidents, Serious Incidents, Recommendations, and Statistics

Deadliest Runway Accidents

● **Tenerife, Canary Islands, March 27, 1977 (583 fatalities).** The world's deadliest runway accident occurred on March 27, 1977, when Pan Am (PAA) flight 1736, a Boeing 747, and KLM4805, a Boeing 747, collided on runway 12 at Tenerife, Canary Islands, killing 583 passengers and crew. KLM4805 departed runway 12 without a takeoff clearance colliding with PAA1736 that was taxiing on the same runway during instrument meteorological conditions.

The Spanish government determined the cause was: "The KLM aircraft had taken off without take-off clearance, in the absolute conviction that this clearance had been obtained, which was the result of a misunderstanding between the tower and the KLM aircraft. This misunderstanding had arisen from the mutual use of usual terminology which, however, gave rise to misinterpretation. In combination with a number of other coinciding circumstances, the premature take-off of the KLM aircraft resulted in a collision with the Pan Am aircraft, because the latter was still on the runway since it had missed the correct intersection."

● **Lexington, Kentucky, August 27, 2006 (49 fatalities).** The deadliest runway accident in the United States occurred on August 27, 2006, at about 0606 eastern daylight time when Comair flight 5191, a Bombardier CL-600-2B19, N431CA, crashed during takeoff from Blue Grass Airport, Lexington, Kentucky. The flight crew was instructed to take off from runway 22 but instead lined up the airplane on runway 26 and began the takeoff roll. The airplane ran off the end of the runway and impacted the airport perimeter fence, trees, and terrain. The captain, flight attendant, and 47 passengers were killed, and the first officer received serious injuries. The airplane was destroyed by impact forces and postcrash fire. The flight was en route to Hartsfield-Jackson Atlanta International Airport, Atlanta, Georgia. Night visual meteorological conditions prevailed at the time of the accident.

The NTSB determined the probable cause of this accident was the flight crewmembers' failure to use available cues and aids to identify the airplane's location on the airport surface during taxi and their failure to cross-check and verify that the airplane was on the correct runway before takeoff. Contributing to the accident were the flight crew's nonpertinent conversations during taxi, which resulted in a loss of positional awareness and the Federal Aviation Administration's failure to require that all runway crossings be authorized only by specific air traffic control clearances. (DCA06MA064) Note: The NTSB on July 27, 2007 classified the accident as a runway incursion.

Fatal Runway Accidents in the United States since 1990

● **Los Angeles, California, February 1, 1991 (34 fatalities).** On February 1, 1991, at 1801 pacific standard time, when USAir (USA) flight 1493, a B737, and Skywest (SKW) flight 5569, an SW4, collided on runway 24L at Los Angeles International Airport, Los Angeles, California, killing 34. USA1493 was landing on runway 24L and collided with SKW5569 that was holding on the same runway, at intersection 45, waiting for a takeoff clearance. (DCA91MA018AB)

The NTSB determined the probable cause was "the failure of the Los Angeles air traffic facility management to implement procedures that provided redundancy comparable to the requirements contained in the National Operational Position Standards and the failure of the FAA Air Traffic Service to provide adequate policy direction and oversight to its air traffic control facility managers. These failures created an environment in the Los Angeles Air Traffic Control Tower that

ultimately led to the failure of the Local Controller 2 to maintain an awareness of the traffic situation, culminating in the inappropriate clearances and the subsequent collision of the USAir and Skywest aircraft. Contributing to the cause of the accident was the failure of the FAA to provide effective quality assurance of the ATC system."

● **Atlanta, Georgia, January 18, 1990 (1 fatality).** On January 18, 1990, at 1904 eastern standard time, Eastern Airlines (EAL) flight 111, a B727, collided with N44UE, an Epps Air Service Beechcraft King Air A100, on runway 26R at the William B. Hartsfield International Airport, Atlanta, Georgia. N44UE was on landing roll, preparing to turn off runway 26R when it was struck from behind by EAL111 that had also been cleared to land on the same runway. The pilot of N44UE sustained fatal injuries. The accident occurred in night visual flight rule conditions, with reported visibility 3 miles with fog. (DCA90MA017AB*)*

The NTSB determined the probable cause of the accident was: "1) the failure of the FAA to provide air traffic control procedures that adequately take into consideration human performance factors such as those which resulted in the failure of the north local controller to detect the developing conflict between N44UE and EAL111, and 2) the failure of the north local controller to ensure the separation of arriving aircraft which were using the same runway. Contributing to the accident was the failure of the north local controller to follow the prescribed procedure of issuing appropriate traffic information to EAL111, and failure of the north final controller and the radar monitor controller to issue timely speed reductions to maintain adequate separation between aircraft on final approach."

● **Detroit, Michigan, December 3, 1990 (8 fatalities).** On December 3, 1990, at 1345 eastern standard time, Northwest Airlines (NWA) flight 1482, a DC-9, and NWA299, a Boeing 727, collided near the intersection of runways 9/27 and 3C/21C at Detroit Metropolitan/Wayne Country Airport, Romulus, Michigan, that killed 8 people. NWA299 was on its takeoff roll on runway 3C and collided with NWA1482 after it taxied onto the runway. The accident occurred in day instrument meteorological conditions. (DCA91MA010-AB)

The NTSB determined the probable cause was the "lack of proper crew coordination, including virtual reversal of roles by the DC-9 pilots, which led to their failure to stop taxiing and alert ground controller of their position uncertainty in a timely manner before and after intruding onto the active runway. Contributing to the cause of the accident were (1) deficiencies in ATC services provided by Detroit Tower, including failure of the ground controller to take timely action to alert local controller to possible runway incursion, inadequate visibility observations, failure to use progressive taxi instructions in low-visibility conditions, and issuance of inappropriate and confusing taxi instructions compounded by inadequate backup supervision for level of experience of staff on duty; (2) deficiencies in surface markings, signage and lighting at airport and failure of FAA surveillance to detect or correct any of these deficiencies; (3) failure of Northwest Airlines to provide adequate cockpit resource management training to line aircrews…."

● **St. Louis, Missouri, November 22, 1994 (2 fatalities).** On November 22, 1994, at 2203 central standard time, Trans World Airlines (TWA) flight 427, a MD-82, collided with N441KM, a Cessna 441, at the intersection of runway 30R and taxiway R, at the Lambert-St. Louis International Airport (STL) in Bridgeton, Missouri. The STL ground controller cleared N441KM to taxi to runway 31 but the crew inadvertently taxied onto runway 30R. The STL local controller cleared TWA427 for takeoff on runway 30R and collided with N441KM. The two occupants of N441KM were killed. The accident occurred in night visual meteorological conditions. (CHI95MA044AB)

The NTSB determined the probable cause was "the Cessna 441 pilot's mistaken belief that his assigned departure runway was runway 30R, which resulted in his undetected entrance onto runway 30R, which was being used by the MD-82 for its departure. Contributing to the accident was the lack of Automatic Terminal Information Service and other air traffic control information regarding the occasional use of runway 31 for departure. The installation and utilization of Airport Surface

Detection Equipment (ASDE-3), and particularly ASDE-3 enhanced with the Airport Movement Area Safety System (AMASS), could have prevented this accident."

● **Quincy, Illinois, November 19, 1996 (14 fatalities).** On November 19, 1996, at 1703 central standard time, United Express flight 5925, a Beechcraft 1900C, and N1127D, a Beechcraft King Air A90, collided at the intersection of runways 13/31 and 4/22 at the uncontrolled airport in Quincy, Illinois, killing all 14 people in both planes. Flight 5925 was completing its landing roll on runway 13 and the N1127D was on its takeoff roll on runway 4 when they collided. The accident occurred in day visual meteorological conditions. (DCA97MA009AB)

The probable cause determined by the NTSB stated in part: "the failure of the pilots in the King Air A90 to effectively monitor the common traffic advisory frequency or to properly scan for traffic, resulting in their commencing a takeoff roll when the Beech 1900C (United Express flight 5925) was landing on an intersecting runway. Contributing to the cause of the accident was the Cherokee pilot's interrupted radio transmission, which led to the Beech 1900C pilot's misunderstanding of the transmission as an indication from the King Air that it would not take off until after flight 5925 had cleared the runway…."

● **Sarasota, Florida, March 9, 2000 (4 fatalities).** On March 9, 2000, at 1035 eastern standard time, N89827, a C152, and N79960, a C172, collided during takeoff on runway 14 at the Sarasota-Bradenton International Airport, Sarasota, Florida, that killed 4 people. The tower controller cleared N89827 for takeoff from the approach end and 6.5 seconds later instructed N79960 to "taxi into position and hold". N89827 collided with N79960 when the airplane entered the runway at taxiway F. The accident occurred in day visual meteorological conditions. (MIA00FA103AB)

The NTSB determined the probable cause was "the failure of the supervisor/ground controller and the local controller to provide effective separation between the accident airplanes on the runway, resulting in a collision during takeoff. Contributing to the accident was the failure of the pilot and pilot-rated passenger on board N79960 to ensure that the runway was clear of traffic before taxiing onto the runway. Also contributing to the accident was the failure of air traffic control guidance and procedures to incorporate redundant methods of verifying aircraft position for both controllers and pilots."

● **Chicago, Illinois, December 8, 2005 (1 fatality)** On December 8, 2005, about 1914 central standard time, Southwest Airlines flight 1248, a Boeing 737-7H4, N471WN, ran off the departure end of runway 31C after landing at Chicago Midway International Airport, Chicago, Illinois. The airplane rolled through a blast fence, an airport perimeter fence, and onto an adjacent roadway, where it struck an automobile before coming to a stop. A child in the automobile was killed, one automobile occupant received serious injuries, and three other automobile occupants received minor injuries. Eighteen of the 103 airplane occupants (98 passengers, 3 flight attendants, and 2 pilots) received minor injuries, and the airplane was substantially damaged. The airplane had departed from Baltimore/Washington International Thurgood Marshall Airport, Baltimore, Maryland.

The NTSB determined that the probable cause of this accident was the pilots' failure to use available reverse thrust in a timely manner to safely slow or stop the airplane after landing, which resulted in a runway overrun. This failure occurred because the pilots' first experience and lack of familiarity with the airplane's autobrake system distracted them from thrust reverser usage during the challenging landing.

Contributing to the accident were Southwest Airlines' 1) failure to provide its pilots with clear and consistent guidance and training regarding company policies and procedures related to arrival landing distance calculations; 2) programming and design of its on board performance computer, which did not present inherent assumptions in the program critical to pilot decision-making; 3) plan to implement new autobrake procedures without a familiarization period; and 4) failure to include a margin of safety in the arrival assessment to account for operational uncertainties. Also contributing to the accident was the pilots' failure to divert to another airport given reports that included poor braking action and a tailwind component greater than 5 knots. Contributing to the severity of the

accident was the absence of an engineering materials arresting system, which was needed because of the limited runway safety area beyond the departure end of runway 31C.

Serious Incidents in the United States

● **Providence, Rhode Island, December 6, 1999.** On December 6, 1999, at 2035 eastern standard time, United Airlines flight 1448 (UAL1448), a Boeing 757, and Federal Express flight 1662 (FDX1662), a Boeing 727, were involved in a runway incursion on runway 5R at the Theodore Francis Green State Airport, Providence, Rhode Island. No injuries were reported, and neither aircraft was damaged. The crew of UAL1448 landed on runway 5R and, during taxi to the terminal, became disoriented and inadvertently turned on taxiway B and stopped on the edge of runway 5R. FDX1662 departed runway 5R, passing very near UAL1448. The incident occurred during night instrument meteorological conditions. Reported visibility was ¼ mile and the runway visibility range was 1,400 feet. (DCA00SA012AB)

● **Chicago, Illinois, April 1, 1999.** On April 1, 1999, at 0220 central standard time, Air China flight 9018 (CCA9018), Boeing 747, and Korean Air flight 36 (KAL36), a Boeing 747, were involved in a near collision on runway 14R at the Chicago O'Hare International Airport, Chicago, Illinois. No injuries were reported, and neither aircraft was damaged. CCA9018 landed on runway 14R and was instructed by the tower controller to exit the runway via a right turn on taxiway T-10, left turn on taxiway K, and to cross runway 27L to the cargo ramp. The same controller cleared KAL36 for takeoff as the CCA9018 was exiting runway 14R. CCA9018 turned right turn onto taxiway T-10 then turned left onto taxiway M instead of taxiway K. CCA9018 entered onto runway 14R as KAL36 was taking off. KAL36 flew over 25 to 50 feet over the top of CCA9018. The incident occurred during night visual meteorological conditions. (DCA99SA054AB)

● **Dallas, Texas, August 16, 2001.** On August 16, 2001, at 1024 central daylight time, Delta Airlines (DAL) flight 1521, a 737, nearly collided with Continental (COA) flight 1487, a 737, on runway 18L at Dallas/Fort Worth International Airport, Dallas, Texas. The tower local controller cleared COA1487 to land on runway 18R, and then cleared DAL1521 for take off on runway 18L. About 24 seconds later, the local controller cleared COA1487 to cross runway 18L. The pilots of both airplanes saw a possible impending collision and took evasive action. COA1487 continued to the gate and deplaned the passengers. The pilot of DAL1521 reported that the tail of the airplane scraped the runway. Examination revealed that there was damage to the skin of the underside of the tail. Radar data indicates that DAL1521 flew over COA1487 by approximately 100 feet. The incident occurred in day visual meteorological conditions. (FTW01IA183AB)

The NTSB determined the probable cause was “the local controller clearing the taxiing aircraft to cross the runway in front of the aircraft on takeoff roll. Contributing factors were the local controller's failure to follow FAA procedures and directives to visually scan the runway prior to issuing the crossing clearance, the local controller’s excessive workload, and the tower supervisor's inadequate supervision.”

● **Los Angeles, California, August 19, 2004.** On August 19, 2004, at 1455 pacific daylight time, Asiana Airlines flight 204 (AAR204), a Boeing 747-400, and Southwest Airlines flight 440 (SWA440), a Boeing 737, were involved in a near collision on runway 24L at the Los Angeles International Airport, Los Angeles, California. No injuries were reported, and neither aircraft was damaged. The same tower controller cleared AAR204 to land on runway 24L and cleared SWA440 onto the same runway to depart. AAR204 initiated a go-around and flew over SWA440 by about 200 feet. The incident occurred during daylight visual meteorological conditions. (LAX04IA302)

The NTSB determined the probable cause of this incident was “a loss of separation between Southwest flight 440 and Asiana flight 204 due to the LC2 relief controller's failure to appropriately monitor the operation and recognize a developing traffic conflict. Contributing factors included the

FAA's position relief briefing procedures, the formatting of the DBRITE radar displays in the LAX tower, controller fatigue, and the tower supervisor's staffing decisions on the day of the incident."

● **Boston, Massachusetts, June 9, 2005.** On June 9, 2005, at approximately 1940 central daylight time, Aer Lingus flight 132 (EIN132), an Airbus 333, and US Airways flight 1170 (USA1170), a Boeing 737, were involved in a runway incursion at the General Edward Lawrence Logan International Airport (BOS), in Boston, Massachusetts. No injuries were reported, and neither aircraft was damaged. Both aircraft were under control of the Boston Air Traffic Control Tower; the Local Control West (LCW) controller was responsible for EIN132 and Local Control East (LCE) was responsible for USA1170. At 2339:10, the LCW cleared EIN132 for takeoff from runway 15R. Five seconds later, forgetting that he released the runway to allow EIN 132 to depart, the LCE cleared USA1170 for departure from runway 9. The first officer on USA1170 saw EIN102 and pushed the control column forward to prevent the captain from taking off. Once EIN132 had passed through the intersection, USA1170 became airborne. AMASS did not activate because in its current configuration it was not designed to operate on intersecting runways due to the amount of nuisance alerts. The incident occurred during daylight visual meteorological conditions. (NYC05IA095A)

● **Chicago, Illinois, July 23, 2006.** On July 23, 2006, about 2200 central daylight time, Atlas Air flight 6972, (GTI6972), a Boeing 747-400, and United Airlines flight 1015 (UAL1015), a Boeing 737-300 were involved in a runway incursion at the Chicago O'Hare International Airport (ORD), Chicago, Illinois. No injuries were reported, and neither aircraft was damaged. The local controller cleared GTI6972 to land on runway 14R and approximately two minutes later, cleared UAL1015 for takeoff from runway 27L. UAL1015 almost collided with GTI6972 as it crossed runway 27L while on landing roll. The captain of UAL1015 noticed GTI6972 and rotated 10 knots prior to Vr, flew over GTI6972, and missed it by approximately 120 feet. At the time of the incident, the Airport Movement Area Safety System (AMASS) was in limited mode and did not alert. The incident occurred during night visual meteorological conditions. (OPS06IA008A)

● **Denver, Colorado, January 5, 2007.** On January 5, 2007, at 0728 mountain standard time, Key Lime Air flight 4216 (LYM4216), an SW4, and Frontier flight 297 (FFT297), an A319, were involved in a near collision at Denver International Airport, Denver, Colorado. No injuries were reported, and neither aircraft was damaged. The pilot of LYM4216 inadvertently entered runway 35L as FFT297 was on approach to the same runway. As FFT297 descended out of the clouds, the pilot noticed LYM4216 on the runway and executed a missed approach. The airplanes missed colliding by about 50 feet. The incident occurred in day instrument meteorological conditions. Weather was reported as 600 overcast, 1100 broken, visibility 1/2 mile, light snow, mist, and the runway visual range was 5,500 feet. (OPS07IA001AB)

● **San Francisco, California, May 26, 2007.** On May 26, 2007, at 1330 a tower air traffic controller at San Francisco International Airport cleared SkyWest Airlines flight 5741, an Embraer 120 arriving from Modesto, California, to land on runway 28R. Forgetting about the arrival airplane, the same controller then cleared Republic Airlines flight 4912, an Embraer 170 departing for Los Angeles, to take off from runway 1L, which intersects runway 28R. After the SkyWest airliner touched down, the Airport Movement Area Safety System (AMASS) alerted and the air traffic controller transmitted "Hold, Hold, Hold" to the SkyWest flight crew in an attempt to stop the aircraft short of runway 1L. The SkyWest crew applied maximum braking that resulted in the airplane stopping in the middle of runway 1L. As this was occurring, the captain of Republic Airlines flight 4912 took control of the aircraft from the first officer, realized the aircraft was traveling too fast to stop, and initiated an immediate takeoff. According to the crew of SkyWest 5741, the Republic Airlines aircraft overflew theirs by 30 to 50 feet. (OPS07IA004)

● **New York City, New York, July 5, 2007.** On July 5, 2007, at about 0915 Eastern daylight time, there was a runway incursion at LaGuardia Airport, New York, New York involving Delta (DAL)

flight 1238, a 737, and Comair (COM) flight 196, a CRJ1. There was a developmental training on ground control (GC) at the time of this incident. GC requested to cross runway 22 with an aircraft at taxiway F. The local controller approved the request advising he should cross behind COM flight 425, an E135, which was landing on runway 22. DAL1238 was inbound, landing behind COM425. The aircraft following DAL1238 inbound was issued go around instructions but GC thought that DAL1238 had been sent around. GC then crossed COM196, on runway 22 at taxiway F, without coordination, as DAL1238 crossed the landing threshold. The FAA originally reported that the lateral separation of the aircraft was 3,200 feet. The Airport Movement Area Safety System (AMASS) radar data indicated that the closest proximity of the aircraft was about 650 feet. The incident occurred during day visual flight rules conditions. The FAA classified this incursion as a Category D. (OPS07IA007AB)

● **Ft. Lauderdale, Florida, July 11, 2007.** On July 11, 2007, at 1437 eastern daylight time a runway incursion occurred at the Fort Lauderdale-Hollywood Airport, Fort Lauderdale, Florida between United flight 1544, an A-320 and Delta Airlines flight 1489, a Boeing 757. The incident occurred in day visual flight rules conditions, visibility 10 miles, scattered clouds at 4,800 feet. The ground controller instructed United 1544 to taxi to runway 9L via taxiway T7. As the flight was taxiing on taxiway D near runway 9L, the tower local controller noticed the airplane was going too fast to hold short of the runway. The local controller told the ground controller to tell United to stop. The ground controller said, "UAL 1544 stop, stop, stop". The crew stopped on runway 9L. Delta1489 was inbound for landing on runway 9L when the local controller determined that United1544 was not going to hold short of the runway and instructed Delta1489 to go around. When the crew received the instruction, the main landing gear was on the ground. According to the crew statement, they noted the urgency in the controller's voice so they knew they had to get the aircraft airborne. FAA reported Delta1489 flew over United1544 by less than 100 feet. According to the FAA, the United crew stated they missed the turn onto taxiway B. The air traffic control tower is not equipped with either AMASS or ASDE-X. All airport lighting was functioning normally. (OPS07IA006)

● **Los Angeles, California, August 16, 2007.** On August 16, 2007, at approximately 1257 Pacific daylight time, a runway incursion occurred involving West Jet (WJA) 900, B737 and Northwest Airlines (NWA) flight 180, an A320, at Los Angeles International Airport, Los Angeles, California.WJA900 landed on runway 24R and exited at taxiway Y then changed to ground control frequency without authorization while the airplane was holding between the parallel runways. The tower controller cleared NWA180 for takeoff from runway 24L. Meanwhile, the pilot of WJA900 contracted ground control and said, "Ground, WJA900 with you on reverse [taxiway] yankee for gate 35." The ground controller assumed that the tower controller had instructed the flight to cross runway 24L and responded, "WJA900, Los Angeles tower, taxi [via taxiway] echo to the gate." Ten seconds later, the pilot of WJA900 confirmed that the flight was cleared to cross runway 24L. The ground controller asked who called and the pilot again asked whether or not they were cleared to cross the runway. The ground controller then realized that WJA900 had not been instructed to cross runway 24L and told WJA900 to stop. According to the FAA and WJA, the airplane crossed the hold short line but did not enter the runway. According to the FAA, the two aircraft missed colliding by 37 feet (wingtip of A320 to the nose of the B737) as NWA180 departed runway 24L. The tower received an AMASS warning when the pilot was confirming to cross and before the controller told WJA900 to stop. (OPS07IA009A)

● **Chantilly, Virginia, September 12, 2007.** On September 12, 2007, about 0313 Eastern daylight time, a runway incursion occurred at Washington Dulles International Airport, Washington, DC involving N66NJ, a Learjet 35, during night visual meteorological conditions. Runway 19R, which is 11,501 feet long and 150 feet wide, was closed for surveying and the runway lights had been turned off. The closure was advertised on the automatic terminal information service and the tower controller placed an X on the tower's ground radar display as a reminder of the closure. The closure was also annotated on the tower status display. At the time of the incident, there was one tower controller in the cab, the second controller assigned to the shift was on break. The tower controller

instructed N66NJ to taxi into position and hold, then cleared it for takeoff on the closed unlit runway. The departure controller at Potomac Terminal Radar Approach Control noticed the radar target depart runway 19R and asked the tower controller if the runway was open, and was told no. The FAA classified the incident as an operational error. (OPS07IA010)

Most Wanted Transportation Improvements List

Runway incursion prevention has been on the NTSB's "Most Wanted List" of safety improvements since the list was inaugurated in 1990. In November 2006, Board Members voted to keep the topic on the list and keep its "red" color code denoting that actions by the FAA were "unacceptable" because of the length of time the recommendation has been open.

The current 4 runway safety recommendations on the list are A-00-66, A-00-67, A-00-68 and A-07-57. All are described below.

Recommendation History

Since 1973, the NTSB has issued about 100 safety recommendations regarding runway incursions to the FAA and various other agencies. These recommendations addressed the need for improvements in air traffic control operations, training, procedures, and hardware; pilot training; airport signage, lighting and markings; airplane conspicuity; and incident reporting.

Currently there are 13 open safety recommendations dealing with runway incursions:

● Amend FAA Order 7110.65, "AIR TRAFFIC CONTROL," to require that controllers provide traffic advisories to the flight crew of each aircraft operating on intersecting runways where flightpaths converge. ***Current classification: open - acceptable. (A-00-34)***

● Amend the Aeronautical Information Manual to inform pilots that controllers will issue traffic information about aircraft operating on intersecting runways where flightpaths converge and explain the rationale for the procedure. ***Current classification: open - acceptable. (A-00-35)***

● Require, at all airports with scheduled passenger service, a ground movement safety system that will prevent runway incursions. The system should provide a direct warning capability to flight crews. In addition, demonstrate through computer simulations or other means that the system will prevent incursions. ***Current classification: open – unacceptable. (A-00-66)*** (Recommendation A-00-66 replaced A-91-29 after numerous runway incursion investigations determined that a direct warning to the cockpit was necessary.)

● Require that all runway crossings be authorized only by specific air traffic control clearance, and ensure that all U.S. pilots, foreign pilots flying into the U.S., and ground personnel responsible for the movement of aircraft, receive adequate notification of the change. ***Current classification: open – unacceptable. (A-00-67)***

● Require that, when aircraft need to cross multiple runways, air traffic controllers issue an explicit crossing instruction for each runway after the previous runway has been crossed. ***Current classification: open – unacceptable. (A-00-68)***

● Discontinue the practice of allowing departing aircraft to hold on active runways at nighttime or at any time when ceiling and visibility conditions preclude arriving aircraft from seeing traffic on the runway in time to initiate a safe go-around maneuver. ***Current classification: open – unacceptable. (A-00-69)***

● Adopt the landing clearance procedure recommended by International Civil Aviation Organization. ***Current classification: open – unacceptable. (A-00-70)***

● Require the use of standard International Civil Aviation Organization phraseology for airport surface operations, and periodically emphasize to controllers the need to use this phraseology and to speak at reasonable rates when communicating with all flight crews, especially those whose primary language is not English. ***Current classification: open – unacceptable. (A-00-71)***

● Require that all 14 *Code of Federal Regulations* Part 91K, 121, and 135 operators establish procedures requiring all crewmembers on the flight deck to positively confirm and cross-check the airplane's location at the assigned departure runway before crossing the hold short line for takeoff. This required guidance should be consistent with the guidance in Advisory Circular 120-74A and Safety Alert for Operators 06013 and 07003. ***Current classification: open – await response. (A-07-44)***

● Require that all 14 *Code of Federal Regulations* Part 91K, 121, and 135 operators install on their aircraft cockpit moving map displays or an automatic system that alerts pilots when a takeoff is attempted on a taxiway or a runway other than the one intended. ***Current classification: open – await response. (A-07-45)***

● Require that all airports certificated under 14 *Code of Federal Regulations* Part 139 implement enhanced taxiway centerline markings and surface painted holding position signs at all runway entrances. ***Current classification: open – await response. (A-07-46)***

● Prohibit the issuance of a takeoff clearance during an airplane's taxi to its departure runway until after the airplane has crossed all intersecting runways. ***Current classification: open – await response. (A-07-47)***

● Revise Federal Aviation Administration Order 7110.65, "Air Traffic Control," to indicate that controllers should refrain from performing administrative tasks, such as the traffic count, when moving aircraft are in the controller's area of responsibility. ***Current classification: open – await response. (A-07-48)***

FAA Runway Incursion Statistics

On October 1, 2007, the Federal Aviation Administration (FAA) adopted the International Civil Aviation Organization (ICAO) definition of a runway incursion as "any occurrence at an aerodrome involving the incorrect presence of an aircraft vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft."

The ICAO definition is broader than the previous FAA definition which said a runway incursion was "any occurrence in the airport runway environment involving an aircraft, vehicle, person, or object on the ground that creates a collision hazard or results in a loss of required separation with an aircraft taking off, intending to take off, landing, or intending to land."

Calendar Year	**Total Incursions (FAA definition)**	**Rate per 1 million ops (FAA definition)**
1999	321	4.7
2000	431	6.4
2001	383	5.9
2002	336	5.2

In 2000, Congress mandated FAA begin reporting runway incursion data by fiscal year instead of calendar year.

Fiscal Year	Total Incursions (FAA definition)	Rate per 1 million ops (FAA definition)	Total Incursions (ICAO definition*)
2000	405	5.9	
2001	407	6.2	
2002	339	5.2	
2003	323	5.2	583
2004	326	5.2	504
2005	327	5.2	530
2006	330	5.4	806
2007	371	6.07 (estimate)	887 (preliminary)
2008 *			110 (Oct & Nov 2007)

**** FAA changed its definition of a runway incursion to the ICAO definition on October 1, 2007, which is the beginning of the 2008 fiscal year.***

Resources

- National Transportation Safety Board: http://www.ntsb.gov/

- Aircraft Owners and Pilots Association's (AOPA) Air Safety Foundation offer an online interactive runway safety course to all pilots: http://www.aopa.org/asf/runway_safety

- FAA's runway safety information, programs and data: http://www.faa.gov/runwaysafety

- ICAO *Manual: Prevention of Runway Incursions:* http://www.icao.int/fsix/res_ans.cfm

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