

Runway Safety Initiatives

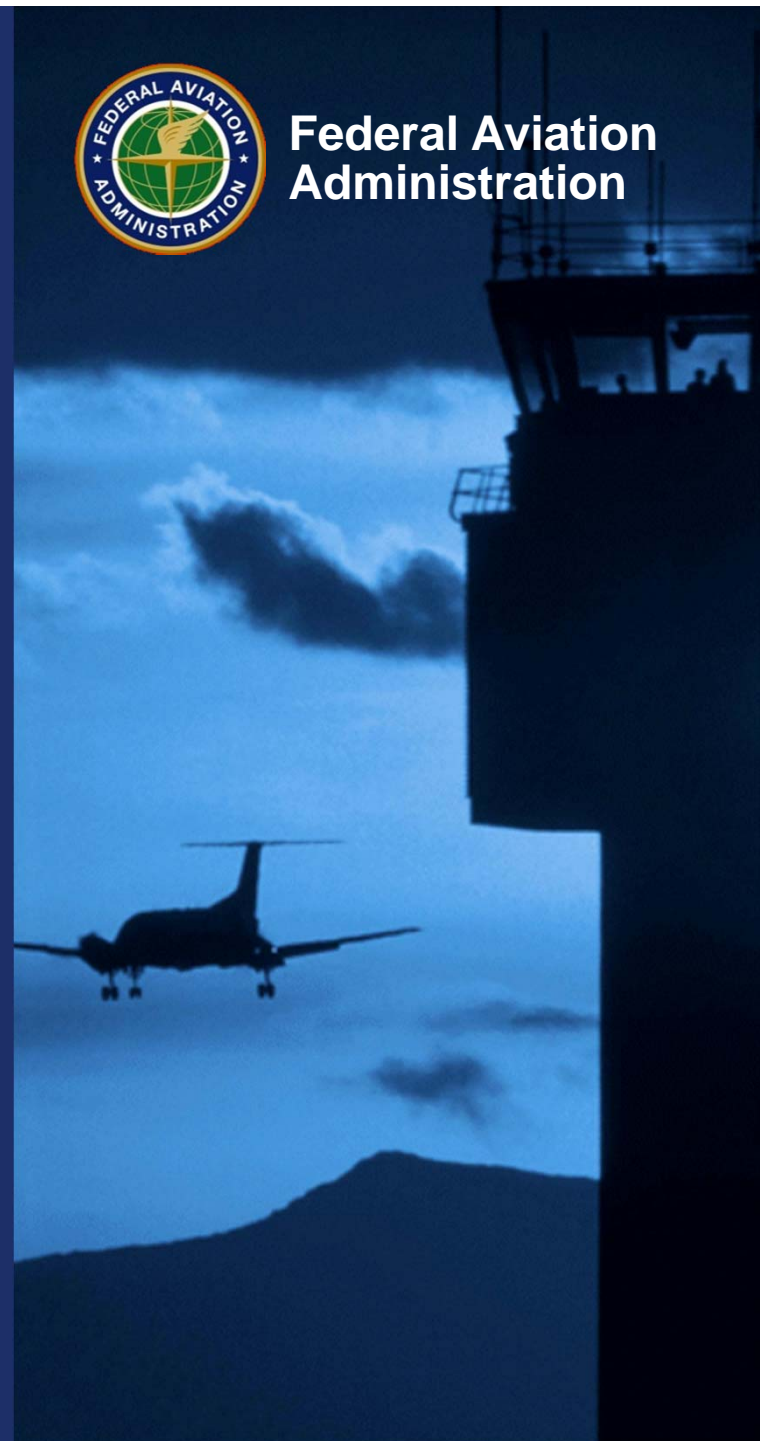
Presented to: ICAO RRSS, Kuala Lumpur

By: James White, FAA Airport Safety and Standards

Date: November 2013



Federal Aviation
Administration



Runway Safety: Surface Operations Risk Factors



Minimal separation and rapid pace



High-speed operations with little margin for error



Complex environment



**Low visibility in
poor weather**

Combination of Factors Minimizes Safety Margin



ICAO Global Runway Safety Action Items

- **Runway safety teams should be established**
- **Focus areas:**
 - runway excursions
 - runway incursions
 - bird strikes
 - FOD
- **Technical solutions**
 - RSAs,
 - EMAS
 - Performance Based Navigation (PBN)
- **ICAO compliant lighting and signs**
- **12 Regional RW Safety Seminars over next 2 years.**
First one was in Miami in U.S. in October 2011
- **November in Malaysia**



Accident Statistics & Accident Rates

2011 UN Region	Accidents	Accident Rate	Fatal Accidents	Fatalities	% Accidents	% Fatal Accidents	% Fatalities
Africa	7	7.9	3	141	6%	19%	34%
Asia	22	2.9	3	98	17%	19%	24%
Europe	39	5.5	4	60	31%	25%	14%
Latin America and the Caribbean	15	5.7	4	60	12%	25%	14%
Northern America	38	3.5	0	0	30%	0%	0%
Oceania	4	4.7	2	55	3%	12%	13%
World	126*	4.2	16	414			

*One accident occurred in international waters and is not associated with any Region.

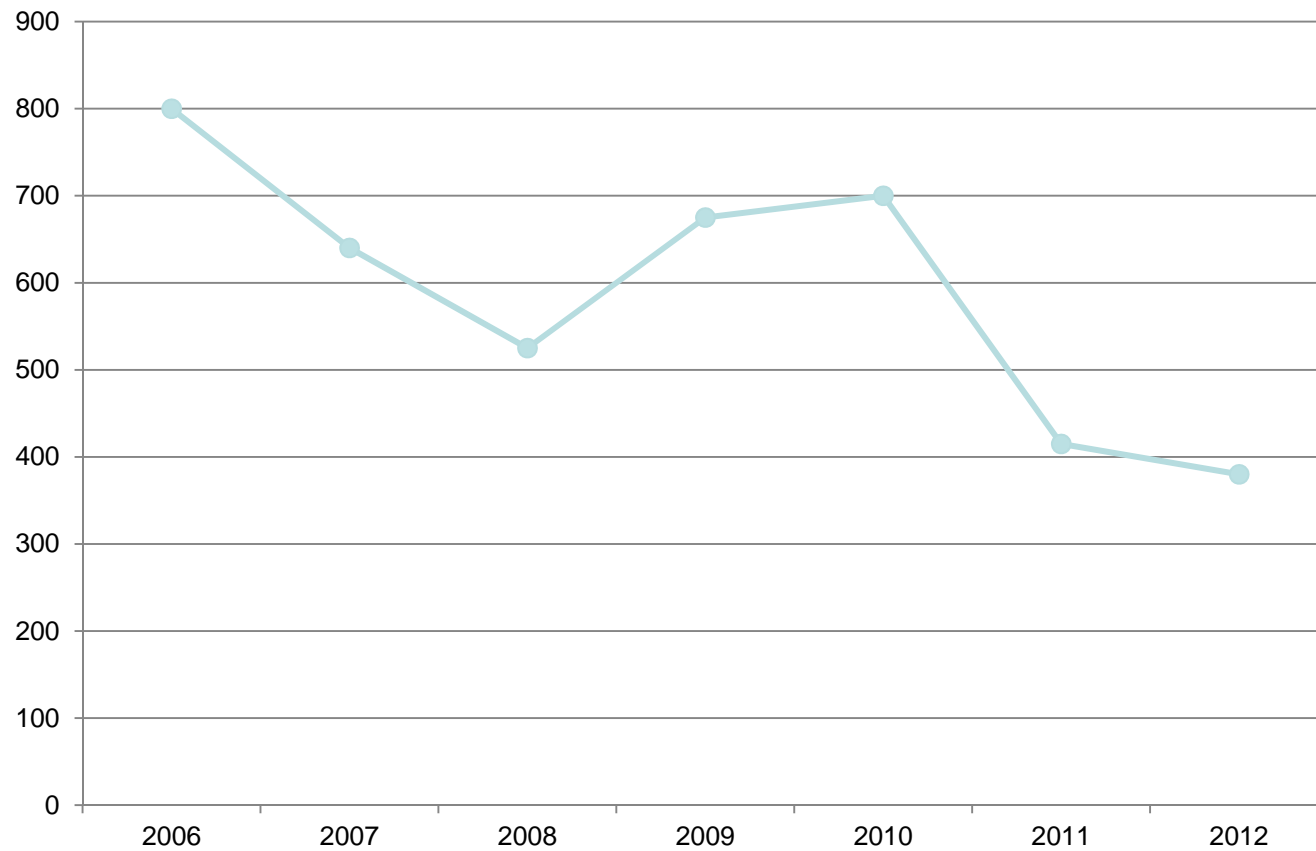
From ICAO 2012 Safety Report (Accidents per million departures)

2012 UN Region	Accidents	Accident Rate	Fatal Accidents	Fatalities	% Accidents	% Fatal Accidents	% Fatalities
Africa	5	4.8	2	167	5%	22%	45%
Asia	23	2.7	3	161	23%	33%	43%
Europe	30	4.2	3	42	30%	33%	11%
Latin America and the Caribbean	12	3.8	1	2	12%	12%	1%
Northern America	29	2.8	0	0	30%	0%	0%
Oceania	0	0	0	0	0%	0%	0%
World	99	3.2	9	372			

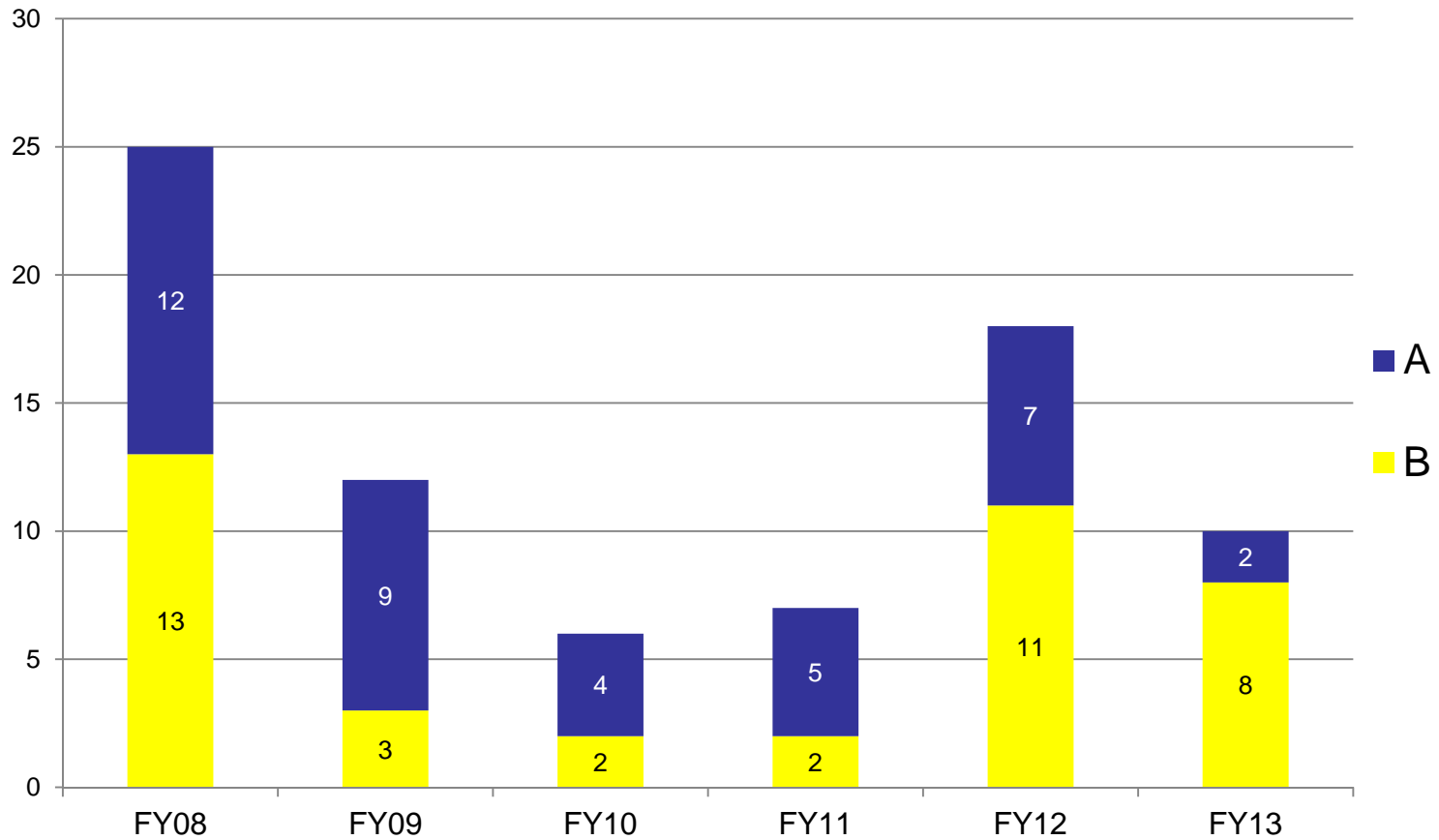
From ICAO 2013 Safety Report



Worldwide Fatality Trends: 2006-2012



Serious Runway Incursions

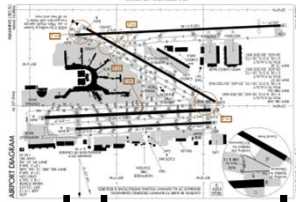


Vehicle Drivers' Training Just As Important As Pilot Training



Driver's Training Best Practices

- Airport Layout



4-22

- Airport Signs, Markings, Lighting and NAVAIDs



- Proper Radio Communication



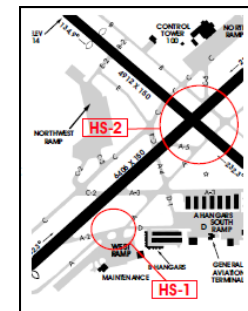
- Safety Areas



- Day, Night and Bad Weather Driving



- Known Congested Areas & Hot Spots



- Driving "Check Rides"



SMS for Airports in the U.S.

- **Require rulemaking to amend Part 139.**
- **Rulemaking action underway.**
- **Issued Notice of Proposed Rulemaking for public comment.**
- **Currently considering comments received.**
- **Conducted SMS pilot projects.**
- **Issue d draft SMS Advisory Circular for comment August, 2012.**
- **FAA Issue final SMS rule spring 2015.**



Participation in RSATs



Recommendation – Highlight the taxiway centerline from Alpha around the corner towards Runway 3 and install a surface painted destination sign for Runway 3.



Southwest



FOE

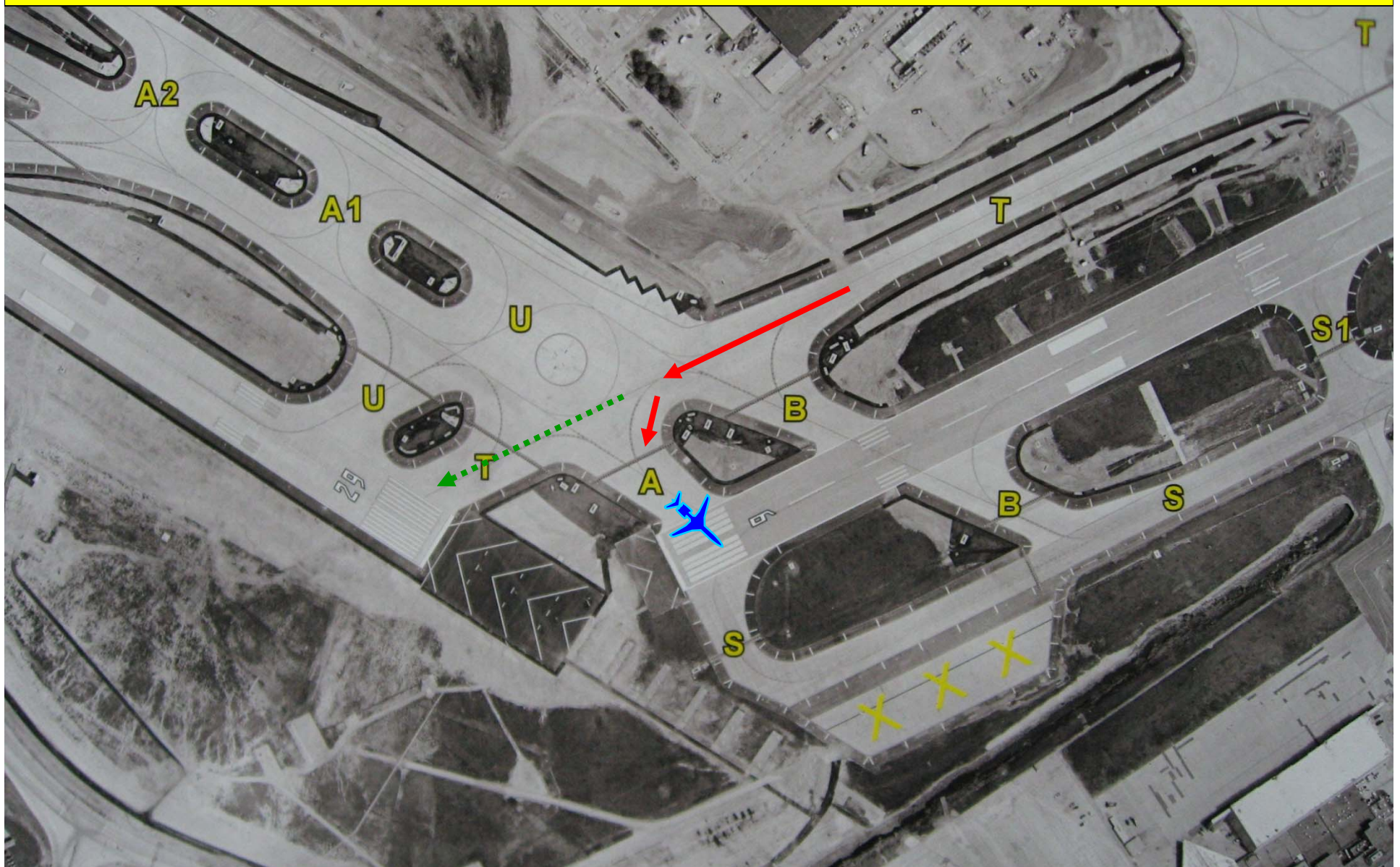


Recommendation Implemented



FOE

STL PD Runway Incursions on Runway 6



On 4/7/08, a CRJ-900 taxiing to Runway 29 on Tango, instead turned left on Taxiway Alfa and entered Runway 6. There was no loss of separation.

STL RSAT Action Items for the Alfa/Tango Intersection



Modified Sign



Action - Modify the Runway 6 holding position sign on the right side of Taxiway Alfa by replacing the 24 designation panel with an arrow panel pointing left.

Actions to Reduce Risk

- Enhanced taxiway centerline markings & surface painted signs
- Eliminate RW crossings (pilots & vehicle drivers)
- Green islands/RGLs/Signs
- Pilot education and awareness
- Proper ATC phraseology
- Simple Airport Geometry
- Annual Vehicle Drivers' Training
- Good Communications
- Current Airport Diagrams



Enhanced Taxiway Markings

Previous Markings



Enhanced Markings



Lack of RESA



RUNWAY SAFETY AREA (RSA) IMPROVEMENT PROGRAM RSA IMPROVEMENT OPTIONS

- **Construct or expand the RSA**
- **Modify or Relocate the Runway**
- **Install an EMAS**
- **Remove objects that are not fixed by function**
- **Implement Declared Distances**
- **Any combination of the above**



Successful EMAS Capture



Courtesy: ESCO

**EMAS capture of a Boeing 747 at JFK International Airport, NY
January 2005**



Federal Aviation
Administration

Successful EMAS Capture



Successful EMAS Capture



The Latest Save (Number 9)

Palm Beach International October 27, 2013



Back to Basics ARFF Training

- **FAA inspections noted increase in airports not meeting ARFF training requirements.**
- **Results in firefighters not fully trained on shifts.**
- **FAA is pursuing enforcement and increasing review of ARFF training records during annual inspections.**



ARFF – High Reach Extendible Turret (HRET)

Current Generation

- 2nd level penetration possible, however, vehicle will be too close to burning aircraft and aircraft must be level.
- Penetrating nozzle should be as close to 90 deg. to skin as possible.
- Penetrating nozzle should be in-line with boom arm.



San Francisco ARFF Response



Wildlife Hazard Mitigation R&D



The Hazardous Wildlife Problem (U.S. data)

- **Bird populations are increasing.**
 - Canada Geese increased in U.S. from 0.5 million in 1980 to 3.8 million in 2012.
 - 13 of 14 species over 8 pounds have significantly increased.
- **Birds are staying in urban areas rather than migrating.**
- **Commercial aircraft movements are increasing. In the U.S. operations have increased:**
 - 18 million in 1980
 - 25 million in 2010
 - 32 million estimated in 2030
- **Reported strikes in the U.S. have increased 6-fold since 1990.**
 - 1,759 in 1990
 - 10,726 in 2012



Wildlife Hazard Assessment

- **Identify species, numbers, locations, local movements**
- **Daily and seasonal occurrences of observed wildlife**
- **Describe existing wildlife hazards to air carrier operations**
- **Review strike records**
- **Identify wildlife attractants on and off airport**
- **Provide recommendations for reducing wildlife hazards**



Wildlife Hazard Management Plan

- **Provide measures to alleviate or eliminate wildlife hazards.**
- **Identify persons who have authority for implementing the plan.**
- **Priorities for needed habitat modification.**
- **Identification of resources for the plan.**
- **Procedures to be followed during air carrier operations.**
- **Wildlife control measures.**
- **Plan reviewed and approved by FAA**



Examples of ACRP reports

- **Manual for Airport In-Terminal Concessions.**
- **Handbook for Practical Greenhouse Emission Reduction Strategies for Airports.**
- **Strategies for Reuse of underutilized Airport Facilities.**
- **Ramp Safety Practices Airport insurance Coverage and risk Management Practices.**
- **Guidebook for Airport Irregular Operations Contingency Planning.**
- **Airport System Planning Processes.**
- **Airport Ground Access Choice Models.**
- **Airport Passenger Terminal planning and Design Guidebook.**
- **Airport Sustainability Practices.**
- **Guidebook for Safety Management Systems.**
- **Guidebook for Airport Capital Project Delivery Systems.**
- **Airport Self Inspection Practices.**
- **Bird Repellant Techniques on Airports.**
- **Evaluating and Mitigating Risk of Disease Transmission at airports and on aircraft**
- **Operational and Business Continuity at Airports**

