## Conference program

### Day 0: Sunday April 07

**All day:** Welcoming participants at the airport and transfer to hotels

### Wednesday April 10

#### Session 1  Introduction and Welcome

<table>
<thead>
<tr>
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<tr>
<td>09:00</td>
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<td>Dalid Guendouz DG ONDA</td>
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<tr>
<td>10:10</td>
<td>Mitigating the Risks - The need for a collaborative approach</td>
<td>James White, Deputy Director Airport Safety and Standards, FAA</td>
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#### Session 2  Hazards and Mitigation Strategies for Excursions

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<tr>
<th>Time</th>
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<tbody>
<tr>
<td>11:00</td>
<td>30 mins Pilot/Air Operator Perspective of Excursion Hazards and Proposed Mitigation Strategies</td>
<td>Nacer Marrakshi, Royal Air Maroc</td>
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<tr>
<td>11:30</td>
<td>30 mins Airport Operator perspective of Excursion Hazards and Proposed Mitigation Strategies</td>
<td>Peter O. Onyeri, Safety Manager, Federal Airports Authority Nigeria</td>
</tr>
<tr>
<td>11:60</td>
<td>30 mins Air Traffic Controller/ATC perspective of Excursion Hazards and Proposed Mitigation Strategies</td>
<td>Djamel Ait Abdelmalek, IFATCA - ENNA, ATC Supervisor</td>
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<tr>
<td>12:30</td>
<td>30 min Panel</td>
<td>David Gamper, ACI World</td>
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<tr>
<td>13:00</td>
<td>Lunch</td>
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<tr>
<td>14:30</td>
<td>15 mins Pilot/Air Operator Perspective of Incursions Hazards and Proposed Mitigation Strategies</td>
<td>Captain Moulay Hicham Guenoun, IFALPA</td>
</tr>
<tr>
<td>15:00</td>
<td>15 mins Airport Operator perspective of Incursion Hazards and Proposed Mitigation Strategies</td>
<td>Rishi Thakurdiin, Airports Company South Africa, Group Manager Safety and Compliance</td>
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<tr>
<td>15:30</td>
<td>30 mins Air Traffic Controller/ATC perspective of Incursion Hazards and Proposed Mitigation Strategies</td>
<td>Boni Dibate, CANSO, Director Africa Affairs</td>
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<tr>
<td>16:00</td>
<td>30 min Panel</td>
<td>Ruby Sayyed, Assistant Director SO&amp;I, IATA Middle East &amp; North Africa</td>
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16:00  16:30  Break

**Session 4  Available Technologies**
16:30  17:30  40 mins ICCAIA  
Captain Sam Goodwill, Safety Pilot, AIA - Boeing  
Mr Armand Jacob, Flight Test Engineer, ASD - Airbus  
20 mins Q&A  
Elizabeth Gnehm, Technical Officer, ICAO Headquarters  
19:00

**Thursday April 11**

**Session 5  The Runway Safety Team**
09:00  10:30  40 mins RST Description and Process  
Gaoussou Konate, Deputy Director, ICAO WACAF RO  
20 mins Role of the Regulator  
Morrocan Civil Aviation Authority  
30 mins Panel + Q&A  
Boni Dibate, CANSO, Director Africa Affairs

10:30  11:00  Break

**Session 6  RST examples and issues**
11:00  12:30  50 min FAA RST experience  
James White, Deputy Director Airport Safety and Standards, FAA  
20 mins An RST Regional Example  
Yousffi Faissale, ONDA Runway Safety Manager  
20 mins Another RST Regional Example  
Captain Moulay Hicham Guenoun, IATA

12:30  14:00  Lunch

**Session 7  Collaborative Approach (Interactive Session - Good interactive moderator to be identified)**
14:00  15:00  Presentation of a Hazard and multiple considerations (using a Regional example)  
Rishi Thakurdin, Airports Company South Africa, Group Manager Safety and Compliance

15:00  15:30  Break

**Session 8  The way forward**
15:30  17:00  Identify plans for the development of RSTs - Challenges, Recommendations, RASG follow-up  
Moderator TBD  
Gaoussou Konate, Deputy Director, ICAO WACAF RO  
Ruby Sayyed, Assistant Director SO&I, IATA Middle East & North Africa  
Boni Dibate, CANSO, Director Africa Affairs  
Ali Tounsi, ACI Africa Secretary General

**Friday April 12**

**Workshop**
09:00  13:00  Workshop  
Elizabeth Gnehm, Technical Officer, ICAO Headquarters

13:00  14:30  Lunch

14:30  18:00  Airport Visit  
Yousffi Faissale, ONDA Runway Safety Manager
**Wednesday April 10**

**Session 1  Introduction and Welcome**

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ACI Welcome and Opening Statement

ICAO Runway Safety Seminar for Africa
Agadir, Morocco
10 April 2013

Angela Gittens
Director General
ACI World

What Does ACI Do?

- Promotes the interests of the world’s airports and the communities they serve
- Promotes professional excellence in airport management and operations
ACI at a Glance

584 members
1766 airports
173 countries and territories
members handle 95% of global traffic

Map of ACI Regions

ACI World and Five Regional Offices

ACI World: Montreal, Canada
ACI Europe: Brussels, Belgium
ACI North America: Washington DC, USA
ACI Latin America-Caribbean: Quito, Ecuador
ACI Africa: Casablanca, Morocco
ACI Asia-Pacific: Hong Kong
ACI Contributes to Industry Safety

- Development of Best Practices
- Knowledge Transfer
  - Publication of Guidance
  - Training
  - Conferences and Seminars

ACI World Safety and Technical Committee

- Focus Areas:
  - Operational Safety
  - Aerodrome planning and design
  - Aerodrome equipment and installations
  - Airspace issues related to airports

- Committee work is in both advocacy and promoting excellence in airport operations
- Close working relationship with ACI regional safety committees
- Support for APEX programme
Best Practice Handbooks
ACI promoting excellence: training

- ACI Fund
- Developing Nations ACI Training
- ACI Global Training
Case for Change

ICAO Safety Audit Programme results with 165 States audited:

- 58% had not established procedures and 72% had no guidance for aerodrome certification and surveillance
- 69% had not established a runway safety programme related to runway incursions
- 65% had not established a mechanism to rectify safety issues in a timely way
- 83% had not implemented aerodrome SMS
- 59% had not reviewed Aerodrome Manuals periodically

Fight Safety Foundation

- Flight Safety Foundation Report found 431 (30%) of major damage accidents to commercial transport aircraft over 1995-2008 (1429 total) were runway-related
- Excursions accounted for 97% of these accidents
- Eight aerodrome operator-related causal factors
APEX Peer Review Process

- Purpose: Practical assistance to ACI members to **improve their level of safety**
- Team visits the airport
- “Safety partner” airport(s) provide staff to assist
- Other participants: ACI staff and ICAO and (optionally) national civil aviation authority
- Full report sent to requesting airport - following the peer review

APEX Tools

- Provision/explanation of Standards (ICAO)
- Provision of Best Practices (ICAO and ACI)
- Provision of Training Tools (ACI)
- Provision of Safety Self-assessment Tools
- (Under development) Key Safety Performance Indicators for airports (and collect data)
Leading, representing and serving the global airport community

www.aci.aero
Runway Safety: The Big Picture

ICAQ 37th Assembly October 2010 Resolution A37-6 (1/2)

The Assembly:
1. **Urges** States to take measures to enhance runway safety, including the establishment of runway safety programmes using a multidisciplinary approach, that include at least regulators, aircraft operators, air navigation services providers, aerodrome operators and aircraft manufacturers to prevent and mitigate the effects of runway excursions, runway incursions and other occurrences related to runway safety;

2. **Resolves** that ICAO shall actively **pursue runway safety using a multidisciplinary approach**; and

(...)
Associated practice no. 1:

- The runway safety programmes should be based on **inter-organizational safety management** including the **creation of local runway safety teams that address prevention and mitigation of runway excursions, runway incursions and other occurrences related to runway safety.**

ICAOs Runway Safety Programme

- **Outcomes of GRSS:**
  - Identification of hazards requires **collaboration** of all stakeholders
  - Solutions need to be standardized to international standards and harmonized to facilitate efficient international operations
  - **Runway Safety Teams** – should be established locally and hosted by the airports
  - RSP partners have committed to work together to compile and promote proven solutions and endorse best practices

- **Regional Runway Safety Seminars (RRSSs):**
  - Promote and enhance implementation of solutions through multidisciplinary RSTs

- **Runway Safety Website** [www.icao.int/RunwaySafety]:
  - Easy access to information on public website
  - Development of RST Action Plan Tool
  - Share documents and toolkits from RSP Partners
Objectives of this RRSS

- Improve runway safety outcomes
- The establishment of RSTs
- Provide tools for use by RSTs
- Develop a regional strategy to establish, promote and provide ongoing support to RSTs

Runway Safety Overview

Runway Safety Accidents
Scheduled Commercial Traffic – MTOW > 2 250 kg (Yrs 2008-2012)

Runway Safety Accidents
- Abnormal Runway Contact
- Bird strike
- Ground Collision
- Ground Handling
- Runway Excursion
- Runway Incursion
- Loss of Control on Ground
- Collision with obstacle(s)
- Undershoot / Overshoot
- Aerodrome

48%
Runway Safety Overview

Accidents & Related Fatalities by Occurrence Categories

Scheduled Commercial Traffic – MTOW > 2 250 kg (Yrs 2006-2010)

Runway safety
System/component failure
Unknown
Controled flight into terrain
Other
Loss of control in-flight
Turbulence
Non-Impact Fire

0% 10% 20% 30% 40% 50% 60%

Total Fatal Accidents Fatalities

Focus on Africa
Runway Safety Overview

Accidents & Related Fatalities by Occurrence Categories

<table>
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<tr>
<th>Category</th>
<th>Total</th>
<th>Fatal Accidents</th>
<th>Fatalities</th>
</tr>
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<tbody>
<tr>
<td>Runway safety</td>
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<td></td>
<td></td>
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<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
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<td></td>
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<tr>
<td>Controlled flight into terrain</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Other</td>
<td></td>
<td></td>
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Role of Runway Safety Teams in the WACAF Region

- Identify and develop mitigation options to:
  1. **Reduce** the number of runway safety related Accidents at individual airports
  2. **Improve** the survivability after a runway excursion

This seminar is designed to facilitate the formation of runway safety teams at individual airports
Federal Aviation Administration

FAA Runway Safety Initiatives

Presented to: ICAO RW Safety Seminar, Agadir
By: James R. White
Date: April 2013

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
Tools to Improve Runway Safety

- Airport Certification and Inspection
- Airport Safety Management Systems
- Runway Safety Action Teams
- Markings and Lighting
- Runway Safety Areas
- Aircraft Rescue and Firefighting
- Wildlife Hazard Management
- FOD Detection Systems
- Pavement Management

Aerodrome Certification Requirements

- Promulgation of basic aviation law.
- Establish a State entity responsible for aviation (normally the CAA), with the authority to ensure compliance with regulations.
  - Develop and promulgate Certification regulations.
    - Certification requirements.
    - Procedures, criteria and technical specifications.
    - Guidance material.
    - Adequate Trained Staff.
Aerodrome Inspections

Cadre of trained inspectors.
Conduct periodically and routinely.
Ensure continued compliance with requirements and standards.
Ensure continued compliance with aerodrome certification manual.
Verify that the SMS is functioning.

ICAO and Safety Management Systems

• SMS added to Annex 14
• Need to be proactive, identify risk, mitigate risk before introducing changes to airport infrastructure or procedures.
• ICAO issued SMS manual.
• An SMS is defined as a systematic approach to managing safety, including the necessary organizational structures, accountabilities, policies, and procedures.”
SMS Defined

The Four SMS Components

Safety Policy
Establishes senior management’s commitment to continually improve safety; defines the methods, processes, and organizational structure needed to meet safety goals.

Safety Risk Management
Determines the need for, and adequacy of, new or revised risk controls based on the assessment of acceptable risk.

Safety Assurance
Evaluates the continued effectiveness of implemented risk control strategies, supports the identification of new hazards.

Safety Promotion
Includes training, communication, and other actions to create a positive safety culture within all levels of the workforce.

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.
- Issued draft SMS Advisory Circular for comment August, 2012.
- FAA Issue final SMS rule 2014.
Participation in RSATs and Reducing Runway Incursions

The worst accident in aviation history was a runway collision accident in 1977 at Tenerife, Canary Islands, that resulted in 583 fatalities when two B-747s collided on the runway.
Serious Runway Incursions

*FY13 data through March 14, 2013

Top RI Errors Code FY12 and 13 Totals

- National

- Code 15 – Crossed hold short line, but did not enter runway after acknowledging hold short instructions. (Pilot)
- Code 22 – Landed/departed without a clearance (Pilot)
  (4 Cat A and B)
- Code 14 – Entered the runway after acknowledging hold short instructions with proper read back. (Pilot)
  (3 Cat A and B)
- Code 18 – Entered runway without communications/clearance (hold short not required). (Pilot)
- Code 1 – Failed to provide required arrival/departure separations for same/intersecting runways or did not ensure runway was clear. (ATC)
  (2 Cat A and B)
- Code 30 – Airport vehicles/personnel (authorized access) entered runway without communication/authorization. (Vehicle/Pedestrian)
Top RI Errors Code FY12 and 13 Totals

• Part 121

15 – Crossed hold short line, but did not enter runway after acknowledging hold short instructions. (Pilot)
22 – Landed/departed without a clearance (Pilot)
14 – Entered the runway after acknowledging hold short instructions with proper read back. (Pilot)
20 – LUAW then departed without a clearance.
16 – Taxied wrong route and entered runway.
18 – Entered runway without communications/clearance (hold short not required). (Pilot)

________________________________________________________
30 – Airport vehicles/personnel (authorized access) entered runway without communication/authorization. (Vehicle/Pedestrian)
29 – POV or pedestrian not authorized access to airfield entered runway without communication/authorization. (Vehicle/Pedestrian)
31 – Authorized vehicle crossed hold short line only without communication/authorization.
32 – Airport vehicle/personnel instructed to hold short/remain clear of runway with correct read back, entered the runway or taxied wrong route and entered runway.

• V/PD Codes

Runway Safety Action Teams

The RSAT Team is a non-regulatory assessment of the airport for potential runway incursion problems.

Purpose of the RSAT Team is to identify problem areas at the airport and recommend mitigation measures. The RSAT team works with stakeholders to implement changes in procedures, operations and facilities to prevent runway incursions.
Runway Safety Action Team Members

**FAA Personnel**
- Runway Safety Office
- Airports Division
- Air Traffic Personnel
- Technical Operations (FAA NAVAIDS)
- Flight Standards (FAA Safety Team)

**Airport Personnel:**
- Airport Management/Operations/Maint.
- FBOs, Airlines, Tenants, Local Users

Reviewing Incident History

- Charting Airport Incursions
- Incident Plot Diagrams
- Incident Recreations
- Evaluate Potential Hot Spots
Recommendation – Highlight the taxiway centerline from Alpha around the corner towards Runway 3 and install a surface painted destination sign for Runway 3.
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

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.
STL RSAT Action Items for the Alfa/Tango Intersection

Action - Modify the Runway 29 holding position sign on the left side of Taxiway Tango by adding another module on the right side with an arrow panel pointing upper right.

Example of an RSAT Recommendation for holding positions when there is a history of pilots failing to hold short.

Elevated and In-pavement Runway Guard Lights are a common RSAT recommendation to enhance the identification of runway-holding positions at intersections with a history of runway incursions.
Enhanced Taxiway Markings

Previous Markings

Enhanced Markings

Federal Aviation Administration

3/14/12

Airport Safety R&D

Federal Aviation Administration
Runway Status Lights (RWSL) Configurations

Runway Entrance Lights (RELs)  Takeoff Hold Lights (THLs)

RWSL Installation Plan

- RWSL will be installed at 15 ASDE-X airports
- FAA owns, operates, and maintains entire system
- Initial Operational Readiness Summer 2014
LESSONS LEARNED

• BURBANK, CALIFORNIA

Lack of RESA
RSA improvements

• In U.S. Improving all RSAs at certificated airports to extent practicable by end of 2015.
• Airport can purchase land.
• Relocate NAVAIDs or make frangible.
• Use of Declared distance.
• Move roads
• Install Arresting Systems.

Engineered Materials Arresting System (EMAS) Installations

Baton Rouge Metropolitan Airport, LA  Roanoke Regional Airport, WV
Little Rock Airport, AR  Greater Binghamton Airport, NY

Photos Courtesy of ESCO
ESCO’s EMAS product is currently installed at 75 runway ends at 49 airports.

Successful EMAS Capture

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

Courtesy: ESCO
Successful EMAS Capture

EMAS capture of a Falcon 900 at Greenville Downtown Airport, SC
July 17, 2006

Successful EMAS Capture
Successful EMAS Capture

Key West
Fire Research Mock-up Section

ARFF – Penetrating Nozzles
Full-Scale Freighter Aircraft Fire Fighting at SCLA

- A310 donated by Fed Ex
- Fully instrumented aircraft with thermocouples, oxygen sensors, FLIR and video coverage.
- Emergency sprinkler system installed.
- ULD instrumented with 48 thermocouples

Full Scale ASPN Penetration Testing

- Under ambient conditions, cargo liner does not hinder penetration by an ASPN.
- Radiant heat allows the cargo liner to soften but does not prevent ASPN penetration.
Prototype Nozzle Development

- New nozzle design developed.
- Improved extinguishing capability in an indirect fire attack.
- Report in editing cycle

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.
Wildlife Hazard Mitigation

Wildlife Hazard Mitigation R&D
The Hazardous Wildlife Problem
(U.S. data)

- Bird populations are increasing.
  - Canada Geese increased from 1 million in 1990 to over 3.5 million in 2000 and has been stable since.
  - 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 2011
  - 37 million estimated in 2030
- Reported bird strikes in the U.S. have increased 5-fold since 1990.
  - 1,748 in 1990
  - 9,730 in 2011

National Scale
Locations of Reported Strikes on February 27/28 and March 3, 2013

- February 27-28, 2013
  - Memphis, TN
  - Dallas, TX
  - Salt Lake City, UT
  - New York, NY
  - Omaha, NE
  - Gainesville, FL
  - Indianapolis, IN
  - Oakland, CA
  - Lehigh Valley
  - Fredericksburg

- March 12, 2013
  - Portland, OR
  - Kansas City, MO
  - Orlando Sanford, FL
  - Miami, FL
  - Teterboro, NJ
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
Wildlife Hazard Management Plan Examples

• New York City - Removed Canada geese from within 7 miles of both JFK and LaGuardia airports.
  – 1,235 geese in 2009
  – 1,676 geese in 2010
  – 1,579 geese in 2011.

• Kauai Airport in Hawaii
  – Relocated 400 endangered nene geese from near runway.

Canada Geese Feeding Research
Kentucky Bluegrass – preferred “by geese”
Tall Fescue – not preferred
Zoysia Grass – not preferred
RESOURCES

Wildlife Hazard Management at Airports

• Available to download on FAA website. Also available in French and Spanish.

http://wildlife.faa.gov

RESOURCES

ACRP Manuals on Wildlife Hazard Management at Airports

First edition (2010)
First edition (2011)
Industry-Government Hazardous Wildlife Collaboration Initiative

- Mexico
- Caribbean
- Central America
- South America

Panama Pilot Project

- Initial pilot project
- Panama City: Tocumen International Airport (PTY)
- COPA airline serving as project champion.
- Biologist provided by FAA and USDA
- Projected WHA start date
  - 2nd QTR 2012
- Projected WHA completion:
  - Early 2013
Ecuador Pilot Project

- Secondary initial pilot project effort.
- Guayaquil: Jose Joaquin de Olmedo International Airport (GYE).
- LAN airline project champion.
- Biologist provided by USDA
- FAA provides audit assistance.
- Projected WHA start date:
  - 2nd QTR 2012
- Projected WHA completion date
  - Early 2013
Automated FOD Detection

Why is the FAA Interested?

“It has become clearer that this was a unique accident caused by a one-off chance of a piece of metal lying on the runway”.

-Concorde crash preliminary report
Automated FOD Detection

XSight - FODetect
Tarsier Camera in operation
Example FOD finds by the QinetiQ system

Stratech – Success Stories

FOD – Tyre Burst

- Date: 14 Aug 11
- iFerret Detected Time: 2150
- Rover 34 Found Time: 2157
- Location: RW2
- Chainage: 2743m
Stratech – Tire
FOD Evaluation in 2013

- Will install FOD systems on primary departure runway at Boston and Miami.
- Requires competitive bid.
- 50% cost share with FAA grant.
- Collect data to evaluate FOD systems performance vs standard visual detection.
- Mobile system at Minneapolis.

National Airport Pavement Test Facility

Instrumented Test Track at the NAPTF, FAA Technical Center
http://www.faa.gov/airports/engineering/pavement_design/
NAPTF Test Vehicle