



# African Regional Runway Safety Seminar

10-12 April 2013, Agadir, Morocco



In cooperation with: المكتب الوطني للمطارات  
Office National Des Aéroports

## **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	Youssfi Faissale, ONDA Runway Safety Manager
		20 mins Another RST Regional Example	Captain Moulay Hicham Guenoun, IATA
12:30	14:00	Lunch	

# Runway Safety Action Teams (RSATS)



Federal Aviation Administration



June 12, 2012

## Definition of a Runway Incursion

**Any occurrence at an airport 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 FAA has adopted the International Civil Aviation Organization (ICAO) definition of a runway incursion. Basically, any unauthorized access onto a runway or past the holding position, is a runway incursion.



## Primary Causes of Runway Incursions

- **Breakdown in Communications**
  - Pilot Communications
  - Ground Vehicle Communications
  - Air Traffic Controller Communications
- **Lack of Airport Familiarity**
- **Loss of Situational Awareness**



## **Common Air Traffic Control Errors Resulting in an Operation Error**

- **Forgetfulness**
  - Forgot about a closed runway, a clearance that they issued, an aircraft waiting for take off or cleared to land
- **“Prospective Memory”**
  - Remembering to do something later is the weakest function of human memory
- **Distractions and Interruptions**
  - Number ONE Enemy of Memory



## Common Pilot Errors Resulting in a Pilot Deviation

- **Read back the air traffic instruction correctly and then do something else such as crossing the Hold Position**
- **Loss of Situational Awareness**
- **Common factor cited for losing track of location is that one pilot is “heads down” programming FMC or conducting checklists**



## Runway Safety Action Teams

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

The purpose of the RSAT Team is to identify problem areas at the airport and recommend mitigation measures. The RSAT team also works with stake holders to implement changes in procedures, operations and facilities to prevent runway incursions.



## Runway Safety Action Teams

- RSAT recommendations are generally considered voluntary.
- Recommendations may provide additional justification for funding from Federal, State, and Local jurisdictions.



## 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



## Typical RSAT Activities

### First Day

- Meet with ATCT to Complete Air Traffic Checklist, Review LOAs and SOPs, Observe Operations from the ATCT.
- Meet with Technical Operations and Complete Checklist.
- Meet with Airport Operations and Complete Checklist.
- Airfield Daytime Tour
- Airfield Night Tour



## Typical RSAT Activities

### Second Day

#### RSAT Meeting

- Runway Safety Program Overview
- Definitions and Statistics
- New Technology
- Changes to Signage and Marking Stds.
- Review Recent Surface Incidents
- Action Planning
- Best Practices

#### Public Pilot Evening Meeting



## Reviewing Incident History

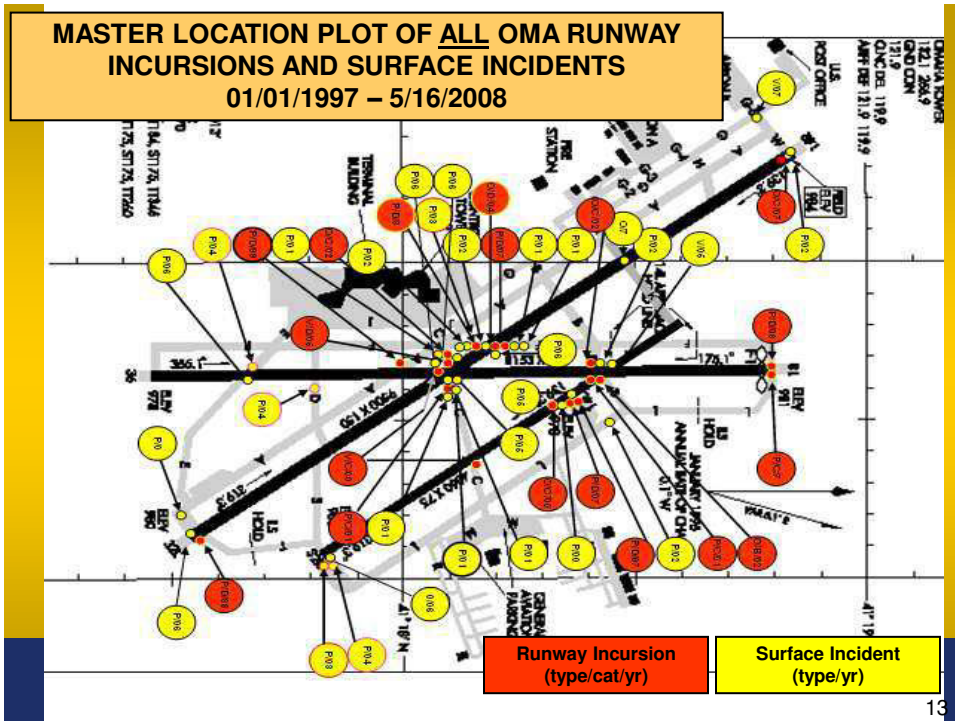
### Charting Airport Incursions

### Incident Plot Diagrams

### Incident Recreations

### Evaluate Potential Hot Spots





## Participation in RSATs

The inspection of the movement area includes:

1. Evaluation of hotspot intersections.
2. Identifying non-standard marking, lighting, and signs.
3. Examining potentially confusing visual aids.
4. Reviewing any past RSAT recommendations related to pilot visual aids for proper implementation.



## Participation in RSATs

### The review of ground vehicle operations includes:

1. Review of the ground vehicle training program.
2. Checking service roads.
  - Personnel should be using service roads.
  - Are any new service roads needed?
  - Signs should be installed at runway safety area boundaries.
3. Controlled access to the AOA.
  - Fencing - gates - signs

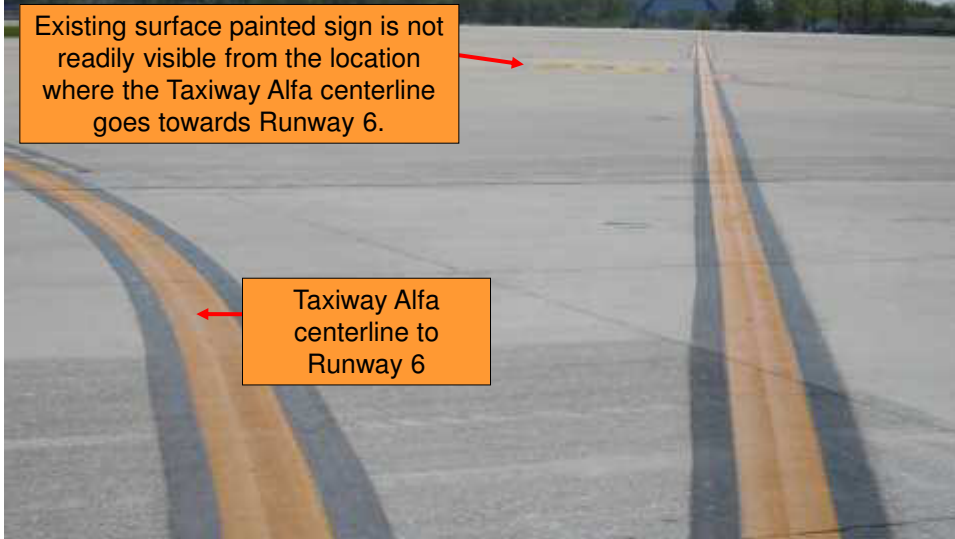


### Example of an RSAT Recommendations to reduce V/PDs



During the RSAT, all service roads that enter runways are checked for signs. If any roads are found without signs, Recommendations are made to install signs on the service roads at the boundary of the runway strip or runway end safety area.

## STL RSAT Action Items for the Alfa/Tango Intersection



Action - Relocate the Runway 29 surface painted destination sign to a location a short distance past the point where the Taxiway Alfa centerline goes left towards Runway 6.

17



Relocating the Runway 29 information marking closer to the Taxiway centerline leading to Runway 6 makes the marking more visible.

18

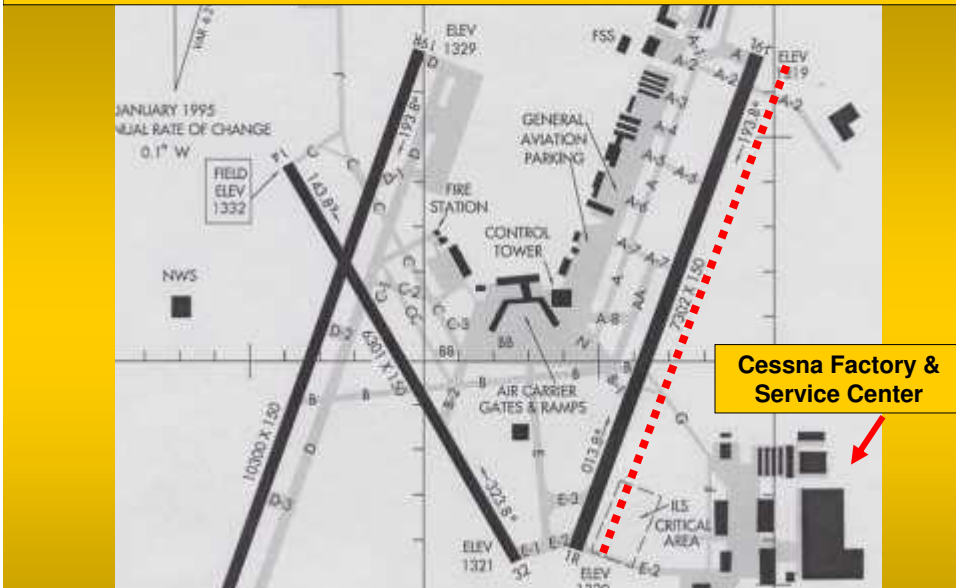
**Example of an RSAT Recommendation for holding positions when there is a history of pilots failing to hold short.**



To reduce the potential for pilots to look beyond the runway holding position marking on runway crossing points, the black highlighting of the taxiway centerline has been removed past the runway holding position marking at this location.

19

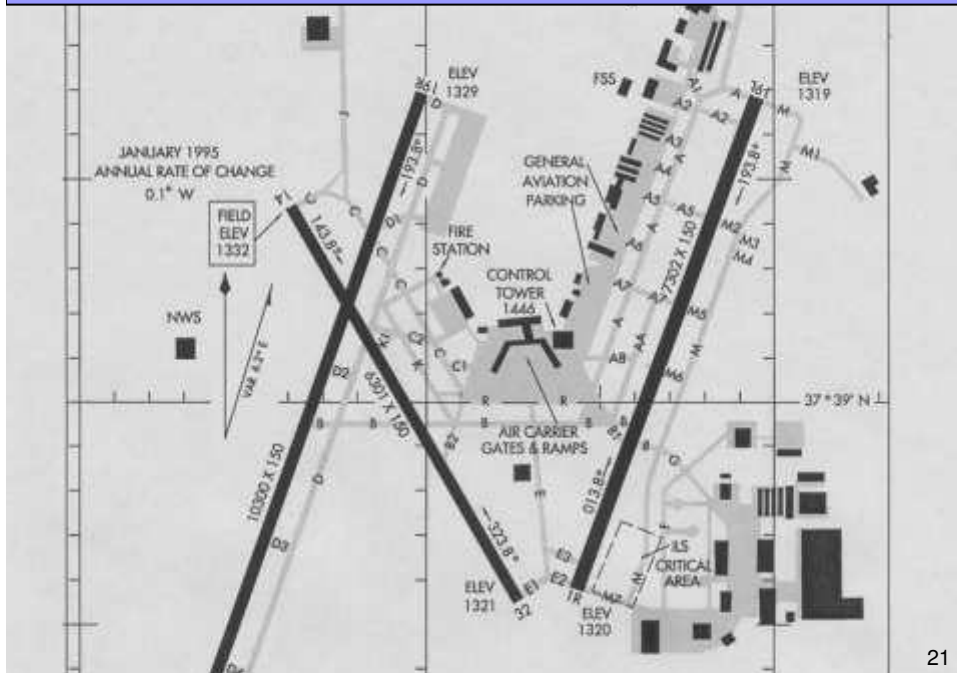
**Example of an RSAT Recommendation for a new Taxiway**



**Recommendation** – Construct a parallel taxiway on the east side of Runway 1R-19L to significantly reduce runway crossings.

20

## Recommendation Implemented



# RUNWAY SAFETY



FAA Runway Safety Program  
International Airport Certification Course



Federal Aviation  
Administration

22

# Runway Incursions

**Don't risk it.....Manage it**

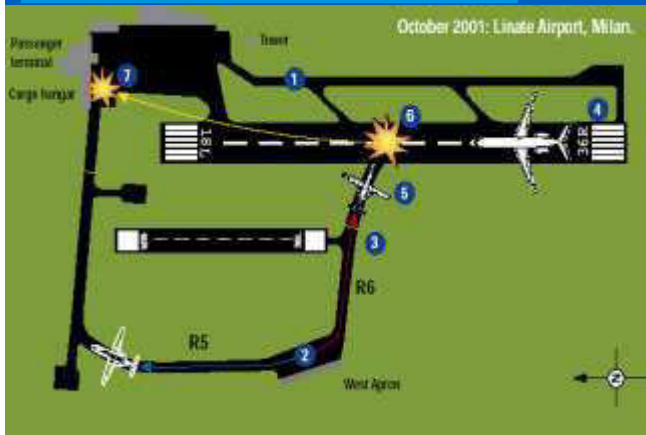


sharing  
experience

A.biadi Head of ATCOs training programme/coordinator RST Agadir  
N.Draa Head of safety departement/ Member RST Agadir

1

# Runway Incursions



Our  
Nightmare

22/04/2013

2

## Definition

Human factors is about people: it is about people in their working and living environments and it is about their relationship with equipment, procedures, and the environment. Just as importantly, it is about their relationships with other people. Its twin objective can be seen as safety and efficiency. (ICAO Circular 227)

22/04/2013

3

## Agadir Airport Movement Area



## Thoughts

### Convinced that

Managing the commercial and operational risks is applicable to the entire ground operation value chain;

Manage the risks to reduce staff injuries, aircraft damages and to be more efficient;

Manage your risks, take the opportunity to share information and learn from it.

22/04/2013

5

## Decision

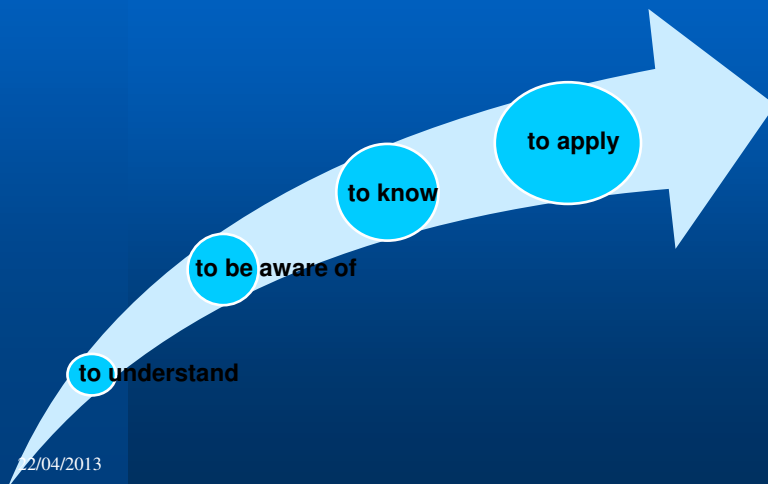
- **Runway Incursions:  
Don't risk it.....Manage it**

**ATCO Training**

22/04/2013

6

# Objectives:



22/04/2013

7

## to understand The meaning of runway incursion





to be aware of

- The seriousness of an runway incursion.

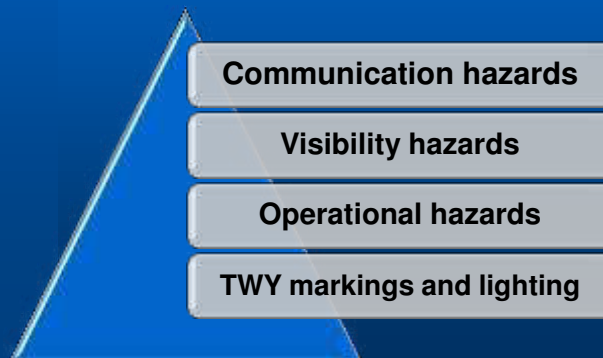


22/04/2013

9

to know

- How to manage it ,by knowing all risk factors :



22/04/2013

10

**to apply**

- by Using all tools that Airport Authority provides in order to mitigate this risk.

**Not only:**

**the existing defenses;**

**But also:**

**additional actions to reduce the risk .**

22/04/2013

11

**How ?**

## Simple and Specific Training

**Identification  
of hazards**

**Risk  
assessment**

**Risk  
mitigation**

22/04/2013

12

## Exercise

By studying your airport 's infrastructure, (runways, taxiways, parkings etc),do you think that such a risk exists?



## Tasks

- State the generic hazard;
- State the specific components of the dangers;
- Establish the consequences of hazards and assess the risks;
- Evaluate the existing defenses that control the risk and the risk index.

# Tasks

- Propose measures or additional actions to reduce the risk and the risk index;
- Establish the responsibility of each one for the implementation of risk mitigation measures.

22/04/2013

15

## Our Aim

- We need that ATCOs be able to:



identify hazards;



manage the related risks and prevent unsafe acts.



Identify the Hot Spots existing on the  
mouvement area



To be aware of an incursion runway 's hasards

22/04/2013

16

# RST Agadir



22/04/2013

Following its creation, the Agadir LRST proceeded to a visit of the platform of GMAD



A report was addressed to the ONDA

## Good points

Agadir Al Massira airport (GMAD) has a fluid and effective system of taxiways to serve his two QFU and its terminal

Markings of runway 10/28 are in very good condition;

The edges of the runway are not blocked;

GMAD has an effective system for combating wildlife hazard;

The staff is well aware from this phenomenon;






Weed control program is operating regularly and effectively.

22/04/2013

18

## Findings

- However, The GMAD LRST reported non compliance with ICAO annex 14 for

-  signage
-  Runway and taxiways markings
-  Lighting of some obstacles.
-  Rubber deposit on RWY TDZs
-  Presence of plastic bags

22/04/2013

19

## Action Plan

Short term actions

- Carried by the airport

Medium term actions.

- In order to comply with Annex 14 ICAO,

22/04/2013

20

1 / Two hot spots at the intersections:

- Taxiway A and Taxiway D to runway 28/10
- Taxiway B and Taxiway D to runway 28/10



**OBSERVATION**

Lack of stop bars and RUNWAY AHEAD indication increases the risk of runway incursion

**Recommendation:** Setting up of red stop bars and mandatory panels "RUNWAY AHEAD" with the indication of the TORA distance available.  
- Insertion of two hot spots in the Taxiing maps of GMAD .



**ACTION:**

Addition of a new sign A1 and B1 to avoid the confusion.

- 2 / Misleading direction and location panels for the entire taxiways system and non compliance with ICAO annex 14 concerning colors, location, dimensions and contrast.



**OBSERVATION**

This Sign is not located on the Taxiway D. It is positioned on the Taxiway A, D is the next Taxiway that will be crossed in this direction

**Recommendation:** Replace all the panels of the entire signage system of GMAD taxiways in accordance with ICAO annex 14 .



**ACTION**

Old panels removed  
Some temporary panels were placed by the airport

- 3 / Lack of the lighting of the weather radar antenna



**Recommendation:**

- The wx radar antenna must be lighted..

**ACTION**

The wx office had been advised to solve the problem.

22/04/2013

23

- 4 / Poor taxiways centre line contrast in the manoeuvring area.



**Recommendation:**

- Border yellow centerline of the Taxiways of manoeuvring area with two black lines as is the case for the traffic area.



**ACTION:**

Done by the airport .



- 5 / Presence of a significant rubber deposit at the TDZs of the two QFU 10 and 28



**Recommendation:**

- Remove rubber deposit from the two TDZ periodically

Scheduled in the Airport short term action plan

22/04/2013

25

- 6 / Non-standard « holding-points » for the two QFU



**Recommendation:**

Implement ICAO holding point marking, signage and red stop bars at each QFU

**ACTION:**

Works in progress.

22/04/2013

26

- 7 / Lack of protection to prevent the entries on the HSE E and F in the opposite direction.



**Recommendation:**

- Equip taxiways E and F with « No Entry » signs to runway

**ACTION:**

Works in progress.

22/04/2013

27

- 8/ Presence of many plastic bags at the level of the manoeuvring areas.

**Recommendation:**

- Strengthen the FOD program.



**ACTION:**

Local team was reinforced.

28



**ACTION:**

The FOD are collected daily by a new company.

29

- 9 / The PI is ideally located for a quick and effective intervention. However, as it lies to the South, the personnel is obliged to cross the runway several times per day, thus increasing the risk of runway incursions.

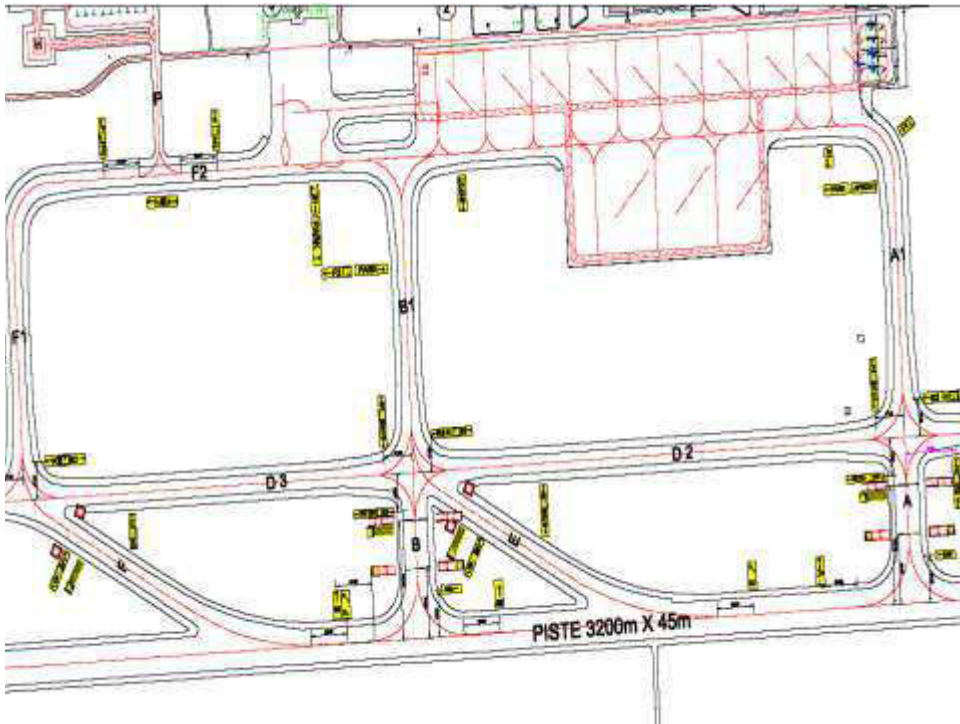


**Recommendation:**

- Avoid unnecessary movement of staff from the PI . An adequate measure should be the construction of a peripheral lane for vehicles bypassing runway 28/10.

22/04/2013

30



## LRST'S Perspectives

To get involved by the airport authority during works

To implement efficient training program (Runway incursion );

To introduce training about non stabilized approaches  
(runway excursion)

To Include the runway incursion in the training program of the holders  
of Manoeuvring Area Driving Licence (PCAM).



# Lessons Learned in the Region

## Session 6 Presentation 1



# Moroccan runway safety experience

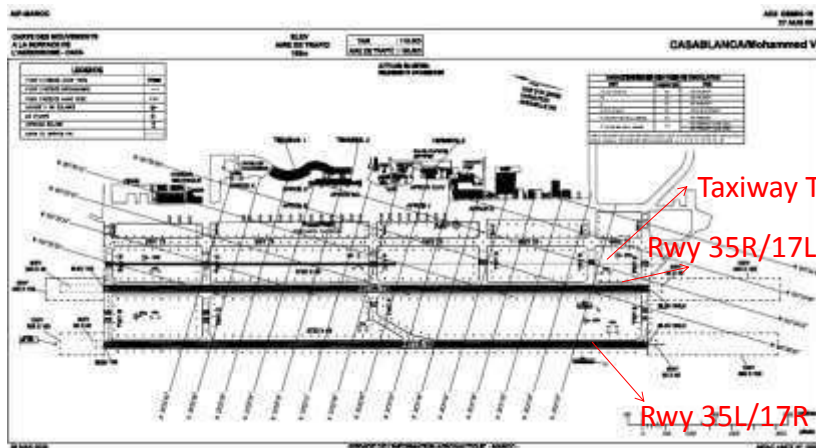


**Captain Moulay Hicham Guenoun**  
AMPL-Comitec- LRST  
IFALPA –AGE-ALR

**Faissal YOUSSEFI**  
Airside safety manager  
Moroccan Airport Authority



# Casablanca GMMN LRST



## Why Casablanca ?



Several factors contribute to the continuous increase in runway incursions:



- Increased volume of air traffic;
- Implementation of the parallel runway;
- Operating in low visibility;
- The use of a single frequency «GND and TWR»
- Training gaps for drivers.
- Lack of reporting ...

## Why Casablanca ?



Last ten years major runway safety occurrences:



- Two landings on parallel taxiway T
- One runway veer off during landing on Runway 17R
- One rejected landing over the parallel taxiway T
- Two landings on wrong runway 35R instead of 35L
- One LVP take off from a closed runway 35R instead of runway 35L



A runway incursion prevention programme should start with the establishment of runway safety teams at individual aerodromes..

Doc 9870



At individual aerodromes, as designated by the National Aviation Safety Authorities, a Runway Safety Team should be established and maintained to lead action on local runway safety issues.

Recommendation 4.1.1 EAPPRI

## Steps towards a national runway safety plan



- First LRST established at GMMN ( Mai 2010)
- LRST-GMMN action plan agreed
- Review of the infrastructure of GMMN
- Review of the GMMN ANSP procedures
- Assessment of runway incursion potential at GMMN (ACI world Marrakesh meeting)
- Agadir LRST established ( september 2011)
- Marrakesh meeting to prepare LRST involving military representatives
- Moroccan CAA circular establishing national runway safety plan

## Start-up !



- A voluntary approach

**18 January 2010**

- Workshop co-organized by ONDA / ALPA / AMCA
  - Runway Incursion
  - FOD
  - Wildlife Hazard





## Composition



- Directorate of Air Navigation (ANSP)
- Representatives of Casablanca airport,
- Moroccan Association of Air Traffic Controllers (AMCA)
- Moroccan Association of Airline Pilots (AMPL)
- Representatives of entities directly involved in the use of runway,



## Survey



<http://www.onda.org.ma/dna>

1. EN ROUTE CLEARANCE USUALLY DELIVERED

BEFORE START-UP

AT START-UP

DURING TAXI

2. ATC RT COMMUNICATION LANGUAGE

ENGLISH

FRENCH

OTHER

OTHER (please specify):

3. AIRPORT ATC COMMUNICATION (GND, TWR, ATIS)

GOOD

ACCEPTABLE

POOR

Site Officiel de la Direction de la Navigation Aérienne

Actualités | Organigramme | Nos projets | Recherches et Développement | Equipement Aériel 2007-2010

Site de la Direction de la Navigation Aérienne : Casablanca | Agadir | Marrakech | Fes | Tanger | Oujda | Meknes | Rabat | Tanger-Med | Agadir-Med | Marrakech-Med | Fes-Med | Tanger-Med | Oujda-Med | Meknes-Med | Rabat-Med

Le DNA et le Service de l'Information Aérienne ont le plaisir de vous annoncer qu'ils ont obtenu la certification ISO 9001 en avril 2006.

**Emission de permis de pilotage**

Le Directeur de la Navigation Aérienne (DNA), qui agit en son nom, pour les organismes agréés, conçoit et la réalisation des services de la navigation aérienne marocaine, est le prestataire national en charge de ces services.

Sous l'égide de la Direction Générale de l'Office National des Aéroports (DNA), le DNA est structuré autour de trois Départements :

- Le Département de la circulation aérienne (DCA) est en charge de l'information aéronautique, des essais

## Results



## Airport visits



### Day and Evening

- Compliance with SARPs
- Ground markings, signs and lighting
- Management of the work in progress
- Runway Inspection
- RFF means
- LVP

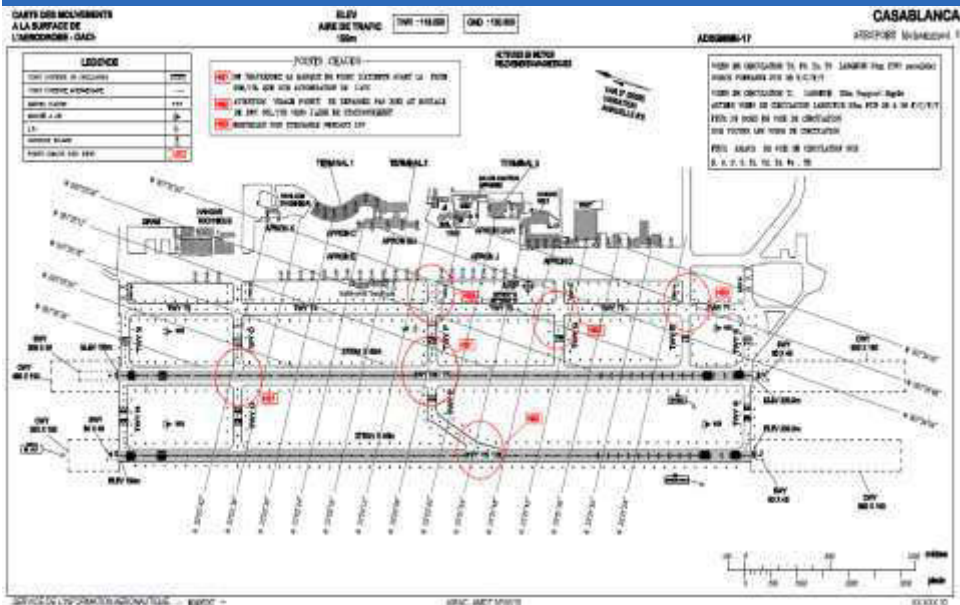


# LRST Recommendations



- ✓ Airport signage, markings and lightings update
- ✓ Specific publications on AIP to inform pilots on the risk of runway confusion
- ✓ Message on the ATIS advising landing pilots to hold short of RWY 35R(17L) after vacating 35L(17R)
- ✓ Awareness campaign to ATCOS, Pilots and Vehicle drivers
- ✓ 24 hours red stop bar use implementation
- ✓ TDZs rubber removal on periodical basis

## Hot spots



## Education and Awareness



**02 days of presentation and discussion for the benefit of pilots, ATCOs and drivers.**

- ❖ Basic concepts of safety
- ❖ Runway safety
- ❖ LRST presentation
- ❖ RTF
- ❖ Sterile cockpit



## medium term targets



- Activation of ground frequency .
- Equipping vehicles authorized to operate on the maneuvering area with VHF radios
- Specific training program for holders of MADL
- Reducing to the minimum necessary the number of the MADL holders
- Publication of recommendations addressed to operational users (ATCOs, Airlines and drivers) to insert into their training programs



## Runway confusion



### Runways layout

- ❖ 02 close parallel runways
- ❖ Rectangular shape, witch makes the close parallel taxiway look more like a runway.



Runway 35L ←

Distance between Rwys centerlines : 380m

Runway 35R ←

Distance between Rwy 35R and Twy T centerlines : 320m

Taxiway T ←

## Mitigation



### Techniques to Reduce Confusion Between Runways

- Specific publications on AIP to inform pilots on the risk of runway confusion
- Confirmation of active runway on first contact between Pilot and TWR
- Warning on risk of runway confusion on airport charts
- 24 H use of available visual aids on active runway (rwy lights, papi, ALS,...) even for visual approach
- Use of nav radio aids for landing even for visual approach

## Mitigation



### Techniques to Reduce Confusion Between Taxiways and Adjacent Runway

Visual aid enhancement solutions to mitigate the risk of inadvertent landings on taxiways.

- 1) green paint surface to create the effect of a curved taxiway,



## Mitigation



- 2) Paint markings on taxiway TANGO with the word TAXIWAY placed facing final approach from both sides of the TXY



- 3) An elevated lighted X

# ICAO 37th Session Assembly



➤ Urges States to take measures to enhance runway safety, including the establishment of runway safety programs.

➤ The runway safety programs should include the creation of LRST responsible for preventing and reducing the severity of RE, RI and other events related to runway safety.



# National Regulation



## MOROCCAN CAA CIRCULAR ESTABLISHING THE RUNWAY SAFETY PROGRAM

• **Runway Safety Committee** is chaired by the Director of CAA and is composed of representatives of:

- ✓ The National Airports Authority
- ✓ The Royal Air Force
- ✓ Aircraft operators
- ✓ Ground-handler
- ✓ Associations of pilots, air traffic controllers and Electronics Aviation Safety



# Runway Safety Committee



## Runway safety team is created within each airport

### This committee will be responsible for:

- Hazards identification on the runway safety at the national level
- Promote best practices, share information and raise awareness through training;
- Act as focal point for coordination in the area of runway safety in industry;
- Identify and discuss available technologies to reduce the risk related to runway safety;
- Review current procedures for airfield operations, Air Traffic Control (ATC) and aircraft operators and if necessary make recommendations on these procedures to reduce the risk related to runway safety;
- Oversee and promote the process of incidents reporting .



Thank You

[LRSTMAROC@gmail.com](mailto:LRSTMAROC@gmail.com)

[LRSTGMMN@gmail.com](mailto:LRSTGMMN@gmail.com)

[LRSTGMAD@gmail.com](mailto:LRSTGMAD@gmail.com)

