7th National Safety Seminar
Creating a Safety-Conscious Aviation Environment
“Runway Incursions”

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Introduction

• What defines runway incursions and the impact on aerodrome operations?

• When and where do runway incursions most commonly occur

• What are some of the consequences

• Why do we have to beware of such incursions

• Reporting and capturing of data

• Who is responsible for prevention or reduction of runway incursions?

• Interventions recommended to prevent/reduce
Definition of a Runway incursion:

• The ICAO PANS-ATM Doc 4444 defines 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”
Let’s attempt to understand the: - What?; Why?; Where?; of runway incursions

**What:**
- Are the possible magnitude and the potential consequences of runway incursions
- Effect do such incursions have on aviation safety and aerodrome operations
- Can we do to mitigate such runway incursions and to reduce fatality numbers
- Are the contributing factors to runway incursions.
- Is our responsibility
RUNWAY INCURSION – TAIPEI
SQ B744 & WORKING VEHICLES
83 FATALITIES
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SQ B744 & WORKING VEHICLES
83 FATALITIES
Why:

• Do we need to be aware of runway incursions?
• Do we need to reduce the hazard, mitigate and manage risk of runway incursions
• Introduce safety programmes and incident data collection
• Do we need to have a collaborative approach to runway incursions and the safe operational environment
RUNWAY INCURSION PREVENTION AND RUNWAY SAFETY
IT’S A SERIOUS BUSINESS
Where & How:

- Do these runway incursions occur
- Lack of being vigilant or not following the rules impacts safety
- Are these accidents and incidents directly related to information and/or communication failure
- We can introduce interventions or improve communication that would mitigate identified risk areas in and around the airfield
WORST RUNWAY INCURSION EVENT IN HISTORY
TENERIFE NORTH 27TH MARCH 1977
KLM TOOK OFF IN FOG WITHOUT ATC CLEARANCE WHILST Pan Am WAS STILL ON THE RUNWAY
WORST RUNWAY INCURSION EVENT IN HISTORY
TENERIFE NORTH 27TH MARCH 1977
Runway incursions occur everywhere
A Global and African Perspective

- The recorded accidents and incidents around the world emanating from runway incursions has led to the introduction of ICAO recommendations. In Europe: - “The European Action Plan for the Prevention of Runway Incursions”
- Statistics for Europe show a minimum of two runway incursions per day.
- In Africa, the current lack of statistical data captured relating to runway incursions, presents a somewhat distorted sense of “a low percentage of runway incursions/incidents”.

SOUTH AFRICAN CIVIL AVIATION AUTHORITY
A Global and African Perspective…..contd

• So, a quick overview of Africa’s aviation industry still highlights basic safety and security concerns that exist at various aerodromes or landing strips, highlighting potential dangers of runway incursions.
• Africa has unique and added hazards or risks due to the location of aerodromes or runway strips in rural areas.
• A improved database of statistics related to runway incursions on the African continent, will provide a better perspective as to the magnitude and frequency of such occurrences
• However, such incidents in rural areas may still not be captured!
What is the reality of runway incursions

Some reasons and results of more Runway Incursions and

!!!!Disaster !!!!!
RUNWAY INCURSION – MILAN
SAS MD-80 & CITATION JET
118 FATALITIES
RUNWAY INCURSION – MILAN
SAS MD-80 & CITATION JET
118 FATALITIES
RUNWAY INCURSION – LEXINGTON
DL CRJ100 & SHORT RUNWAY
(Communication)
Some major reasons for Runway incursions

- Communication breakdown
- Non-standard phraseology
- ATC failure in confirmation of read-back to instruction
- Blocked and partially blocked radio transmission
- Loss of situational awareness
- Airside construction
Construction accidents
Construction accidents
Some major reasons for Runway incursions

- Inadequate signage or markings
- Complicated airport design
- Last minute changes to ATC instructions in taxi or departure
- Distraction; workload; experience; training; lack of clear line of sight; weather conditions; lack of knowledge of the aerodrome; aerodrome reference maps
Aircraft and vehicles on airside
RUNWAY INCURSION – TAINAN GE A321 & VEHICLE ON RUNWAY NIL FATALITIES
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Weather
Aerodromes or Landing strips – does it matter???

• It is obvious that runway incursions can cause major aviation disasters at aerodromes and landing strips which can/could have been prevented.
• With these accident findings and data collection, there has been a recognition and recommendation for:
  • Improved safer operations of aircraft; air traffic control; vehicle movement and aerodrome management
  • Reduce the risk to aerodrome and landing strip operations
  • Successful collaboration of controllers; pilots; drivers and aerodrome management
  • To assist states with the implementation of the ICAO safety management system (SMS) provisions
Runway incursions can occur everywhere
Runway incursion – Africa !!!
So what is the purpose for preventing/reducing Runway Incursions

• Improves aviation safety at aerodromes and landing strips
• Reduces the possibility of disasters related to runway incursions
• Eliminate the possibility of human fatalities
• Increase safety awareness amongst all users
• Identify potential high risk areas at an aerodrome
• Become pro-active in improving communication
• Collaborative discussion forums for suggested improvements
So what can/do we do?????

- ICAO has produced: - “Manual for preventing runway incursions”
- This is designed to provide a global guidance for the implementation of national or local runway safety programs aimed at removing hazards and residual risks of runway incursions, reduce active failures and the severity of their consequences.
3.1.1 A runway incursion prevention programme should start with the establishment of runway safety teams at individual aerodromes.

3.1.2 The team should comprise representatives from aerodrome operations, air traffic service providers, airlines or aircraft operators, pilot associations and any other groups with a direct involvement in runway operations.
Some interventions to be considered for implementation

• Local Runway Safety Teams
  • Existing at ACSA airports are: FAOR; FACT; FALE; FAPE; FAGG; FABN

• Hot-spot aerodrome charts

• Continuous training and refresher training

• Enhanced and additional signage

• Safety campaigns

• Introduction of new technologies

• Data collection, analysis and dissemination
Examples of upright signage and surface painted markings
Upright signage and surface painted markings
Some interventions being rolled out

- Many aerodromes have hazardous locations on taxiways and/or runways where incidents have occurred. Such positions are commonly referred to as "hot spots".

**Definition of “Hot Spots”**

A location on an aerodrome movement area with a history or potential risk of collision or runway incursion, and where heightened attention by pilots/drivers is necessary

*(ICAO Doc 9870, Manual on the Prevention of Runway Incursions).*
Typical examples of a Hot Spot AIP chart

NOT FOR NAVIGATION

SAN FRANCISCO INTL AIRPORT (SFO)
SAN FRANCISCO, CALIFORNIA

Hot Spot Chart

ATIS 113.7 115.8
118.85 135.45
SAN FRANCISCO TOWER 120.5
GND CON 121.8
CLNC DEL 118.2

HOT
Pilots instructed to follow Taxiway B south sometimes continue onto Taxiway J or Taxiway F by mistake. Follow the depicted route.

HOT
Pilots taxiing east on Taxiway C and instructed to turn right onto Taxiway E sometimes miss the turn onto Taxiway E and continue across Runway 1L by mistake.

CAUTION: BE ALERT TO RUNWAY CROSSING CLEARANCES. READBACK OF ALL RUNWAY HOLD SHORT INSTRUCTIONS IS REQUIRED.

Hot Spot Chart

NOT FOR NAVIGATION

SAN FRANCISCO INTL AIRPORT (SFO)
SAN FRANCISCO, CALIFORNIA
Runway Hot Spots

Formal identification of hotspots can alert pilots and drivers to movement area design issues which cannot be readily mitigated by signage or lighting or where poor visibility may contribute to reduced Situational Awareness in relation to active runways.

It can also alert to potentially critical points where the visual control room (VCR) or other surveillance systems are less effective than on a particular aerodrome generally.

ICAO recommends the local generation of AIP charts to show runway hotspots, which, once issued, must be kept up to date and revised as necessary.
Different examples of a Hot Spot chart - AIP
Runway Hot Spots + Enhanced signage

- The enhancement or additional signage strategically located around the aerodrome or landing strip improves situational awareness around “hotspots”
- This includes:
  - painted runway surface markings
  - Upright mounted signage
  - Runway FOD radar control
Conclusion and the Way Forward in reduction of runway incursions
Conclusion and the way forward

- Runway incursions are not limited to bigger or busier aerodromes
- Catastrophic results with high fatalities are possible
- All aerodrome airside users should be aware of their respective responsibilities and accountabilities
- Deviation to ‘normal’ or ‘standard’ operations must be properly communicated
- Increased ‘adequate’ signage
Runway incursions is a serious business
PEOPLE DO DIE!!
Lets be pro-active and do something!!!!
Thank You

Q & A