

PRESENTATION BY GABRIEL LESA DIRECTOR GENERAL

**CIVIL AVIATION AUTHORITY** 



The objective role of every Local Runway Safety Team at each International Airport in Zambia is to develop an action plan for runway safety, advise management on potential runway safety issues and recommend strategies for hazard removal and mitigation of the residual risk. These strategies are developed premised on obtaining local realities or combined with benchmarked information.

Runway Safety is an integral component of Aviation Service Provider's Safety Management System (SMS). The RST programme is designed to enhance and support integrated local runway safety structured approach at each airport.

#### **IMPORTANCE OF RUNWAY SAFETY TEAMS**

- RSTs serve as an excellent tool for managing runways safety related risk identified by the service provider programs. **Change Management,** is also emphasised in the service provider SMS process to evaluate possible risks posed by operational changes resulting from RST proposed corrective actions.
- The frequency of RST meetings is relative to the realities in the operational environment at each individual airport.
- The RST programme is built on the principles of Hazard Identification and Risk Management (HIRM) process in accordance with ICAO Doc 9859 — Safety Management Manual (SMM) and covers a wide range of issues related to runway safety, including but not limited to the following ICAO occurrence categories:
- 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

#### THE CONCEPT OF SAFETY, HAZARDS & RISK

#### As defined by ICAO:

- **Safety** is the state in which the risk of harm to persons or property damage is reduced to, and maintained at or below, an acceptable level through a continuing process of hazard identification and risk management
- Hazard Condition or object with the potential of causing injuries to personnel, damage to equipment or structures, loss of material, or reduction of ability to perform a prescribed function
- **Consequence** Potential outcome(s) of the hazard
- **Risk** The assessment, expressed in terms of predicted probability and severity, of the consequence(s) of a hazard taking as reference the worst foreseeable situation
- A wind of 15 knots blowing directly across the runway is a hazard
- A pilot may not be able to control the aircraft during takeoff or landing is one of the consequences of the hazard

The assessment of the consequences of the potential loss of control of the aircraft by the pilot expressed in terms of probability and severity is the risk

#### **Role of the Regulator (CAA)**

**The CAA as a regulatory authority**, attends RST meetings in order to advise on regulatory matters, share information, appreciate the currently obtaining hazards and risks associated with local operations, and interface with other government agencies (e.g. Planning Authorities; Local Authorities, etc) on behalf of the RST when appropriate.

Pursuant to ICAO's Eight Critical Elements of Safety Oversight, the CAA, as part of its, Surveillance Program and the Resolution of Safety Concerns, plans and prioritises its participation in the RST meetings whenever possible.

Even if Zambia's LEI has not yet reached the threshold of 60% required for the implementation of the SSP, the CAA has gone ahead with the development of the framework for the SSP, including the drafting of the requisite Policies and Service Provider's SMS Regulations and Gap Analysis to prepare for the CAA's effective interface with Service provider's SMS.

### **Critical Elements Of Safety Oversight System (CEs)**

- CE 1 Legislation, Zambia has enacted the CAA Act and has currently completed the fourth draft of the new Aviation Bill;
- CE 2, Regulations, Zambia has promulgated new ZCARs, SMS Regulations and shall specifically promulgate Runway Safety requirements;
- CE 3, Organisation, Zambia is currently transforming the DCA into an autonomous CAA;
- CE 4, Technical Staff Qualification and Training as a tool to improved competencies and closure of skills gaps;
- CE 5, Technical Guidance and Tools- Zambia has promulgated and reviewed guidance materials for Inspectors.
- CE 6, Licensing, certification, and approval-Aerodrome (Rwy Safety Teams)/AOC
- **CE 7, Continuous Surveillance, Surveillance Programs; and**
- CE 8, Resolution of Safety Concerns- RWY Safety team hazard Id and recommendations, Enforcement Manual and serious follow through process.

## **ROLE OF SERVICE PROVIDERS**

As part of the Airport community and members of the RSTs:

- To Provide Services Safely and Securely in the Aviation Sector;
- **D** To Comply with Zambian Law;
- □ To Comply with ICAO Standards, e.g., SMS Rwy Safety;
- To Champion Safety in their Workplaces; and
- To Cooperate with the CAA, in the effective Reporting of identified Hazards & incidents and the Resolution of Safety Concerns.



## **RATIONALE FOR RUNWAY SAFETY**

- Statistics from ICAO, ACI and IATA reveal that Runway Incursions, Excursions and Confusion account for a large number of fatal aircraft accidents world wide. Measures to control and limit the incidence of Runway accidents and serious incidents need to be developed, implemented and maintained to assure safety.
- Recent ACI forecasts indicate that there will be over 10 billion passengers and 130 million aircraft movements per annum by 2029, meaning that aside from other operational measures, the existing world airport capacity would need to double over the next 15 years to be able to accommodate this added capacity demand.
- Runway Safety Teams presents a practical and viable way to manage the incidents of Runway Excursions, Incursions and Confusion at each individual airport, especially with the added risk driven by the aforementioned growth prospects in aviation.

#### **Problem description**

According to the ICAO Safety Audit Program (USOAP) results (with 165 States audited as at August 2010):

- □ 58% of audited states had not established procedures and 72% had no guidance for airport certification and surveillance;
- ☐ 69% of audited states had not established a runway safety program related to runway incursions;
- 65% of audited states had not established a mechanism to rectify safety issues in a timely way;
- □ 83% of audited states had not implemented airport SMS;
- 59% had not reviewed Aerodrome Manuals periodically.

#### **Problem description**

The significant growth in the number of passengers, freight volume, and aircraft movements is expected to create additional burdens on a system under constant pressure to maintain safety levels. According to ICAO's Universal Safety Oversight Audit Programme (USOAP, 2009 results), of the total number of states audited:

☐ 70% did not establish or implement a runway safety programme to prevent runway

incursions;

- 44% failed to implement the ICAO standards regarding the certification of aerodromes;
- □ 50% did not require periodic testing and review of aerodrome emergency plans or the measurement of friction characteristics;
- ☐ 38% did not ensure that aerodrome operators comply with the requirements related to operational services and physical facilities.

#### HAZARD IDENTIFICATION

Examples of likely Hazards include but are not limited to:

- **D** Poor Vegetation Control;
- **Driver Incompetence;**
- □ Fatigue;
- **D** Poor Supervision;
- **D** Poor Communication;
- □ Airport Hot Spots, e.g., Airport layout, closed Taxiways;
- □ Airport Charts and AIP;
- □ Human Factors issues;
- Poor Signage and Lighting; etc.

#### **1.RUNWAY OPERATIONS MEMBERS**

- □ Air Traffic Controllers;
- Aerodrome Operators;
- Ground Handlers;
- Airlines and Air Operators;
- **The Zambia Air Force**;
- Pilot and Air Traffic Associations;
- Cargo Operators; and
- **Zambia Police**

**Runway Safety activity Review** 

- **Runway Safety Awareness**
- Change Management(Construction)
- Design of Aerodromes to comply with ICAO SARPs.
- **Naming Convention**
- **Stopbars**

Markings, Signs and Lighting
Protection of NAVAIDs

#### Maintenance and Construction

- **D**1 Drainage
- **2** Surface Condition
- **3** Vegetation Control
- **4** Perimeter Fence
- **5** Contaminant Removal
- Image: Provide the second state of the seco
- Paint Removal
- Output Content of C
- Image Marking & Signage & Lightings

- **7** Maintenance of NAVAIDs
- **B** Aerodrome Construction Safety

**Runway Inspection** 

- Retrieval of Wildlife
- **Q-** Inspection Programs
- **D** Vehicle Inspection
- Incident
  Incident

## 

- In the second second
- **-** AIP Supplements/NOTAM
- Aerodrome Charts(/Jeppesen)
- Provision of Runway Condition



## **Wildlife Prevention**

#### **Generation Fod Management**

- **D-** Tool Management System
- **Gradientergy FOD Detection System**
- **Gradient FOD Recovery**



#### Obstacle Control

- Internal and External obstacles
- Investigation of Obstacles
- Image: Marking and Lighting Obstacle
- **-** Type A Chart

Communication/Surveillance

- **D-** Radio Frequency
- **-**Training
- ICAO Phraseology

#### □ Vehicle and Drivers Control

- Incident Reporting / Investigation /Statistics
- **Adverse Weather**
- LVO
- Image: High Winds/Cross Winds

#### Operational Procedures for Runway Safety

- **Q- Runway Incursion**
- **Q- Runway Excursion**
- □ Runway Confusion
- **Gradienter FOD Management**

#### **CONTROL STRATEGIES**

Safety risk is controlled by addressing either:

- 1. the probability of the consequences occurring;
- 2. the severity level of the consequences; or
- 3. both simultaneously.

Key approaches to controlling safety risk include:

- 1. Avoidance: The operation or activity is cancelled because the safety risk exceeds the benefit of continuing the operation or activity;
- 2. Reduction: The frequency of the operation or activity is reduced, or action is taken to reduce the severity of the consequences of the risks;
- 3. Segregation: Action is taken to isolate the effects of the consequences of the hazard or build in redundancy to protect against them; and
- c) Evaluating alternative solutions.

#### **RUNWAY SAFETY PROMOTION**

As part of the Safety Management System, the CAA shall promulgate procedures and requirements for all Aerodrome operators to establish Local Runway Safety Teams as an essential part of any aerodrome runway safety program. Promotion of Collaborative Decision Making shall be prioritised among the airport communities.

As partners in runway safety, all stakeholders shall share awareness of safety issues identified at the airport and develop agreed solutions. Local Runway Safety Teams shall consist of cross-disciplinary members and shall be integrated within the overall safety plan for the airport.

#### **TERMS OF REFERENCE**

Pursuant to the ICAO Runway Safety Team Handbook First Edition of January 2014, the ToR includes the following:

- a) Objectives, scope of oversight, and expected frequency of RST meetings.
- b) Membership selection processes.
- c) Roles and responsibilities of individual RST members.
- d) Processes governing and protecting the sharing of safety data, safety reports, and safety information from the participating organizations.
- e) Processes and formal agreements governing the protection of the sources of information shared within the RST (protection form inappropriate use and protection against disclosure).
- f) Consultation, decision-making and conflict resolution processes.
- g) Documentation and reporting requirements.

#### **TERMS OF REFERENCE AND ACTIONS**

- In particular, the LRST assists in enhancing runway safety by conducting the following tasks:
- Review compliance of the aerodrome with ICAO SARPs in Annex 14;
- Monitor runway incidents by type, severity and frequency of occurrence;
- Identify risk factors and local issues;
- Identify particular locations where risks exist ("hot spots");
- Identify problems in daily operations;
- Solicit assistance, e.g. advice and peer reviews, by safety experts from within the industry e.g., ACI;
- Contribute to active development of solutions to these issues;
- Ensure that the best possible solution is implemented;
- Disseminate information on developed solutions to stakeholders;
- Initiate a comprehensive safety-awareness campaign to ensure that all stakeholders' staff are aware of safety issues; and
- As part of individual Service Provider's SMS's Proactive Processes, learning the lessons from other incidents.

#### Hot Spots

ACI has defined a hot spot as a location on an airport movement area with a history of potential risk of collision or runway incursion, and where heightened attention by pilots and drivers is necessary.



Zambia through the National Airports Corp Ltd, in 2012 requested for a Safety Review from ACI and immensely benefited from the undertaking. New insight was gained on hazards, and solutions currently then prevailing and available. Lessons and information was shared freely and openly.

#### **ACI's Collaborative Efforts**

APEX (Airport Excellence) in Safety program is based on ICAO Annex 14 Standards and Recommended Practices (SARPs) and ACI best practices. It takes the form of a Safety Review, including a self-assessment of the safety level, gap analysis, recommended solutions and design of an action plan following an on-site visit at an airport which has requested assistance to enhance their level of safety.

A Safety Review is the process of carrying out an on-site safety assessment at an airport based on the results of a selfassessment safety questionnaire, making proposals for an Action Plan, and recommending solutions to optimize the safety standing of the requesting airport.

**Host Airport** 

The Host Airport is the airport that requests the Safety Review.

The Safety Review reflects industry best practices, while maximizing operational benefits.

**Host Airport Benefits** 

□ Ensure an enhanced level of safety, by gaining appropriate knowledge of regulatory standards, best operational practices, and training needs / options;

**Self-evaluate its safety performance**;

**Access a pool of expertise that will enable the Host Airport to mitigate any gaps in safety as required by their specific operating environment.** 

APEX in Safety Benefits

Tailored approach

Measures that can be immediately implemented

Access to global network of safety experts

**Practical application** 

**Creation of Action Plan** 

Effective results within reach

Appropriate solutions based on specific operational environment

**ICAO** regulatory aspects covered

Access to knowledge data base

Access to documentation

**Guidance material provided** 

Training, workshops, and further assistance available. (Zambia had benefited from an interactive ACI Risk Management Workshop in 2013, Livingstone).

Twinning of KKIA and YVR

#### CHALLENGES

- 1. Gaps in knowledge of the members;
- 2. Frequent changes to the composition of the team;
- 3. Slow development of a just culture;
- 4. Challenges with effective documentation of safety information;
- 5. Lack of adherence to the schedule of meetings;
- 6. Training costs for all new members;
- 7. Team building challenges;





# THANK YOU

