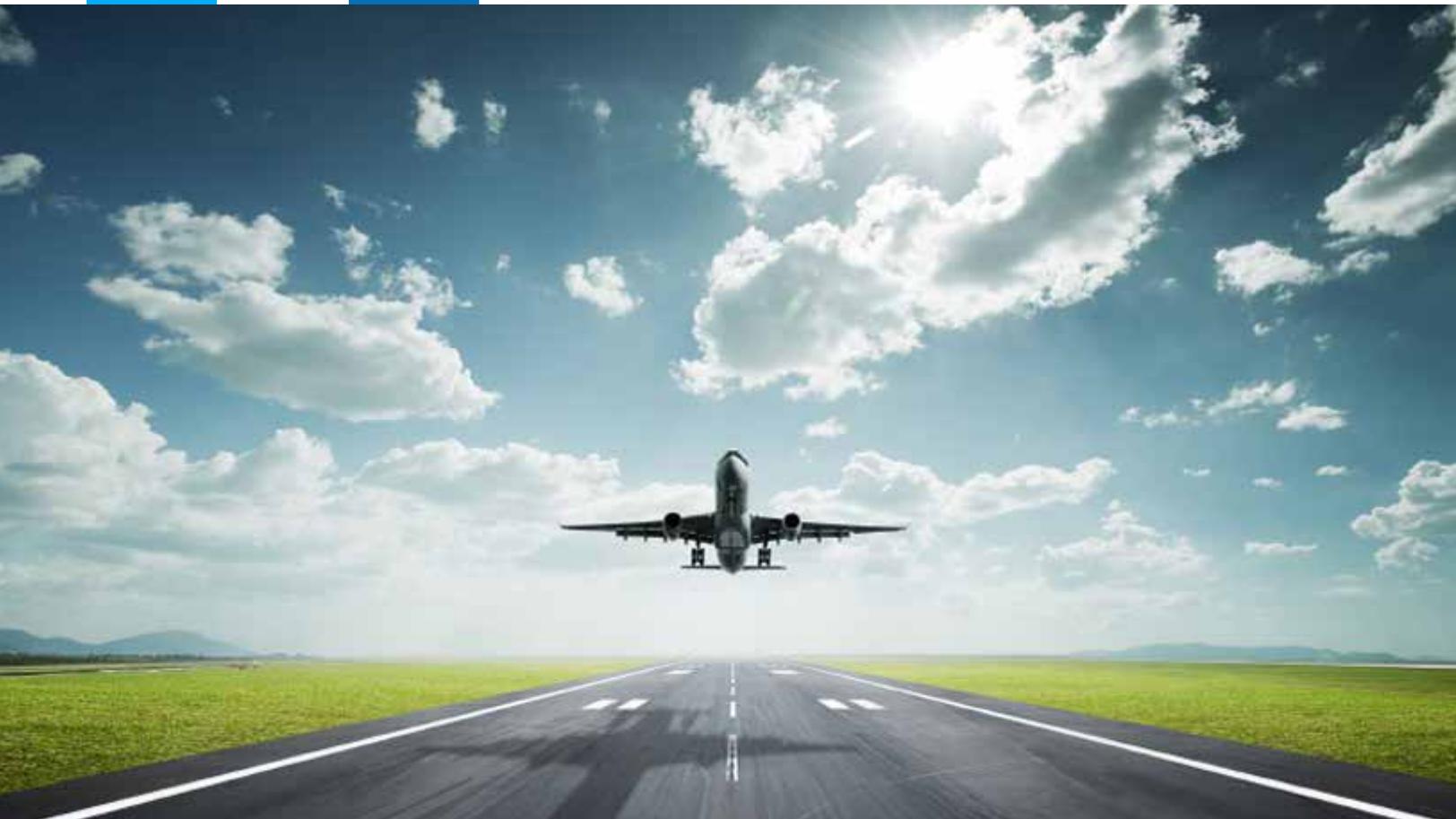


Runway Safety **HANDBOOK**

First Edition 2014





Runway Safety

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Authors: ACI World Safety & Technical Standing Committee (Subgroup)

Written by: Dirk Geukens (Brussels Airport), Yair Gannot (Israel Airports Authority), Gerhard Gruber and Bernhard Winter (Vienna Airport), Rolf Liebscher (Fraport AG), Bruno Maingon (ADP), Gabriel Lesa (Kenneth Kaunda Airport - Lusaka), Sergio Iannaccone (Aeroporti di Roma), David Gamper and Paul Aliu (ACI World), John (Jong hoon) Kim (IIAC and ACI World)

Reviewed by: Dirk Geukens (Brussels Airport), Eunbyul Kim and Songsup Lee (IIAC), Ian Witter (Heathrow Airport), Thomas Romig (Geneva Airport), Gerhard Gruber and Bernhard Winter (Vienna Airport), Bruno Maingon and Jean-Noel Massot (ADP), SL Wong (ACI-APAC), David Gamper (ACI World)

Coordinated by: John (Jong hoon) Kim (IIAC and ACI World)

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Director, Safety, Technical
ACI World
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Canada

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Airports Council International
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Canada
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FOREWORD

Runway safety is a significant challenge and a top priority for airport operations which is why ACI is proud to present this new handbook on Runway Safety, aimed at airport operators. Its content has been distilled from a wide range of guidance material from Civil Aviation Authorities, ACI Member Airports' operational safety procedures, ICAO and other international aviation organizations' publications pertaining to runway safety.

The content of this handbook also builds upon the existing guidance in the ACI Airside Safety Handbook (4th edition 2010). While remaining short and succinct, the Runway Safety Handbook provides checklists for action, as well as an explanation of risks to be assessed and means of mitigation available. As stated in the text, local risk assessments are inevitably necessary.

Safety on runways is clearly of great importance to Aerodrome Operators, who want to avoid or mitigate all foreseeable risks of accidents occurring from runway incursion, excursion, confusion and FOD. These risks and issues have been discussed many times at ACI conferences and committee meetings; therefore, ACI believes that it has the responsibility to put forward a guide to best practice, to assist its members. The Runway Safety Handbook forms part of a coordinated approach to Safety Management Systems for ACI's members.

In the area of staff development, ACI's Global Training offers a range of courses relevant to runway safety, via both classroom delivery and online.



Angela Gittens
Director General
ACI World

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INTRODUCTION

The issues of *Runway Incursions, Runway Excursions, Runway Confusions, FOD and Wildlife Management* have been the most serious concerns related to runway safety. Over the past decade, these concerns have been addressed in conjunction with ICAO and others through the production of new best-practice materials and more recently through ICAO's runway safety programme, including a series of regional Runway Safety Symposia.

The ACI World Safety and Technical Standing Committee (STSC) developed this Handbook to provide methodologies and best practices that can be implemented to assist airport operators to achieve a "state of the art" level of runway safety. This handbook provides guidance material for the development of a runway safety programme for all aerodrome (large or small) as well as ways to tailor, improve and expand existing programmes. The Handbook's four chapters are focused on the perspective of aerodrome operators:

- **Runway Safety** describes how to establish a Runway Safety Team and implement a Runway Safety Programme;
- **Planning and Design** explains how to prevent or mitigate infrastructural hazards of runway incursion, excursion and confusion during Master Planning and Designing;
- **Operations** provides methodologies of runway inspection, dissemination procedures for Aero-nautical Information Service (AIS) and best practices of FOD management and obstacle control; and
- **Maintenance, Temporary Restriction and Construction** provides proactive activities to prevent or mitigate accidents or incidents for those activities.

The aim has been to produce a current 'best practice' guidance document without it being overly detailed. Therefore, of necessity, it cannot cover all situations. Further information is available from the expanded Useful Documents and Websites section at the end of this Handbook. These best industry practices, and methodologies, should be implemented in a manner commensurate with the type and level of aircraft activities at a particular airport.

1 Runway Safety

Runway excursions, incursions and confusion present some of the greatest aviation hazards, potentially creating very serious consequences. A number of fatal accidents have occurred around the world resulting from these events.

In recognition of the seriousness and growing frequency of these events, a number of years ago ICAO, the FAA and EUROCONTROL introduced concerted programmes to reduce the numbers of runway incursions and excursions. One of their conclusions was that a Local Runway Safety Team should be established at each airport. Additional information can be found in the *ICAO Doc 9870 - Manual on the Prevention of Runway Incursions*;

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

1.1 Runway Safety Team

A Runway Safety Team is an essential part of any airport runway safety programme. It is most important to break down barriers between the different operational organizations at the airport. Once these bodies treat each other as genuine partners in runway safety, it is easier to share awareness of safety issues identified at the airport and develop agreed solutions. Local Runway Safety Teams may not necessarily replace existing cross-disciplinary teams such as an Airside Safety Committee, but should be integrated within the overall safety plan for the airport.

1.1.1 Function of a Local Runway Safety Team (LRST)

The function of any successful Runway Safety Team will be to advise Airport Management and Operations Staff on:

- Prevailing local conditions on the runway, taxiways and adjacent areas;
- Issues of concern and importance; and
- Mitigating measures and solutions to identified issues.

1.1.2 Reporting Culture

It is of paramount importance that a clear, free and fair safety-reporting culture be established at the airport, especially a “just culture” in which individuals and their teams are aware that reporting mistakes or potentially unsafe actions and procedures will not be punished, unless negligence was involved. Reporting of all safety-relevant events must be strongly encouraged and valued. Without such a safety culture, Runway Safety Teams cannot have access to all information on occurrences which may lead to potentially unsafe situations. All staff must have constant and active awareness of the potential for error and the consequences of such errors.

1.1.3 Establishing a Local Runway Safety Team

The team should consist of, as a minimum, representatives from at least the three main groups associated with manoeuvring area operations. Specifically, representatives from the Aerodrome Operator, from the Air Navigation Service Provider and/or local Air Traffic Controllers and pilots from Aircraft Operators which operate at the aerodrome must be represented. In addition, any other organisations that operate on the manoeuvring area should participate when applicable.

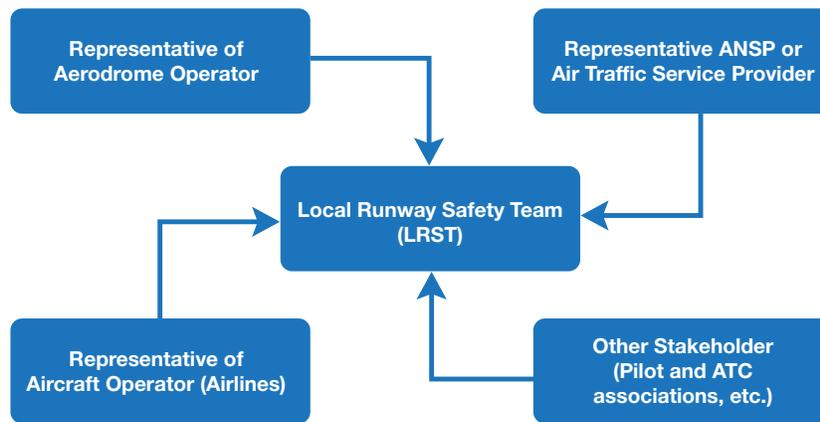


Figure 1. Example of Composition of LRST

1.1.4 Terms of Reference and Actions

The LRST will assist 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;
 - Contribute to active development of solutions to these issues;
 - Ensure that the best possible solution is implemented;
 - Disseminate information on developed solutions to stakeholders; and
 - Initiate a comprehensive safety-awareness campaign to ensure that all stakeholders’ staffs are aware of safety issues.
- Learning the lessons from other incidents

1.1.5 Hot Spots

A **hot spot** is defined 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.

By identifying hot spots, it is easier for users of an airport to plan the safest possible paths of movement in and around that airport. Planning is a crucial safety activity for airport users, pilots and air traffic controllers alike. By making sure that aircraft surface movements are planned and properly coordinated with air traffic control, pilots add another layer of safety to their flight preparations. Proper planning helps avoid confusion by eliminating last-minute questions and building familiarity with known problem areas.

1.1.6 Identification of Potential Runway Issues

A Local Runway Safety Team will be able to draw on the combined operational experience gained throughout the careers of its members, on industry best practices through publications and established safety-information forums, as well as airport information. Local Runway Safety Teams should participate in industry meetings, in order to assimilate the latest information and practices. Potential runway issues may entail:

- Design and maintenance of the runway;
- Markings, signs and lightings;
- Standard operating procedures for airport staff – missing, inappropriate or incomplete procedures;
- Birds and wildlife;
- Foreign object debris (FOD);
- Incursions & excursions (by aircraft); and
- Incursions (other than by aircraft).

1.1.7 ACI Recommended Training (Airport Perspective)

Each individual member of the LRST should be qualified and should have received the best safety training possible in his/her sphere of expertise. APEX In Safety also recommends that LRST members obtain safety training in other spheres which may overlap with their own, within the area of operations. We recommend that each member maintain competency in each of the following:

- ACI Runway Incursion Awareness and Prevention course;
- ACI Global Safety Network (GSN); and
- ACI/ICAO Aerodrome Certification course.

Please visit www.aci.aero/training for further information on relevant safety training courses.

1.2 Runway Safety Awareness

An important objective for Local Runway Safety Teams is to raise awareness of runway safety matters and share good practices to prevent runway incursions, excursions, wildlife events, vehicle and mobile equipment occurrences.

A local **safety awareness campaign** should be initiated at each aerodrome to identify runway safety issues from the combined operational experience of the established Local Runway Safety Team. Timing of awareness campaigns is important. Making a hot spot map or conducting a runway safety briefing at the start of a busy season, or just before a period of weather deterioration, can be helpful to all operational staff.

Lessons learned from LRST experience, the individual careers of its members, and industry best practices from publications and safety campaigns should be gathered for information-sharing to all members. A LRST should ensure wide dissemination of the safety recommendations derived from accident and incident investigation findings as well as other relevant lessons learned, for example from operational experience and best risk-mitigation practices.

1.3 Change Management (Construction)

Runway construction or temporary restrictions for maintenance may create hazards for aircraft operation. It is recommended that the RST should undertake a safety assessment at each stage of the planning of the construction or maintenance.

Planning Stage: The construction plan (or long term maintenance plan) should be reported to the LRST and the LRST should perform a safety assessment via document to review such items as:

- The construction site protection plan (including markings, signs and lighting);
- The construction site access plan (including the communication plan to ATC);
- Prescriptive traffic control plans, including phasing predicated on aircraft access; and
- The Aeronautical Information plan (AIP or NOTAM).

Initial Construction Stage: the LRST should perform a safety assessment through site inspection and document review before beginning construction, to review such items as:

- Protection of the construction site and measurements according to the plan;
- Protection measurement from local potential hazards; and
- The published AIP or NOTAM.

Closing Construction and Reopening Stage: the LRST should perform a safety assessment through site inspection and document review before closing the construction site and reopening the runway, to check items such as:

- Clearance of construction fencing, stationary equipment and vehicles, etc. from the site
- Compliance of the constructed area's markings, signs and lighting with ICAO SARPs; and
- The revision of the AIP or NOTAM.

More information about preparation for construction safety can be found in Chapter 4.