

Runway Safety

Jorge Reyes

Aerodrome Inspector's Classroom and On-the-Job Training Course

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EU-South East Asia Aviation Partnership Project (EU-SEA APP)

*This project is funded by the European Union and implemented
by the European Union Aviation Safety Agency - EASA*

Your safety is our mission.

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Runway Safety

LET'S START EASY

Rode Island

Safety Case 1
Providence 2013
Multiple Runway Incursions

Runway Safety

Safety Programmes in Reg 139

Committees

Runway Safety

FOD

Runway Safety

Safety Programmes in Reg 139

Committees

Runway Safety

FOD

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AMC2 ADR.OR.D.027 Safety programmes	143
GM3 ADR.OR.D.027 Safety programmes	143

Minimum of 3 Programmes (Runway, Apron, FOD)

Aerodrome Operator to Establish, Coordinate and Lead Safety Committees (Runway, Apron)

Safety Committees, DEFINE (Tasks, Composition, Regularity, Procedures, Minutes, etc.)

HOT SPOT Management

Runway Safety

For further consultation Please Check these IRs + AMCs + GMs



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ADR.OR.D.027 Safety programmes

Regulation (EU) No 139/2014

The aerodrome operator shall:

- (a) establish, lead and implement programmes to promote safety and the exchange of safety-relevant information; and
- (b) encourage organisations operating or providing services at the aerodrome to be involved in such programmes.

Runway Safety



AMC1 ADR.OR.D.027 Safety programmes

ED Decision 2014/012/R

SAFETY PROGRAMMES — AERODROME SAFETY COMMITTEES

- (a) The aerodrome operator should:
- (1) organise, coordinate and implement programmes to promote safety at the aerodrome. Such programmes should include, but are not limited to:
 - (i) runway safety, including runway incursion and excursion prevention;
 - (ii) apron safety; and
 - (iii) FOD prevention;
 - (2) coordinate and promote the exchange of information, and the joint investigation of occurrences, serious incidents, and accidents.
- (b) The aerodrome operator should establish, coordinate, and lead local aerodrome safety committees, and a Local Runway Safety Team, dealing with runway safety, apron safety, and the safety of the operations at the aerodrome in general. All relevant organisations operating or providing services at the aerodrome should participate to such aerodrome safety committees and the Local Runway Safety Team.

The local aerodrome safety committees and the Local Runway Safety Team should convene regularly, identify and review local safety issues, and examine possible solutions, and need for action. Minutes of such meetings should be kept. Procedures relevant to the functioning of local aerodrome safety committees and the Local Runway Safety Team should be included in the aerodrome manual.

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GM1 ADR.OR.D.027 Safety programmes

ED Decision 2014/012/R

AERODROME SAFETY COMMITTEES

(a) Manoeuvring area/Apron Safety Committee

- (1) The aerodrome operator should establish (a) Manoeuvring area/Apron Safety Committee(s);
- (2) The Manoeuvring area/Apron Safety Committee(s) should have an advisory role to the aerodrome operator;

(b) Management of Manoeuvring area /Apron Safety Committee(s)

- (1) The Manoeuvring area /Apron Safety Committee(s) should be chaired by an aerodrome operator's official, responsible for aerodrome operations; and
- (2) The aerodrome operator's safety manager should act as the secretary of the Committee(s).

(c) Composition of Manoeuvring area /Apron Safety Committee(s)

Participation should include, but not limited to representatives of:

- (1) aerodrome users active in flight operations;
- (2) aircraft ground handling services providers;
- (3) aerodrome rescue and firefighting services;

- (4) aerodrome operations;
- (5) aerodrome wildlife management;
- (6) aerodrome maintenance; and
- (7) air navigation service provider(s).

(d) Tasks

The tasks of the Manoeuvring area /Apron Safety Committee(s) should be:

- (1) to receive and evaluate reports on operational safety issues;
- (2) to receive reports and statistical information on accidents and incidents, and propose solutions;
- (3) to advise on manoeuvring area/apron safety issues such as:
 - (i) promotion of apron safety discipline;
 - (ii) FOD prevention;
 - (iii) developing measures for safe operations;
 - (iv) considering actions to resolve manoeuvring area/apron safety problems;
 - (v) apron equipment issues;
 - (vi) adherence to vehicle traffic issues;
 - (vii) new and/or updated safety instructions;
 - (viii) personal protective clothing/equipment issues;
 - (ix) methods to develop and promote apron safety awareness initiatives;
 - (x) snow and ice clearance issues;
 - (xi) proposed aerodrome works;
 - (xii) proposed changes/developments to the movement area;
 - (xiii) standard operating procedures, etc.

Runway Safety



GM2 ADR.OR.D.027 Safety programmes

ED Decision 2014/012/R

LOCAL RUNWAY SAFETY TEAM

(a) Context

As part of its runway safety programme, the aerodrome operator should establish and lead a Local Runway Safety Team and act on local runway safety issues, including runway incursion (including runway confusion) and excursion prevention.

A runway incursion is defined 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 aircraft¹.'

A runway excursion occurs when 'An aircraft veers off or overruns the runway surface during either take-off or landing'.

(b) Local Runway Safety Team composition

Participation should include representatives from all interested parties with direct involvement in runway operations at the aerodrome, including, but is not limited, to:

- (1) aerodrome operations;
- (2) aerodrome engineering and maintenance;
- (3) air navigation service providers;
- (4) aircraft operators that operate of the aerodrome;
- (5) aerodrome rescue and firefighting services;
- (6) drivers having access on the manoeuvring area.

(c) Role

The role of the Local Runway Safety Team should be to advise the appropriate management on potential runway safety issues, and to recommend mitigating measures.

Runway Safety

GM2 ADR.OR.D.027 Safety programmes

ED Decision 2014/012/R

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(c) Role

The role of the Local Runway Safety Team should be to advise the appropriate management on potential runway safety issues, and to recommend mitigating measures.

(d) Tasks

The Local Runway Safety Team may have the following tasks:

- (1) identification of potential runway safety issues, including the need for establishment of hot spots or other problem areas at the aerodrome and the review of the relevant entries of the AIP for accuracy;
- (2) developing and running local awareness campaigns, at suitable periods, including at the start of a busy season or before an unusual event, that focus on local issues, for example, producing and distributing local hot spot maps, or other guidance material considered as necessary; local awareness campaigns should be periodically refreshed to maintain interest and operational awareness of the relevant personnel;
- (3) monitoring the number, type and, the severity of runway incursions; disseminating safety recommendations delivered from accident and incident investigation findings as well as other relevant lessons learned e.g. from operational experience and best risk mitigation practices; sharing good practices to prevent runway incursions or excursions;
- (4) assisting in verifying that communications between air traffic controllers, or other Air Traffic Services personnel, pilots, and vehicle drivers are satisfactory, or if any improvements could be suggested;
- (5) making observations on a regular basis in different weather and light conditions to assess whether all runway entrances and visual aids are adequate, correctly located and understandable by all parties concerned, with no possible ambiguity of their meaning, or identify potential aerodrome design issues;
- (6) understanding the operating difficulties of personnel working in other areas, and recommending areas for improvement; when reviewing operating procedures it is necessary to ensure that the procedures employed by different companies at the aerodrome are integrated and effective, so as to minimise the risk of runway incursions. Care should be taken when examining existing or proposed runway capacity enhancing procedures or noise abatement schemes involving runway preferential systems;

Runway Safety

AMC2 ADR.OR.D.027 Safety programmes

ED Decision 2014/012/R

HOT SPOTS

Once hot spots have been identified at an aerodrome, suitable strategies should be implemented to remove the hazard and, when this is not immediately possible, to manage and mitigate the risk, including the publication of HOT SPOT charts in the Aeronautical Information Publication.

GM3 ADR.OR.D.027 Safety programmes

ED Decision 2014/012/R

HOT SPOTS

A hot spot is defined as '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.'

Strategies to manage and mitigate the risk from hot spots, depending on the case, may include, but are not limited to:

- (a) awareness campaigns;
- (b) additional visual aids (signs, markings, and lighting);
- (c) establishment of alternative routings;
- (d) introducing changes to the design of parts of the aerodrome; and
- (e) the mitigation of blind spots in the aerodrome control tower.

Aerodrome charts showing hot spots should be produced locally, checked regularly for accuracy, revised as needed, distributed locally, and published in the AIP. The criteria used to establish and chart a hot spot are contained in the PANS-ATM (Chapter 7) and Annex 4 — Aeronautical Charts (Chapters 13, 14 and 15).

Examples of how hot spots are shown on charts are provided in Figures 1, 2, and 3 below.

Runway Safety



Runway Safety

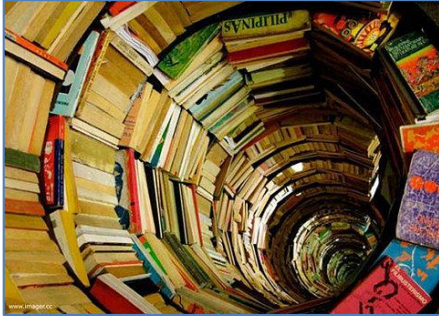
Safety Programmes in Reg 139

Committees

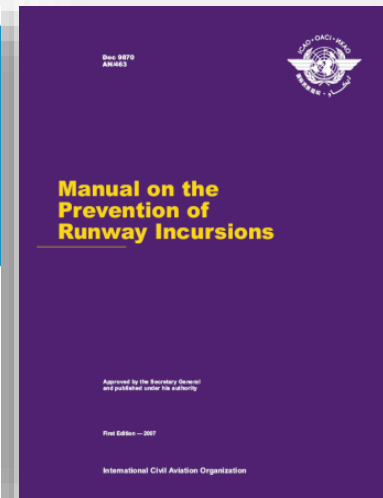
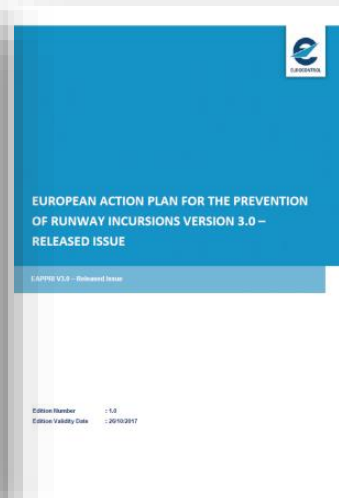
Runway Safety

FOD

Runway Safety



SAFETY COMMITTEES

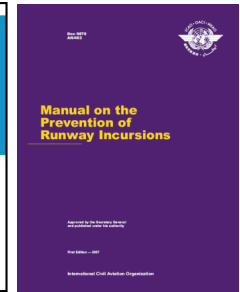
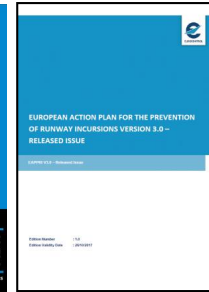
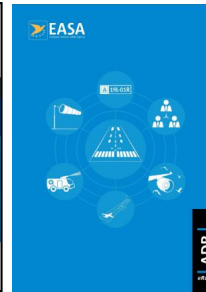


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SAFETY COMMITTEES

ToRs must include at least:

- **Objectives:** *scope, and attributions. (REG 139)*
- **Meetings:** *annual Plan, ordinary, extraordinary, invitations, etc.*
- **Roles:** *Chairperson, Secretary, Members. (Rapporteur)*
- **Data Management:** *data sharing between LRSTs, inputs, data base, reports, recommendations.*
- **Disclosure:** *Formal agreements for the no disclosure and inappropriate use of the shared LRSTs information.*
- **Measures:** *Definition, Implementation, Follow-up, Effectiveness.*
- **Recording:** *ACTs, Reports, Presentations, Recommendations, etc.*
- **Evaluation:** *Internal Audits, External Audits, Continuous Improvement.*



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LOCAL RUNWAY SAFETY TEAM

- (1) Identification of the potential safety **RUNWAY PROBLEMS**,
 - a. Including the need to establish Hot Spots or the problematic spots in the airport, and
 - b. the review of the main AIP entrances in order to verify their precision;

- (2) Develop and execute **LOCAL AWARENESS CAMPAIGNS**, during the appropriate time periods.
 - a. Including at the beginning of a high activity season or before an unusual events occurs, that are focused on local problems, for example, producing and distributing critical local Hot Spots, or other guidance material considered as necessary;
 - b. The local awareness campaigns should be updated periodically for maintaining the interest and the operational awareness of the relevant team.

Runway Safety

LOCAL RUNWAY SAFETY TEAM

- (3) Controlling the number, type, and importance of the **RUNWAY INCURSIONS AND EXCURSIONS**;
 - a. Distributing the safety recommendations delivered after the accident or incident investigations results, as well as other important lessons learned, for example, the operational experience and the best risk mitigation practices;
 - b. Sharing good practices in order to prevent runway incursions and excursions;
- (4) **HELPING** to verify the **COMMUNICATION** between the air traffic controllers, or the personal of the air traffic services, pilots, and vehicle drivers are acceptable, or if improvements could be implemented;
- (5) Doing **REGULAR REVISIONS** in different meteorological and lighting conditions for evaluate if all the runway entrances & visual aids are adequate, are properly based and are comprehensible for all the actors, without any possible ambiguity about their meaning, or identify airport design potential problems.

Runway Safety

- (6) **UNDERSTAND THE OPERATIONAL DIFFICULTIES** of the staff who work in other areas, and recommend areas for improvement; When operational procedures are reviewed, it is necessary to ensure that the procedures used by the different companies at the airport are integrated and are effective, in order to minimize the risk of runway incursions. Pay special attention when examining improvement capacity runway procedures existing or proposed or the reduction noise plans involving preferential systems of the runway;
- (7) **LEAD INITIAL AND PERIODIC TRAINING** and familiarization programs sets for the runway incursions and excursion prevention, for all relevant staff (drivers and other people who operate in the manoeuvring area, pilots and air traffic services staff). These programs may include visits to the manoeuvring area to increase the knowledge of the airport layout, signs, position of the anemometers, etc., where deemed necessary.
- (8) **Provide RECOMMENDATIONS BEFORE THE IMPLEMENTATION OF CHANGES** in the airport, practices and procedures to identify the probability of runway incursions or excursions;
- (9) **Evaluate Periodically The Effectiveness** of the implemented operational solutions.

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LOCAL RUNWAY SAFETY TEAM



Among the LRSTs tasks should include the following, derived from the EAPPRI:

(10) Ensure that the recommendations contained in **EAPPRI** are implemented;

(11) Review the airport to ensure that is consistent and in accordance with the **standards and recommendations of ICAO**

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BARCELONA	50M	350.000 OPS
IBIZA	8M	75.000 OPS
NORTH TENERIFE	6M	70.000 OPS
GIRONA	2M	20.000 OPS
JEREZ	1M	50.000 OPS
REUS	0,5M	20.000 OPS
LOGROÑO	0,02	1.500 OPS

HOW CAN IT BE
THE SAME?

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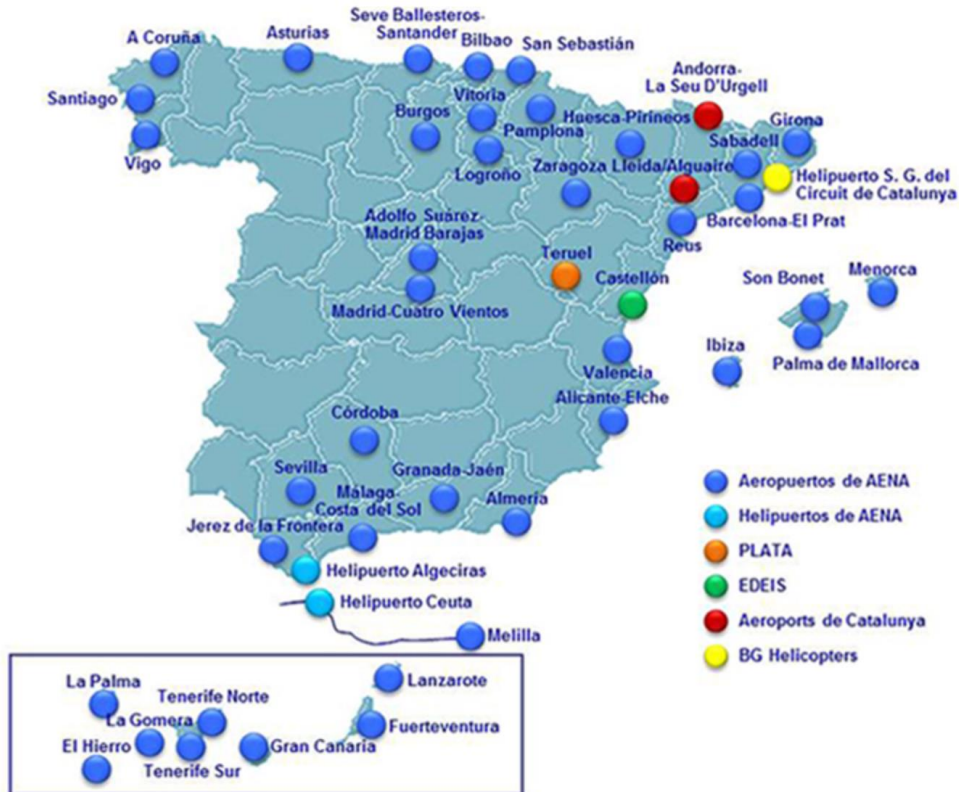
AUTHORITY ROLE IN LRSTS

REGULATION 139

Although the aeronautical authority participation is not essential, this role is to **provide indications on aspects of Aeronautics Legislation**, participate in the **information sharing** and **understand the airport problematic** and the local dangers of airport, and to **serve as a partner with other organizations and Government entities** for the LRST benefit when necessary.

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SPAIN 47 LRSTs



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ANNUAL
ATTENDING PLAN

PREVIOUS LRST

INCURSIONS

INSPECTIONS

AEROPUERTO	COMITÉS LOCALES DE SEGURIDAD EN PISTA											
	2017											
	ENE	FEB	MAR	ABR	MAY	JUN	JUL	AGO	SEP	OCT	NOV	DIC
A Coruña					25/05/2017							
Algeciras Helip.												
Alicante				26/04/2017					27/09/2017	30/10/2017		
Almería						Jun-2017						Dic-2017
Asturias						08/06/2017					Nov-2017	
Badajoz												
Barcelona - El Prat			02/03/2017			01/06/2017			18/09/2017		30/11/2017	
Bilbao			Mar-2017								09/11/2017	
Burgos			23/03/2017							26/10/2017		
Castellón			Mar-2017								07/11/2017	
Ceuta Helip.				26/04/2017								
Córdoba			Mar-2017		09/05/2017		Jul-2017				20/11/2017	
El Hierro												05/12/2017
Fuerteventura		Feb-2017								19/10/2017		
Girona - Costa Brava			Mar-2017						Sep-2017			
Gran Canaria			28/03/2017			20/06/2017					25/11/2017	
Granada - Jaén						Jun-2017					Nov-2017	
Huesca - Pirineos					05/05/2017	21/06/2017				24/10/2017		
Ibiza					24/05/2017					25/10/2017		
Jerez					10/05/2017						14/11/2017	
La Gomera				07/04/2017								
Lanzarote											08/11/2017	
La Palma											19/11/2017	
La Seu D'Urgell			Mar-2017						Sep-2017			
León												
Lliria					15/04/2017						15/10/2017	

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1.1 DEFINITION OF A RUNWAY INCURSION

The *Procedures for Air Navigation Services — Air Traffic Management* (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.”

What does “incorrect presence” mean?

What does “protected area” mean?

Runway Safety

- This is an extract coming from a presentation given by **IAN WITTER** During the EUROCONTROL Safety Forum.



Ian Witter (ACI, Heathrow)
(ICAO, AOWG)
(EUROCONTROL, SISG)



2017 Safety Forum
Runway Incursion scenarios

6th June 2017

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Making every journey better

Runway Safety

1. Despite numerous attempts by the ATC controller, to issue a landing clearance to Flight 123 on short final, the aircraft did not receive it as it was still on the previous frequency.

Flight 123 landed with no further incident.

Is this landing a runway incursion?



Runway Safety

2. Flight 123 landed without landing clearance being issued.

The controller had not issued it due to distraction with an imminent runway direction change.

Is this landing a runway incursion?



Runway Safety

3. The Tower controller cleared Flight 123 to land, after visually confirming that an Airport Ops vehicle undertaking a runway inspection had vacated the runway.

ATC had not received the verbal 'runway vacated' RT message from the Ops vehicle.

There was therefore the potential for the Airport Ops vehicle, who had been conducting a Runway Inspection at the time, to re-enter the runway without seeking ATC permission.

Is this a runway incursion?



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4. Whilst waiting for departure at the holding point from runway XY at Hold AB, Flight 123 reported an engine fire. The Fire Service attended and declared that the aircraft was fit to taxi back to stand.

In order to do so, Flight 123 was cleared to enter (in order to vacate at the next holding point) for a Service vehicle, and 2 Airport Ops vehicles.

Whilst doing so, one of the Service vehicles contacted the ATC controller if the Police vehicle was now on the runway with them, had been given clearance to do so.

The controller confirmed that no Police vehicles had been cleared onto the runway.

The accompanying vehicles vacated the runway. An Airport Ops vehicle confirmed that the runway was clear for all vehicles and available for use.

TOO LONG QUESTION

Was the Police vehicle a runway incursion?

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5. At night, flight 123 at runway holding position Alpha One, was given a conditional line up clearance, which was read back correctly.

The aircraft was then observed to cross the Alpha One lit stop bar, but at the correct time with respect to the conditional traffic clearance.

Is this a runway incursion?



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6. An aircraft is cleared to line up for departure on the runway.

The aircraft lines up as instructed.

To the controllers surprise the aircraft is next seen accelerating through 100kt and completes its departure.

Is this a runway incursion?



Runway Safety

7. An aircraft waiting at a holding point is cleared to enter the runway for departure after a landing clearance has been issued to another aircraft which is on finals.

The departing aircraft does not move as the pilot realises the situation.

Is this a runway incursion?



Runway Safety

8. An aircraft taxiing for departure on the parallel taxiway to the runway exceeds his given clearance on the taxiway and enters the ILS Glidepath critical area.

Is this a runway incursion?



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9. An aircraft is cleared to land after a departing aircraft has taken off.

The landing aircraft is overflying the threshold when the departing aircraft just gets airborne from the same runway.

Is this a runway incursion?



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10. Flight 123 was waiting at the runway holding point to enter the runway for departure.

An aircraft was on finals to land.

ATC gave a clearance to Flight 123 “After the landing, line up runway XY”

The aircraft on finals carried out a go-around due to cabin insecure.

Seeing the go-around, Flight 123 entered the runway and lined up.

Is this a runway incursion?



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- Answers received during the 2017 Safety Forum



2017 Safety Forum Runway Incursion scenarios

6th June 2017

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1	YES 70%	NO 30%
2	YES 95%	NO 05%
3	YES 30%	NO 70%
4	YES 85%	NO 15%
5	YES 60%	NO 40%
6	YES 25%	NO 75%
7	YES 05%	NO 95%
8	YES 50%	NO 50%
9	YES 20%	NO 80%
X	YES 50%	NO 50%

Runway Safety

What does “incorrect presence” mean?

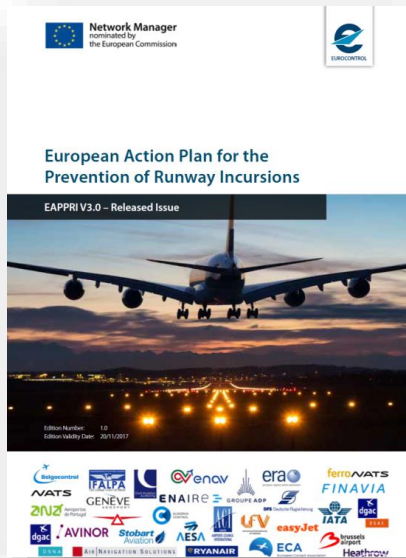


FORMERLY,
A TABLE IN EAPRI
2.0 EDITION

Aircraft, vehicle or pedestrian is cleared, correctly, to enter or cross a runway and proceeds as cleared, but does not read-back the clearance.		X
Aircraft is cleared, correctly, to land or take off and proceeds as cleared, but does not read-back the clearance.		X
Aircraft lands without clearance.	X	
Aircraft lands without clearance and evidence shows that the pilot was acting appropriately in accordance with Loss of Communication procedures due to R/T failure.		X
Aircraft takes off without clearance.	X	
Aircraft, vehicle or pedestrian enters runway without clearance.	X	
Aircraft, vehicle or pedestrian is cleared to enter the runway and does so, as instructed and intended, but before the red stop bar has been “dropped”. (this also applies to traffic lights where so positioned).	X	
Aircraft, vehicle or pedestrian enters the runway at the incorrect holding point.	X	
Aircraft, vehicle or pedestrian vacates at the incorrect holding point.		X
Controller incorrectly clears an aircraft, vehicle or pedestrian to enter or cross runway.	X	
Controller incorrectly clears an aircraft to land or take-off.	X	
Aircraft lines-up out of instructed sequence.	X	

Runway Safety

What does “incorrect presence” mean?



NOW, A NEW WHOLE
APPENDIX IN THE SOON
COMING EAPPRI 3.0
EDITION



APPENDIX N INTERPRETING EVENTS – RUNWAY INCURSION?

Table to Assist in Determining if a Runway Incursion has occurred

Protected Area and Runway End Safety Area considerations

Controller Clearance

Defined Distances (for determining runway incursions)

Just Culture

Runway Safety

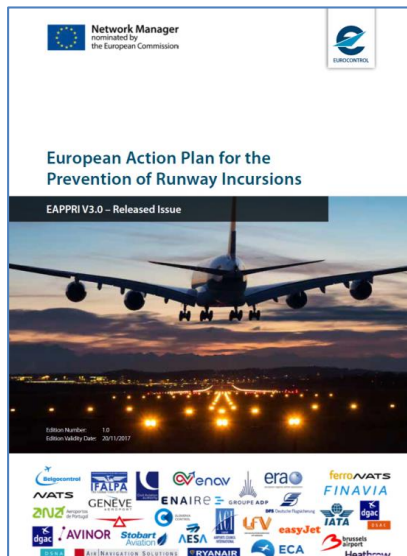
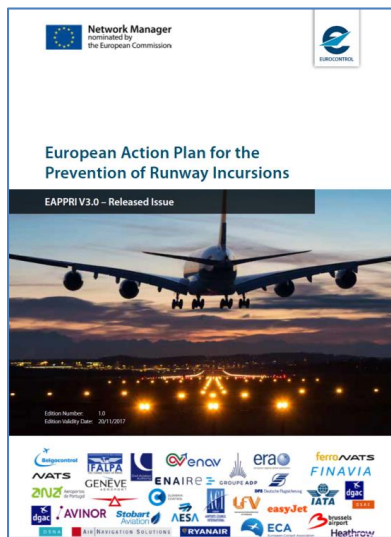


Table to Assist in Determining if a Runway Incursion has occurred

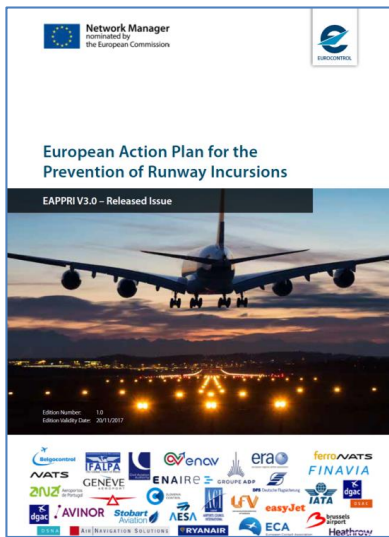
Example	Runway Safety; Runway Incursion	Runway Safety Event; Not Incursion	Rationale
An aircraft vehicle or pedestrian is cleared correctly to enter or cross a runway and proceeds as cleared but does not read back the clearance.		Yes	There is no incorrect presence. Failing to read back does not create an incursion.
An aircraft is cleared correctly to land or take off and proceeds as cleared, but does not read back the clearance.		Yes	There is no incorrect presence. Failing to read back does not create an incursion.
Aircraft lands without clearance being issued by the controller.	Yes		This is an incorrect presence.
Aircraft lands without clearance being received by the flight crew, having been issued by ATC.		Yes	If ATC have given the clearance, there is no incorrect presence.

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Aircraft lands without clearance being received by the flight crew, after a go-around instruction from ATC.	Yes		Once a go-around instruction is given it is an incorrect presence to land on the runway.
Aircraft lands without clearance and evidence shows that the pilot was acting appropriately in accordance with Loss of Communication procedures due to R/T failure.		Yes	
Aircraft takes off without clearance	Yes		The aircraft was only cleared to line up. Thus it is an incorrect presence once take-off is commenced.
An aircraft vehicle or pedestrian enters runway without clearance	Yes		This is an incorrect presence.
An aircraft, vehicle or pedestrian is cleared to enter the runway and does so as instructed and intended, but before the red stop bar has been "dropped". (This also applies to traffic lights where so positioned)		Yes	There is no incorrect presence as ATC clearance to enter has been given. However, pilots/drivers shall not cross illuminated red stop bars. If the stop bar does not extinguish, pilots and drivers must check with the controller before proceeding.
An aircraft, vehicle or pedestrian crosses a red stop-bar without ATC	Yes		It is an incorrect presence

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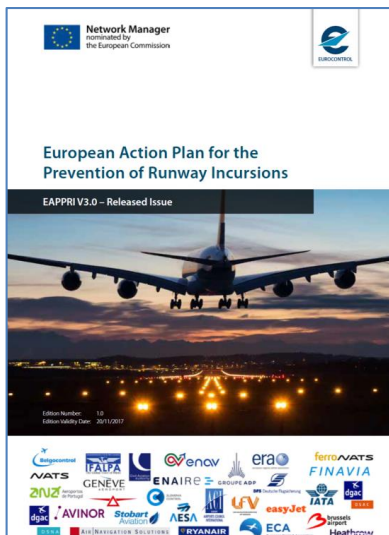
An aircraft vehicle or pedestrian enters the runway at the incorrect holding point.	Yes		At this location on the runway it is an incorrect presence.
An aircraft vehicle or pedestrian vacates the runway at the incorrect holding point.		Yes	There is no incorrect presence on the runway
Controller incorrectly clears an aircraft, vehicle or pedestrian to enter or cross a runway and the runway is entered. I.e. the controller issues a clearance he wouldn't have issued if he was conscious of the whole situation.	Yes		It is the movement onto the runway or protected area that creates the incorrect presence – not the incorrect RT transmission. The RT transmission does not mean an RI occurs at that moment.
Controller incorrectly clears an aircraft to land or take-off. I.e. the controller issues a clearance he wouldn't have issued if he was conscious of the whole situation.	Yes		It is an incorrect presence. It is the movement onto the runway or protected area that creates the incorrect presence – not the incorrect RT transmission. The RT transmission does not mean an RI occurs at that moment.
Aircraft lines up out of sequence	Yes		It is an incorrect presence

Runway Safety



<p>Two aircraft are correctly present on the runway after lining up: one for full length departure at the beginning of the runway and the other for an intersection take-off. The controller erroneously gives a take-off clearance to the aircraft at the beginning of the runway. The pilots of the aircraft do not realise the error and the full length departure starts to roll.</p>	<p>Yes</p>		<p>It is an incorrect presence</p>
<p>An aircraft is cleared to take-off and a vehicle is on the runway correctly and the pilot recognises the situation and refuses to move.</p>		<p>Yes</p>	<p>There is no incorrect presence</p>
<p>An aircraft is cleared to take-off and a vehicle is on the runway correctly and the aircraft commences its take off roll.</p>	<p>Yes</p>		<p>It is an incorrect presence once the aircraft begins its take-off roll.</p>

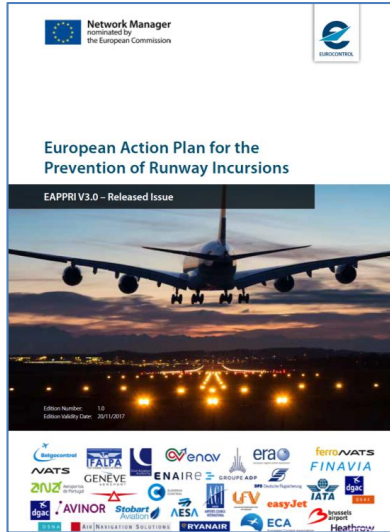
Runway Safety



EUROCONTROL

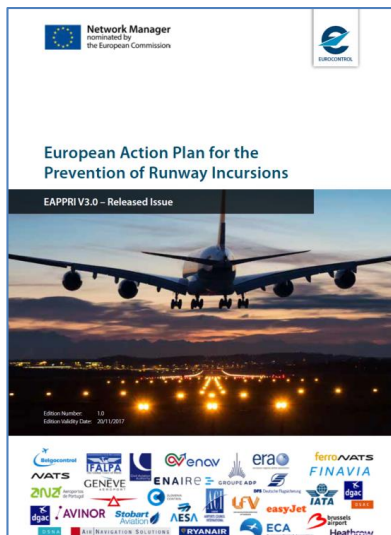
Aircraft, vehicle or pedestrian crosses a red stop bar but stays outside of the protected surface of the runway (e.g. stop bar at Cat III position but Low Visibility conditions not present)		Yes	No incorrect presence on the runway or protected area. However, pilots/drivers shall not cross lit red stop bars and shall check with the controller.
An aircraft taxis up to a runway holding point and stops, with all undercarriage short of the holding point but the nose/radome is beyond the holding point.	Yes		It is an incorrect presence
During Cat III operations a vehicle enters the Cat III runway strip without ATC clearance.	Yes		It is an incorrect presence
During Cat I operations a vehicle enters the Cat I runway strip without ATC clearance.	Yes		It is an incorrect presence
A vehicle convoy is cleared by ATC to enter the runway, but the stop-bar comes back on before the last vehicle has crossed the holding point.		Yes	As the convoy was cleared to enter, there is no incorrect presence. However, pilots/drivers shall not cross lit red stop bars and shall check the status of the stop bar with the controller before proceeding.

Runway Safety



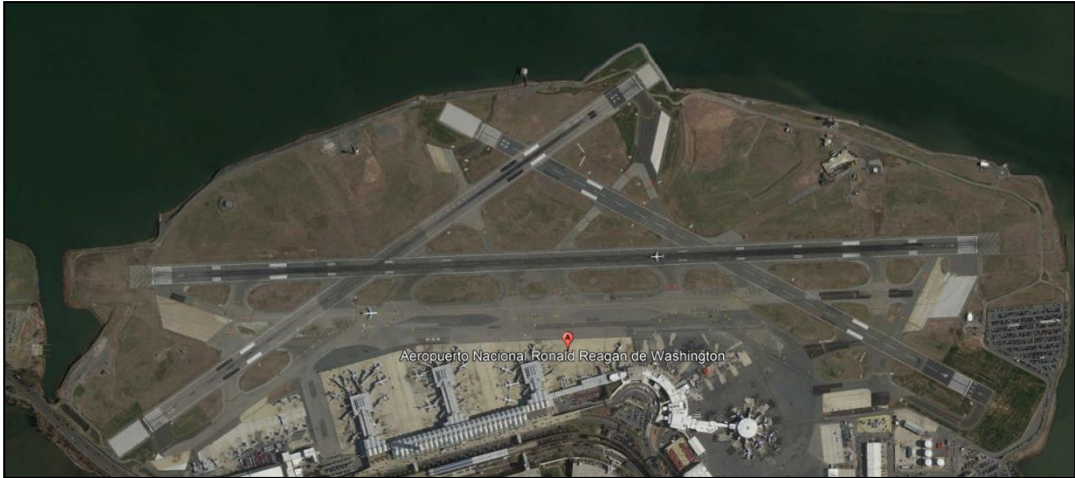
<p>A pilot lands an aircraft on a runway NOTAM'd as closed.</p>		<p>Yes</p>	<p>If the runway is NOTAM'd as closed, it is not a runway.</p>
<p>Two airfield ops vehicles and 2 fire service vehicles call ATC and obtain permission to enter the runway correctly which is done. Another vehicle joins the back of the convoy without communication and 5 vehicles cross the runway.</p>	<p>Yes</p>		<p>In this example the 5th vehicle is an incorrect presence.</p>
<p>At night a departing aircraft is given a conditional line up clearance at the correct holding point which is read back correctly. The aircraft enters the runway at the correct time in terms of the conditional clearance, but in doing so crosses a lit stop-bar.</p>		<p>Yes</p>	<p>There was no incorrect presence. However, pilots/drivers shall not cross lit red stop bars and shall check the status of the stop bar with the controller before proceeding.</p>

Runway Safety



An aircraft enters the runway correctly but faces in the wrong direction (e.g. cleared to enter runway 23 but lines-up facing 05 direction) and starts its roll.	Yes		It is an incorrect presence once it starts take-off roll.
The TWR controller erroneously clears an incorrect aircraft for take-off. He immediately realises his error and corrects the clearance. The aircraft does not move and remains at the holding point.		Yes	There is no incorrect presence
A helicopter flies or ground taxis along part of the runway length without clearance to do so.	Yes		It is an incorrect presence
An aircraft is cleared to enter the runway after a landing clearance has been given to another aircraft.		Yes	The RT clearance does not mean an incursion has immediately happened.
An aircraft is cleared to enter the runway and does so, after a landing clearance has been given to another aircraft.	Yes		It is an incorrect presence

Runway Safety



Runway Safety



Runway Safety



Runway Safety



Runway Safety



Runway Safety

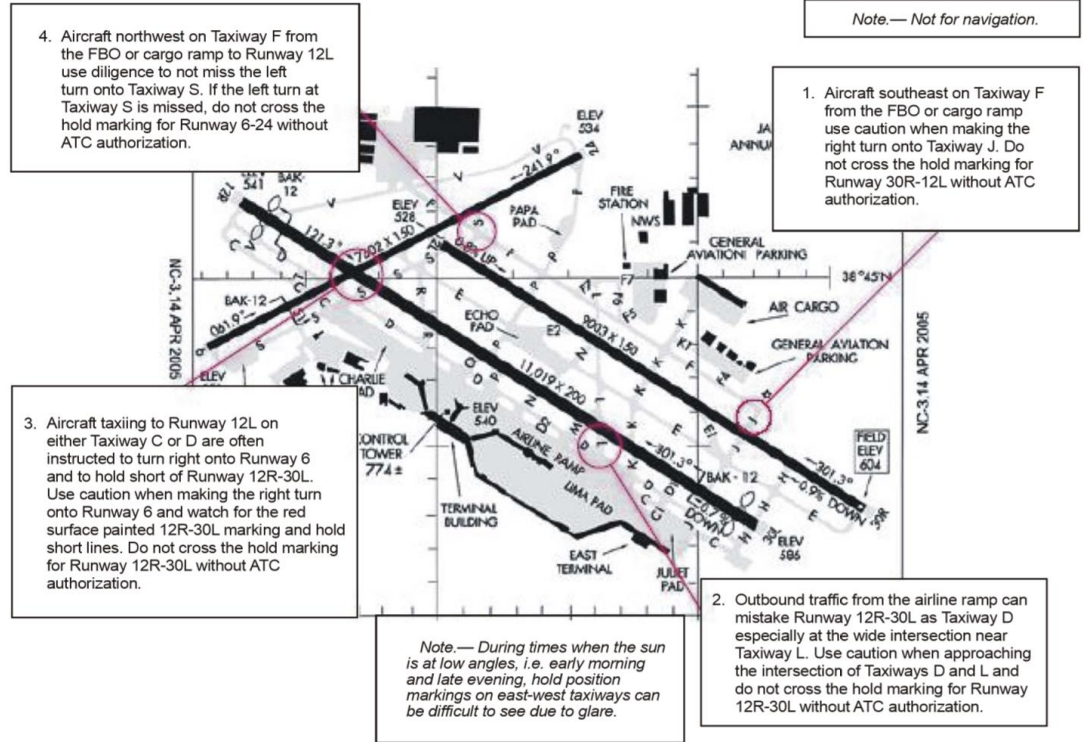


Runway Safety

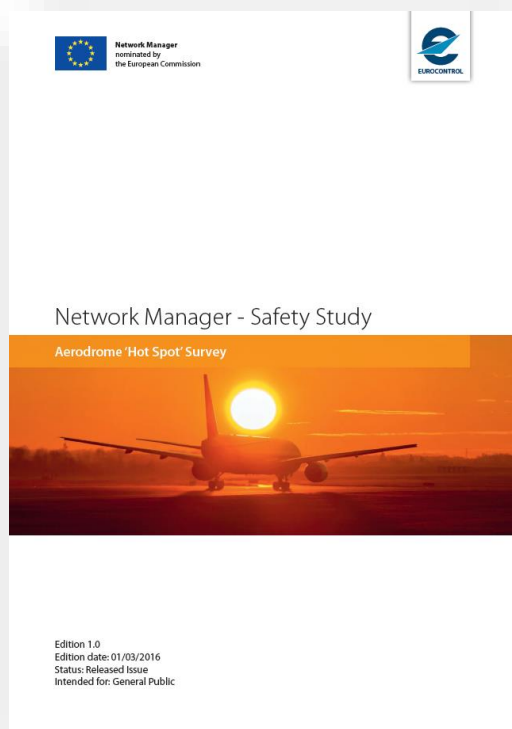
HOT SPOTS

What are the main differences between a good & a bad HOT SPOT MAP?

Figure 3-2. Example of hot spot information



Runway Safety



Published hot spot information shall be clear and effective and should consider the following charting guidance:

- Each hot spot is depicted by a clear bright red circle and joined to a red label box, providing the assigned designator of the hot spot if applicable (e.g. HS1, here meaning "Hot Spot 1").
- Large tabulated textual information elaborating the action required of pilots in and around the hot spot. This may be inserted on the main aerodrome diagram or on the verso of the chart.
- Additional graphical boxes depicting the hot spots in greater detail. These additional boxes should if possible be linked to the relevant hot spot on the main aerodrome diagram, by lines or arrows.
- Publish specific hot spot pages in cases where the aerodrome diagram otherwise would be too cluttered, to present the hot spots effectively.
- Usage of a colour-coded format assisting the depiction of runways, hot spot areas and normal taxiways.

CIRCLE + HSX

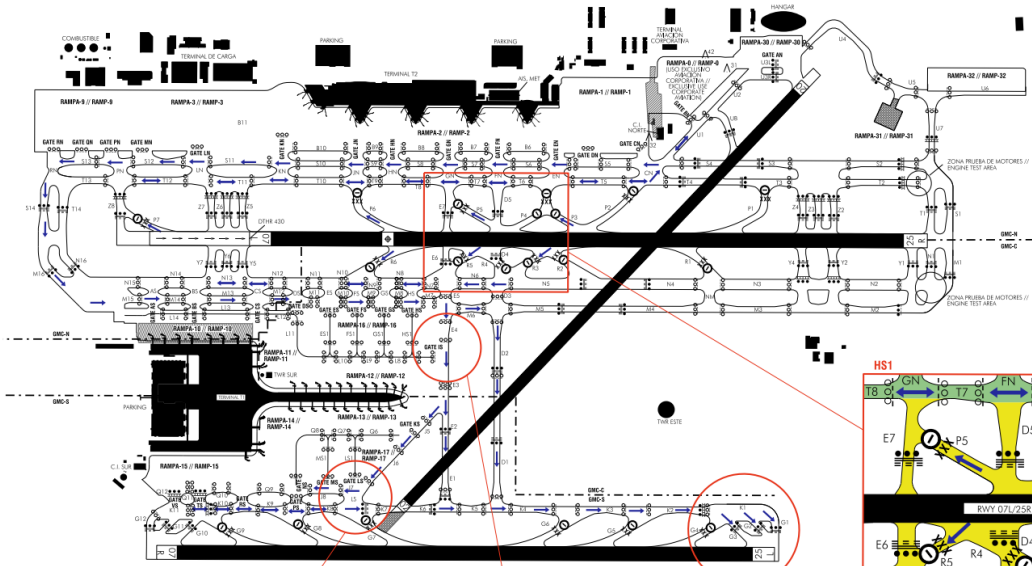
ZOOM

TEXT

COLORS

ARROWS

CONFIGURACION OESTE // PARALLEL RUNWAYS OPERATION
OPERACION CON PISTAS PARALELAS // PARALLEL RUNWAYS OPERATION
ARR 25R DEP 25L

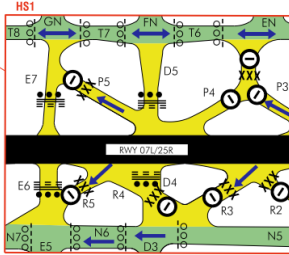


REGIMEN DE CAMBIO ANUAL // ANNUAL RATE OF CHANGE

PROCEDIMIENTOS GENERALES DE ROTAS Y PROCEDIMIENTOS DE BARRA VIBERATORIA
GENERAL ROUTING PROCEDURES AND ZONE VIBERATOR PROCEDURES

METRY: 1:50,000
84 ft // 16,810, 82, 16, 37, 55 ft // 513, 108, 11, 50, 108, 104 ft // 16, 50, 107, 23, 81, 50, 102 ft // 16, 51, 48
03, 17, 38, 410, 57 ft // 16, 516, 11, 14 ft // 11, 13, 11, 14 ft // 16, 28, 28, 30

LAS BARRAS DE PARADA EN LOS PUNTOS DE ESPERA DE LA PISTA...
STOP BAR BY THE RUNWAYS AND CROSSBARS...
LAS BARRAS DE PARADA EN LOS PUNTOS DE ESPERA DE LA PISTA...



CONSEJO REGULADOR DEL TRAFICO AEREO DE ESPAÑA // REGULATORY BOARD OF AIR TRAFFIC CONTROL OF SPAIN

Table with 2 columns: CLAVE // LEGEND and descriptions of symbols like ZONA NO VUELO DESDE TIW, BARRAS DE NO INSTRUCCION, etc.

Table with 2 columns: CLAVE LUGARES CRITICOS // HOT SPOT IDENTIFICATION and descriptions of symbols like RWY, TIW, ENTRADA/SALIDA DE RWY, etc.

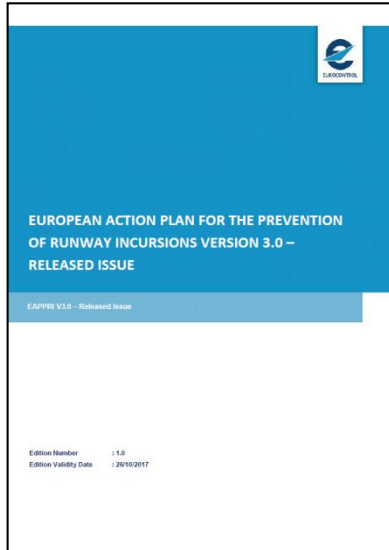


Runway Safety



Runway Safety

European Action Plan for the Prevention of Runway Incursions



RECOMMENDATIONS

- 1.1 GENERAL PRINCIPLES
- 1.2 AERODROME OPERATOR ISSUES
- 1.3 COMMUNICATIONS
- 1.4 AIRCRAFT OPERATOR
- 1.5 AIR NAVIGATION SERVICE PROVIDER ISSUES
- 1.6 DATA COLLECTION AND LESSON SHARING
- 1.7 REGULATORY ISSUES
- 1.8 AERONAUTICAL INFORMATION MANAGEMENT
- 1.9 TECHNOLOGY
- 1.10 CIVIL MILITARY
- 2.0 FUTURE WORK

APPENDICES

- A COMMUNICATIONS GUIDANCE
- B GUIDELINES FOR LOCAL RUNWAY SAFETY TEAMS
- C AIRSIDE VEHICLE DRIVER TRAINING
- D AIRCRAFT OPERATOR /FLIGHT CREW BEST PRACTICES
- E AIR NAVIGATION SERVICE PROVIDERS/AIR TRAFFIC CONTROLLER BEST PRACTICES
- F OVERSIGHT ACTIVITIES FOR REGULATORS
- G SAFETY MANAGEMENT SYSTEM
- H AERONAUTICAL INFORMATION MANAGEMENT GUIDANCE
- I GUIDANCE FOR JOINT USE AERODROMES — CIVIL-MILITARY
- J USE OF AERONAUTICAL GROUND LIGHTING THAT PROTECTS THE RUNWAY
- K AERODROMES DESIGN GUIDANCE FOR THE PREVENTION OF RUNWAY INCURSIONS
- L MAINTENANCE, INSPECTIONS, WORKS IN PROGRESS/TEMPORARY MODIFICATIONS OF THE AERODROME
- M TECHNOLOGY
- N INTERPRETING EVENTS – RUNWAY INCURSION?
- O BIBLIOGRAPHY

1.2 AERODROME OPERATOR ISSUES

#	RECOMMENDATION	ACTION	GUIDANCE
1.2.1	Verify the implementation of ICAO Annex 14 provisions and implement maintenance programmes relating to Runway operations e.g. markings, lighting, signage. Ensure that signs and markings are clearly visible, adequate and unambiguous in all relevant conditions.	Aerodrome operator.	APPENDIX L APPENDIX J
1.2.2	Works in progress - Ensure that information about temporary work areas is adequately disseminated and that temporary signs and markings are clearly visible, adequate and unambiguous in all relevant conditions.	Aerodrome operator.	APPENDIX L APPENDIX J
1.2.3	Implement safety management systems in accordance with ICAO provisions.	Aerodrome operator.	APPENDIX G
1.2.4	Ensure a continued focus on runway safety in internal audit activities.	Aerodrome operator.	APPENDIX F
1.2.5	Introduce a formal Driver training and assessment programme, or where already in place review against driver training guidelines.	Aerodrome operator.	APPENDIX C
1.2.6	Introduce formal communications training and assessment for Drivers and other personnel who operate on or near the runway.	Aerodrome operator.	APPENDIX A APPENDIX C
1.2.7	Implement the ICAO standard naming convention for the manoeuvring area to eliminate ground navigation error and communication confusion.	Aerodrome operator (lead), Air Navigation Service Provider (support).	APPENDIX K
1.2.8	Ensure all vehicles on the manoeuvring area are in radio contact with the appropriate Air Traffic Control service, i.e. ground and/or the tower either directly or through an escort, including Emergency services.	Regulator, Aerodrome Operator, Air Navigation Service Provider.	APPENDIX A APPENDIX C
1.2.9	Ensure all Manoeuvring Area Vehicle Drivers are briefed at the start of a shift and that situational awareness is maintained throughout the shift.	Aerodrome Operator.	APPENDIX C

Annex 14
Compliance

Works in Progress

SMS

Internal audits

Drivers Training

TWYs Naming

Radio Vehicles-TWR

Drivers Briefing

1.2.10	Enable the tracking of vehicle movements on the manoeuvring area when possible.	Aerodrome Operator, Air Navigation Service P	Tracking Vehicles (MLAT, SSR)
1.2.11	Ensure that a policy and robust procedure for Runway Inspections are in place. Example - Identify any potential safety benefits of carrying out runway inspections in the opposite direction to runway movements and if appropriate adopt the procedure.	Aerodrome Operator, Air Navigation Service Provider, Regulator.	RWY Inspection Procedures
1.2.12	New aerodrome infrastructure and changes to existing infrastructure should be designed to prevent runway incursions.	Aerodr	Change Management on RWY safety
1.2.13	The aerodrome operator should ensure that a procedure exists and Manoeuvring Area Vehicle Drivers are trained for those occasions where they become uncertain of their position on the manoeuvring area.	Aerodrome Opera	Unknown location procedures
1.2.14	Avoid infringing lines of sight from the air traffic control tower. Assess visibility restrictions from the tower, which have a potential impact on the ability to see the manoeuvring area. Recommend improvement to restricted lines of sight and develop appropriate mitigation procedures. Disseminate this information as appropriate.	Air Navigation Service Provider, Aerodrome Operator.	Lines of sight form TWR
1.2.15	Regularly review the operational use of aeronautical ground lighting e.g. stop bars, to ensure a robust policy to protect the runway.	Aerodrome Operator, Air Navigation Service Provider, Regulator.	24 hours stop bars
1.2.16	Manoeuvring Area Vehicle Drivers shall not cross illuminated red lights, e.g.. stop bars, when entering or crossing a runway, unless contingency procedures are in force, i.e. to cover cases where the stop bars or controls are unserviceable. The period that a stop bar is out of service must be time limited.	Ae	Vehículos to not proceed over red lights

Runway Safety

Safety Case
Charlotte Douglas 2013
Runway Incursion

Runway Safety

www.eu-sea-app.org
easa.europa.eu/connect



Your safety is our mission.

An Agency of the European Union 