

The ICAO Runway Safety Programme & the GRSAP

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3 December 2019

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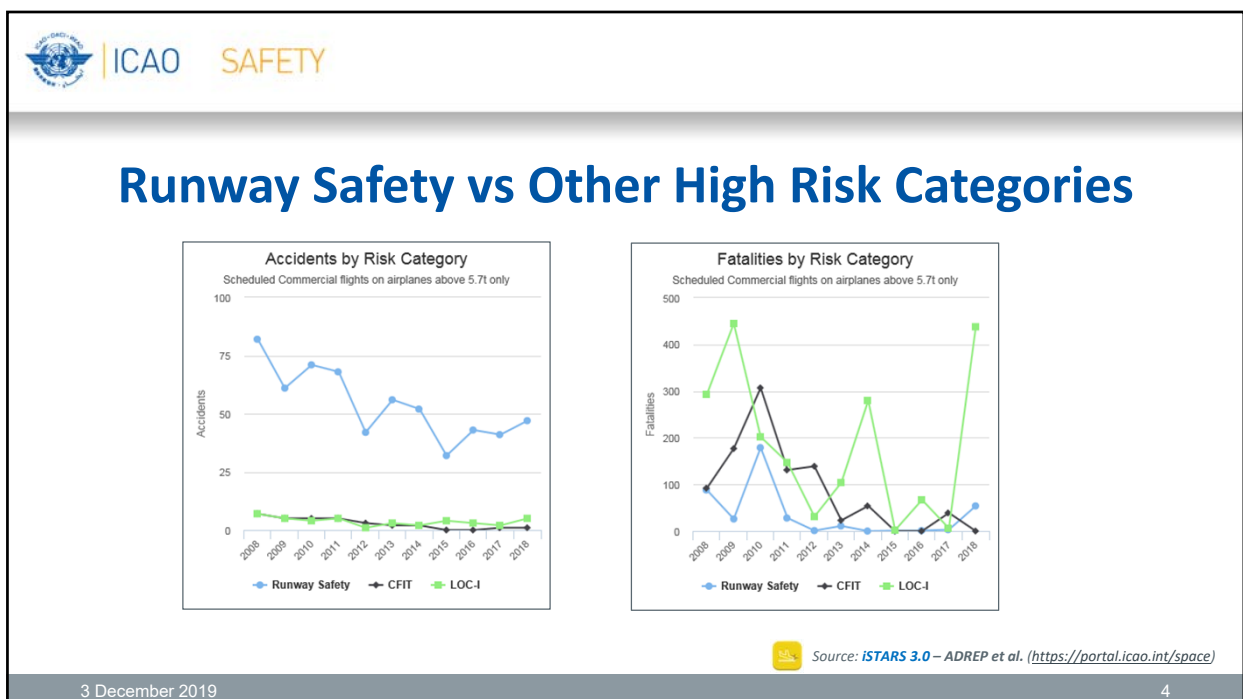
Overview

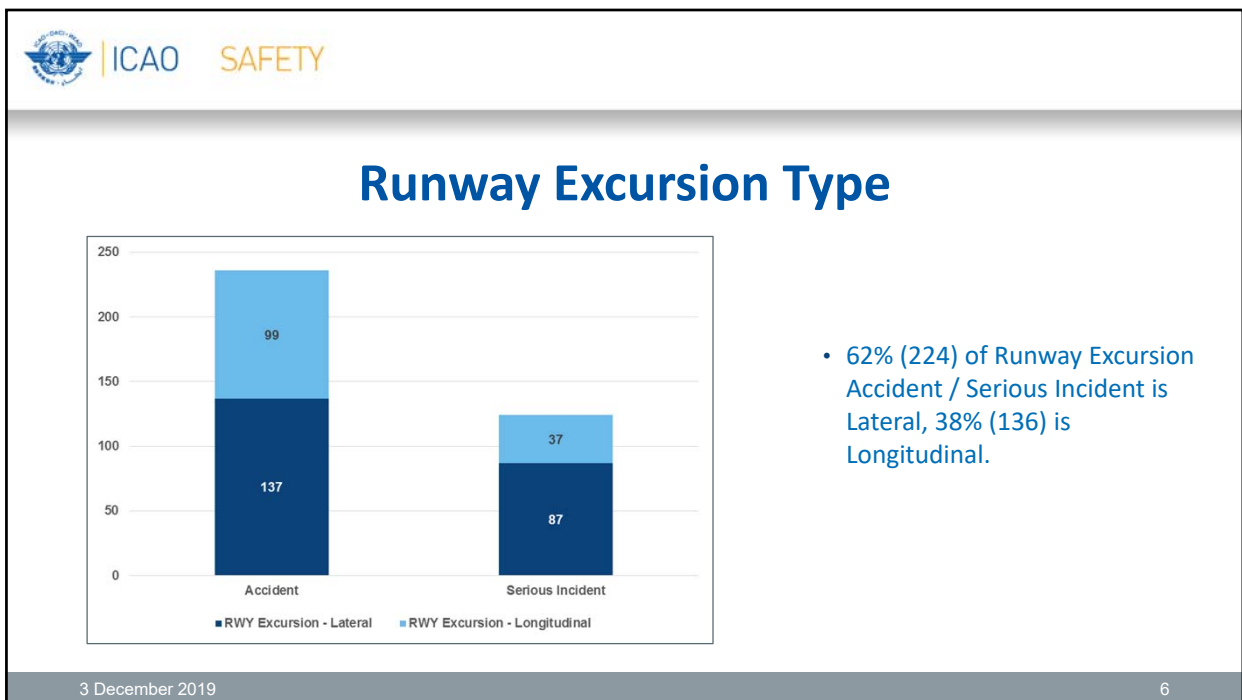
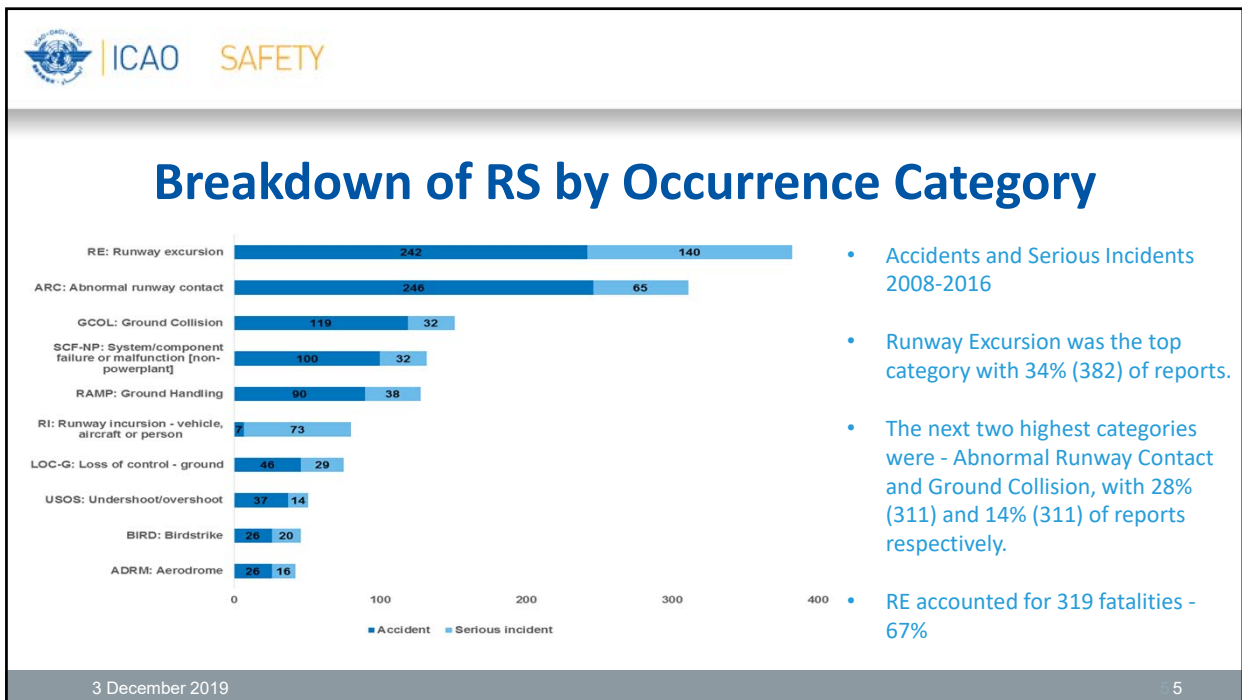
- ICAO's Runway Safety Programme
- Runway Safety Statistics
- The Global Runway Safety Action Plan (GRSAP)
- RE/RI Contributing Factors
- Recommended Actions
- Available guidance



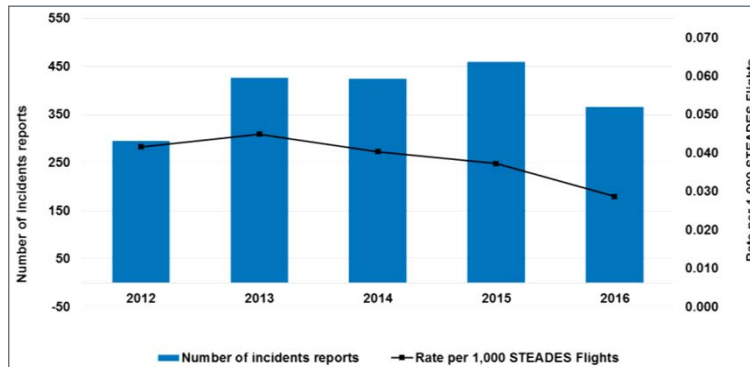
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Runway Incursion Incidents





Source: IATA STEADES

- On average there is 1 RI incident reported every day, with a total of 1,971 reports from 2012-2016.
- Although few RI accidents the number of incidents is very high
- High fatality risk

Global Runway Safety Action Plan (GRSAP)

- The GRSAP provides recommended actions for all runway safety stakeholders, with the aim of reducing the global rate of runway excursions and runway incursions.
- Launched at the Second GRSS in November 2017








RE Contributing Factors

- Analysis based on information provided by Runway Safety Programme partners e.g. IATA annual safety report
- Key Contributing factors:
 - Meteorology/Contaminated runway
 - Failure to go-around after destabilized approach
 - Long landings

Contributing Factor	Description / Examples
Threats – An event or error that occurs outside the influence of the flight crew, but which requires crew attention and management if safety margins are to be maintained.	
Mismanaged threat: A threat that is linked to or induces a flight crew error.	
Meteorology	Includes thunderstorms, poor visibility/Instrument Meteorological Conditions (IMC), wind, wind shear, gusty wind and icing conditions
Airport Facilities - Contaminated Runway/Taxiway	Poor braking action as a result of contaminated runways/taxiways
Flight Crew Errors (Active Human Performance) – An observed flight crew deviation from organizational expectations or crew intentions.	
Mismanaged error: An error that is linked to or induces additional error or an undesired aircraft state.	
Failure to go-around after Destabilization during Approach	Flight crew does not execute a go-around after stabilization requirements are not met.
Manual Handling/Flight Controls	<ul style="list-style-type: none"> • Hand flying vertical, lateral, or speed deviations • Approach deviations by choice (e.g., flying below the glide slope) • Missed runway/taxiway, failure to hold short, taxi above speed limit • Incorrect flaps, speed brake, autobrake, thrust reverser or power settings
Standard Operating Procedures (SOP) Adherence	<ul style="list-style-type: none"> • Intentional or unintentional failure to cross-verify (automation) inputs • Intentional or unintentional failure to follow SOPs • Pilot flying makes own automation changes • Sterile cockpit violations
Undesired Aircraft States (UAS) – A flight-crew-induced aircraft state that clearly reduces safety margins; a safety-compromising situation that results from ineffective error management. An undesired aircraft state is recoverable.	
Mismanaged UAS: A UAS that is linked to or induces additional flight crew errors.	
Unstable Approach	Vertical, lateral or speed deviations in the portion of flight close to landing. <i>Note: This definition includes the portion immediately prior to touchdown and in this respect the definition might differ from other organizations. However, accident analysis gives evidence that a destabilization just prior to touchdown has contributed to accidents in the past</i>
Long/floats/bounced/firm/off-center/abbed landing	

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RI Contributing Factors

- Key Contributing factors:
 - Inadequate training
 - Aerodrome design
 - Meteorology
 - Communication errors

Contributing Factor	Description / Examples
Latent Conditions – Conditions present in the system before the accident and triggered by various possible factors.	
Training	Includes inadequate training for air traffic controllers, pilots or airside vehicle drivers
Procedures	Inadequate, inappropriate or absent procedures
Regulatory Oversight	Inadequate regulatory oversight by the State
Safety Management	Absent or ineffective safety management
Aerodrome Design	Complex or inadequate aerodrome design such as the complexity of the layout of roads and taxiways adjacent to the runway, intersecting/crossing runways, insufficient spacing between parallel runways, departure taxiways that fail to intersect active runways at right angles, and no endstop perimeter taxiways to avoid crossings, inadequate or poorly maintained visual aids (including signs, marking and lighting), poorly maintained runways (friction etc.)
Workplace Conditions	Covers issues such as the sterile cockpit environment when pilots are taxiing. For air traffic controllers human-machine interface and ergonomics affecting their ability to maintain, as far as practicable, a continuous 'heads up' visual scan of the aerodrome with unimpeded visual lines of sight or the use of surveillance systems such as A-SMGCS.
Threats – An event or error that occurs outside the influence of the flight crew, but which requires crew attention and management if safety margins are to be maintained.	
Meteorology	Includes poor visibility, rain, snow and icing conditions (that may obscure visual aids)
Active Human Performance – Human Performance Limitations (directly related to OSF and CC) including false perceptions; memory lapses; and reduced situational awareness.	
Pilot Factors	Includes inadvertent non-compliance with ATC instructions, in particular take-off or landing without clearance
Airside Vehicle Driver Factors	May include not obtaining a clearance or non-compliance with ATC instructions
Air Traffic Controller Factors	May include clearing aircraft to land/depart on an occupied runway, not monitoring aircraft position on approach to intersecting runways and clearing aircraft to cross runway with aircraft on departure/landing roll
Communication Errors	A breakdown in communications between air traffic controllers and pilots or airside vehicle drivers often related to the read-back/hear-back procedure

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Recommended Actions – State CAAs and Industry

- Collect and analyze data** and develop/implement **action plans**
- Participate** in Aerodrome **RST activities**
- Implement** Safety Management
- Ensure** runway safety training is part of **initial and recurrent training** for relevant operational staff
- The GRSAP** Includes recommendations for each stakeholder and each Runway Safety priority

Stakeholder	State Civil Aviation Authorities, Aircraft Operators, Air Navigation Service Providers, Aerodrome Operators, Aircraft Manufacturers	
Runway Safety Priority	Runway Excursions, Runway Incursions	
Actions	Action	Related Contributing Factor (if applicable)
	1. Ensure all infrastructure, radio telephony phraseology, practices and procedures relating to runway operations are in compliance with ICAO, Regional and State provisions.	Latent Conditions Regulatory Oversight
	2. Ensure that information is collected on all runway incidents/accidents and perform analysis and risk assessments to identify risks and contributing factors. These activities to be reviewed and conducted on a recurring basis to reassess risks.	
	3. Develop and implement action plans to mitigate identified risks and monitor the implementation/effectiveness of those action plans.	
	4. Actively participate in aerodrome local runway safety team (RST) activities. Note: Aerodrome Operators shall establish and lead RSTs, not applicable to Aircraft Manufacturers.	
	5. Ensure that there is in place a mechanism of protection of information and non-punitive environment inside RSTs.	
	6. Implement the elements of Safety Management and ensure the implementation of Safety Management Systems is in accordance with the applicable ICAO provisions.	Latent Conditions Safety Management
	7. Make use of available resources such as the ICAO Safety Management Implementation Website and its safety management tools.	
	8. Ensure appropriate Safety Management training of staff and make use of available training such as the ICAO Safety Management Training Programme (SMTTP).	Latent Conditions Training
	9. Ensure runway safety training (e.g. runway excursion/incursion prevention) is part of initial and recurrent/recurrent training regimes for all relevant operational staff. Joint training sessions between different stakeholders groups (e.g. pilots and controllers) should be encouraged.	
References	ICAO Annex 14 Vol 1 - Aerodromes ICAO Annex 19 - Safety Management ICAO PANS-Aerodromes (Doc 9981) ICAO Safety Management Manual (Doc 9859) ICAO Runway Safety Team Handbook Second Edition	

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Key Runway Safety Guidance

- ICAO GRSAP
- ICAO PANS-Aerodrome (Doc 9981)
- ICAO RST Handbook
- ACI Runway Safety Handbook
- IATA/IFALPA/IFATCA/CANSO Unstable Approaches Best Practices
- FAA National Runway Safety Plan
- European Action Plan for the Prevention of Runway Excursions (EAPPRE)
- European Action Plan for the Prevention of Runway Incursions (EAPPRI)
- FSF Go-Around Decision-Making

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iSTARS
Integrated Safety Trends Analysis and Reporting System

Useful apps:

- ✓ ADREP et al.
- ✓ Airport Briefings
- ✓ State Safety Briefing 2018
- ✓ Regional Safety Briefing
- ✓ SSP Gap Analysis

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Access to iSTARS

- Free of charge
- Available for any category of user:
 - Civil Aviation Authorities
 - Government ministries
 - Airlines
 - Service Providers

iSTARS 3.0 – <https://portal.icao.int/space>

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RUNWAY SAFETY
Working together to resolve
a complex problem

For more information on
ICAO's Runway Safety
Programme please visit:
[www.icao.int/safety/runway
safety](http://www.icao.int/safety/runway-safety)
