

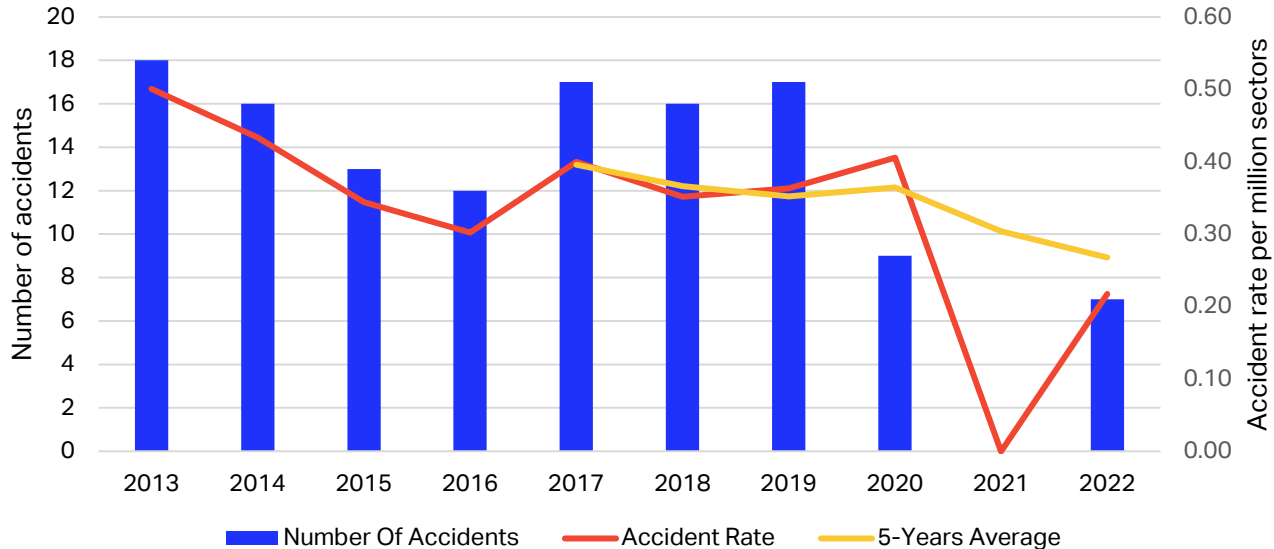
# Runway Excursion Accidents - Detailed Implementation Plan (RE DIP)

Measures to reduce runway  
excursions



# Runway Excursions: From 2013 - 2022

Runway Excursions Count and Rates



Source: IATA Safety Report - 2022

125 Runway Excursion (RE) accidents happened from 2013-2022

Zero RE accidents in 2021 vs. 7 RE accidents in FY 2022

The 2022 RE accident rate of 0.22 was below the 5-year (2018-2022) RE accident average rate of 0.27 per million sectors

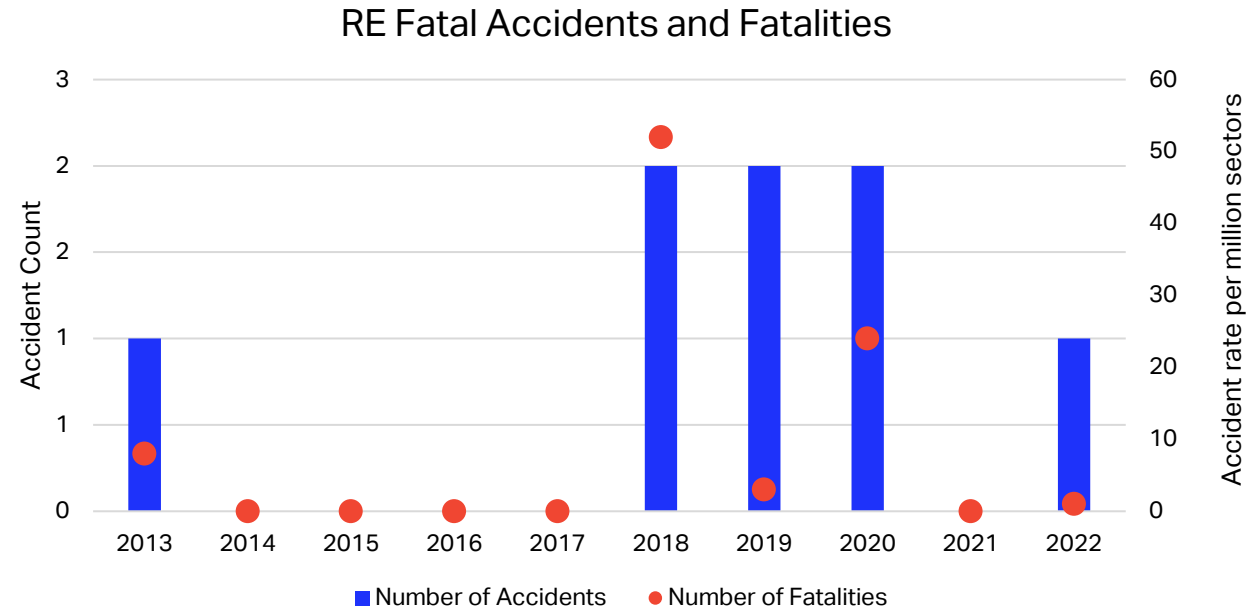
98 operated on passenger flights and 27 on cargo flights

# Fatal Runway Excursion Accidents

Out of the 125 RE accidents, 8 were fatal, resulting in 88 fatalities

The 8 fatal accidents were operated on passenger flights. Two accidents happened in 2018, 2019 and 2020.

There was one fatal RE accident reported in 2022, causing one fatality.



Source: IATA Safety Report - 2022

# Runway Excursion Detailed Implementation Plan

- In 2021, the [Global Action Plan for the Prevention of Runway Excursions \(GAPPRE\)](#) was published. This is a guide with over 100 recommendations for preventing runway excursions
- Pilots can incorporate practices into their flying routine to prevent runway excursions, including but not limited to:
  - Comply with procedures and regulations
  - Familiarize with the stabilized approach criteria
  - Perform proper calculations in accordance with manufactures' limitations, especially for taking off and landing with a tailwind
  - Know you can always execute a go-around when unstable.
- In 2017, the [Global Runway Safety Action Plan \(GRSAP\)](#) was published. The GRSAP provides recommended actions for all runway safety stakeholders, with the aim of reducing the global rate of runway excursions and runway incursions.
  - An updated version will be published soon.

# Runway Excursion Detailed Implementation Plan

## From the data presented, it shows that

- Runway Excursion accidents represent the most frequent accident category worldwide.
- Inappropriate flight control input
- Operating in adverse weather conditions
- Inaccurate weather information may contribute to unstable approaches and increase the risk of RE
- Inefficient crew resource management
- Inadequate regulatory oversight
- Absent or deficient Safety Management System
- No go-around
- Landings following an unstable approach or a long landing beyond the touchdown zone

## Objective / Scope

- IATA developed a Detailed Implementation Plan (DIP) for reducing the risk of RE events. This DIP
  - Facilitates the execution of the proposed recommendations
  - Identifies and communicates with the concerned resources for the execution of the plan
  - Reports progress against the plan
  - Measures the implementation and the effectiveness of the plan

# Runway Excursion Detailed Implementation Plan

## What is required from Operators' perspective:



### Safety Management System

- Dedication and commitment from leadership and everyone
- Establishing a positive safety culture
- Identification of runway excursion risks for monitoring
- Increase awareness and visibility on the implications of deviating from established procedures
- Consult with and promote the following documents
  - [IATA / CANSO / IFATCA / IFALPA in the Unstable Approaches: Risk Mitigation Policies, Procedures, and Best Practices – 3<sup>rd</sup> edition.](#)
  - [Examining Unstable Approaches \(UAs\) – Risk Mitigating Efforts \(UA – Safety Analysis Project Team\)](#)
  - [Global Action Plan for the Prevention of Runway Excursions \(GAPPRE\)](#)
  - [Global Runway Safety Action Plan \(GRSAP\)](#)

### Training

- Training Departments should implement the consolidated threat and error management (TEM) principles where the pilot competencies represent the flight crew countermeasures
- Within the scope of TEM, flight crew should aim to gain complete awareness of threats to their operations.
- Operators to empower and train flight crew to advise Air Traffic Control when unable to comply with an instruction or a clearance that would decrease safety margins
- Operators to ensure that the TEM principles are reinforced during training, taking advantage of methods such as competency-based training and assessment (CBTA) including Evidence-Based Training (EBT).
- Consult with and promote the following documents
  - [IATA / CANSO / IFATCA / IFALPA in the Unstable Approaches: Risk Mitigation Policies, Procedures, and Best Practices – 3<sup>rd</sup> edition.](#)
  - [Examining Unstable Approaches \(UAs\) – Risk Mitigating Efforts \(UA – Safety Analysis Project Team\)](#)
  - [Global Action Plan for the Prevention of Runway Excursions \(GAPPRE\)](#)
  - [Global Runway Safety Action Plan \(GRSAP\)](#)

# Runway Excursion Detailed Implementation Plan

## What is required from Operators' perspective:

### Flight Operations

- Operators should clearly define stabilized approach criteria, in accordance with regulations requirements and manufacturers guidance
- Consult with and promote the following documents
  - [IATA / CANSO / IFATCA / IFALPA in the Unstable Approaches: Risk Mitigation Policies, Procedures, and Best Practices – 3rd edition.](#)
  - [Examining Unstable Approaches \(UAs\) – Risk Mitigating Efforts \(UA – Safety Analysis Project Team\)](#)
  - [Global Action Plan for the Prevention of Runway Excursions \(GAPPRE\)](#)
  - [Global Runway Safety Action Plan \(GRSAP\)](#)

### Technical Operations (Engineering & Maintenance)

- Adopt methods and technologies that aid in minimizing runway excursions
- Consult with and promote the following documents
  - [IATA / CANSO / IFATCA / IFALPA in the Unstable Approaches: Risk Mitigation Policies, Procedures, and Best Practices – 3rd edition.](#)
  - [Examining Unstable Approaches \(UAs\) – Risk Mitigating Efforts \(UA – Safety Analysis Project Team\)](#)
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  - [Global Runway Safety Action Plan \(GRSAP\)](#)

# Runway Excursions Detailed Implementation Plan

## What is required from Manufacturers' perspective:

- Promote the adoption of original equipment manufacturers' (OEMs') standard operating procedures (SOPs) and create a transparent feedback system for continuous improvement of the OEMs SOPs.
- Consult with and promote the following documents
  - [IATA / CANSO / IFATCA / IFALPA in the Unstable Approaches: Risk Mitigation Policies, Procedures, and Best Practices – 3rd edition.](#)
  - [Examining Unstable Approaches \(UAs\) – Risk Mitigating Efforts \(UA – Safety Analysis Project Team\)](#)
  - [Global Action Plan for the Prevention of Runway Excursions \(GAPPRE\)](#)
  - [Global Runway Safety Action Plan \(GRSAP\)](#)



# Runway Excursions Detailed Implementation Plan



What is  
required  
from  
Pilots:

- Adhere to the SOPs
- Ensure you are familiar with the criteria for stabilized approaches for your operation
- Know you can always go around if you are unstable
- Applicability of Threat and Error Management during take off and landing (briefing, debriefing, etc.)

# Runway Excursions Detailed Implementation Plan

## What is required from Pilots:



### Importance of the briefing

- Through thorough briefing, the flight crew would be able to know
  - the main features of the departure route, descent, approach and missed approach;
  - terrain and hazard awareness.

### Briefing to include:

- Briefing should include
  - significant changes in wind direction and/or runway surface conditions (e.g., due to incoming or deteriorating weather situations).
  - possible runway/taxiway and intersections, SIDs or approach changes
- For the approach briefing, it should include
  - Descent profile management and energy management
  - Terrain awareness and approach hazard awareness
  - Elements of unstable approach and missed approach procedures
  - MSAs and applicable minimum (visibility, runway visual range, ceiling)
  - Go-around altitude

# Runway Excursions Detailed Implementation Plan

## What is required from Pilots:



# Briefing

In order to conduct a safe go-around, advance preparation and a comprehensive crew briefing are essential components of risk mitigation. Operators should encourage flight crews to implement a Threat and Error Management (TEM) arrival briefing, that includes aspects regarding the prescribed missed approach procedure and any threats, such as at airports surrounded by high terrain (with higher required climb gradients) aircraft performance in case of a one-engine inoperative situation or a balked landing

# Recommendations

1.

Active contribution and participation in safety information sharing programs, and regional and local safety groups is essential.

2.

Operators should clearly define stabilized approach, landing and go-around polices in their operations manual, in accordance with regulations requirements and manufacturers guidance

3.

Consult with the IATA / IFALPA / CANSO / IFATCA Risk Mitigation Policies, Procedures and Best Practices (GM) – Reference Unstable Approaches Project Analysis Report

4.

Training:

A) Operators should implement the consolidated threat and error management (TEM) principles where the pilot competencies represent the flight crew countermeasures

B) Operators should emphasize the proper use of stopping devices, especially when runway conditions are unfavourable

5.

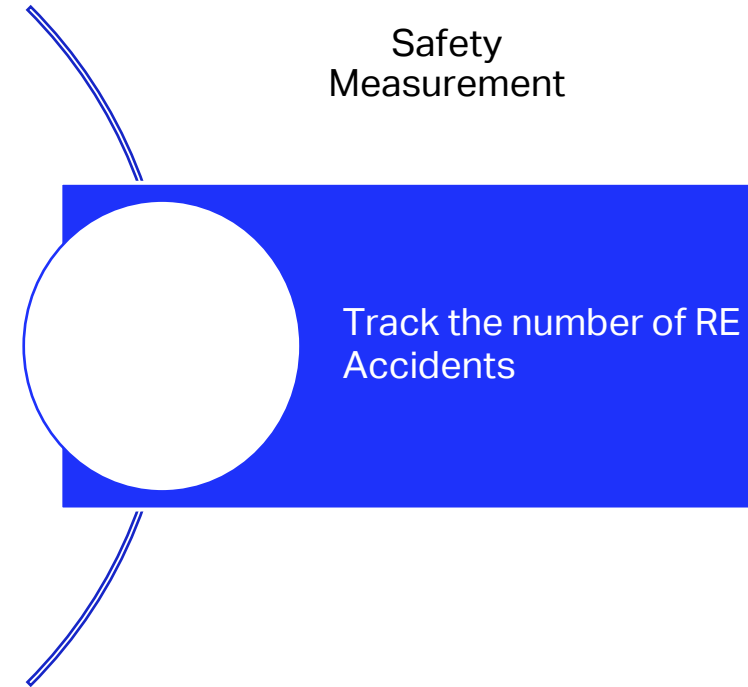
Empower and train flight crew to advise Air Traffic Control when unable to comply with an instruction or a clearance that would decrease safety margins.

6.

Industry to incorporate appropriate methods and technologies that aid in minimizing runway excursions

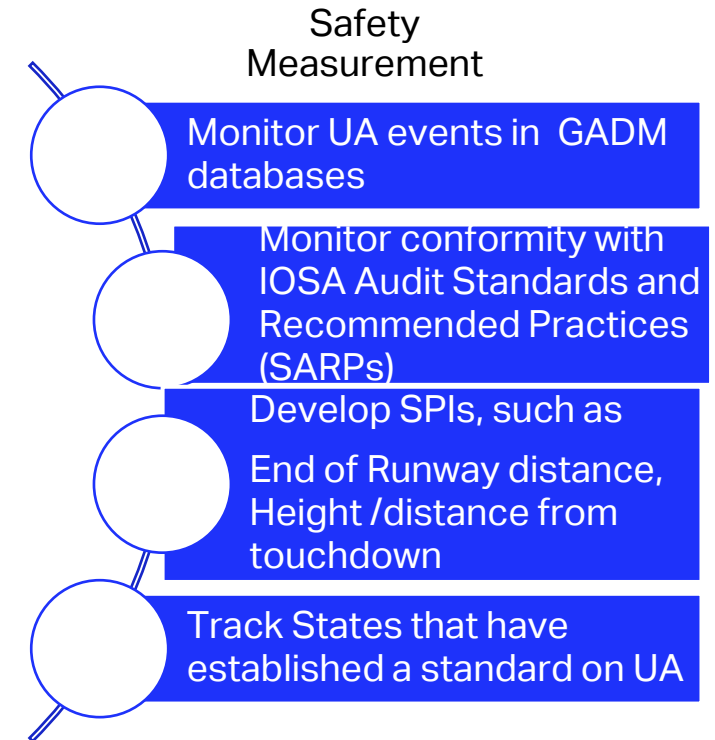
# 1: Active contribution and participation in safety information sharing programs, and regional and local safety groups is essential

- States to adopt safety information protection regulations as recommended by ICAO
- Establish and implement collaborative safety teams (CST) for safety enhancements
- Operators to actively participate in industry safety information sharing programs
- Local and regional safety groups are encouraged to share and use information to identify emerging risks and mitigate them
- Foster the participation in safety culture measuring surveys like [I-ASC](#)
- Air Navigation Service Providers (ANSPs) to implement procedural changes to reduce the rate of unstable approaches at runways identified as higher risk



## 2: Operators to define stable approach, landing & go-around polices, in accordance with regulations requirements & manufacturers guidance

- Develop and adopt standard for Classification of Unstable Approach ("high-risk")
- Operators to implement, as part of the accident prevention and flight safety program, a comprehensive Flight Data Monitoring (FDM) program that includes and monitors aircraft parameters. This to be implemented, as appropriate, in accordance with Commercial Aviation Safety Team/ICAO Common Taxonomy Team (CICCTT)
- Operators to adopt in their SOPs, OEMs' standards
- Operators and OEMs to create a transparent, collaborative feedback system for continuous development and enhancement of the OEMs SOPs
- Operators to participate in such feedback system



### 3: Consult with the IATA / IFALPA / CANSO / IFATCA Risk Mitigation Policies, Procedures and Best Practices (GM) – Reference Unstable Approaches Project Analysis Report

Operators should consult and implement, as appropriate, recommendations mentioned in:

- [IATA / CANSO / IFATCA / IFALPA in the Unstable Approaches: Risk Mitigation Policies, Procedures, and Best Practices – 3rd edition.](#)
- [Examining Unstable Approaches \(UAs\) – Risk Mitigating Efforts \(UA – Safety Analysis Project Team\)](#)
- [Global Action Plan for the Prevention of Runway Excursions \(GAPPRE\)](#)
- [Global Runway Safety Action Plan \(GRSAP\)](#)



# 4: Training : Operators to

- Implement the consolidated TEM principles where the pilot competencies represent flight crew countermeasures
- Emphasize the proper use of stopping devices, especially when runway conditions are unfavourable

Operators to implement and/or define SOPs and training that :

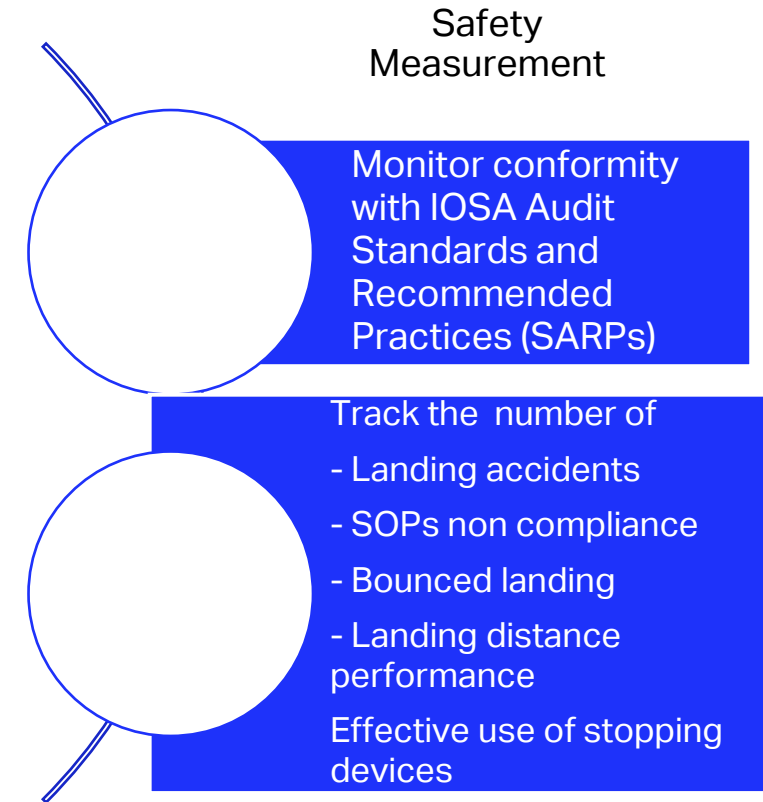
- includes the proper use of stopping devices, especially when runway conditions are unfavourable, and discourage practices like disengaging the autobrake early, to roll down the runway, and then applying 'strong' braking application in the last third of the runway.
- addresses recovering techniques for bounced landings which are specific to each aircraft type, following manufacturing guidance
- addresses all scenarios that may require rejected take-off
- includes landing techniques that are aligned with Global Reporting Format (GRF) and manufacturer's guidance for all runway states and environmental conditions
- urges flight crew to execute a go-around at any point during the approach, when necessary
- allows flight crew to conduct TEM principles during the departure as well as descent and approach briefings
- includes the roles and responsibilities for Pilot Flying (PF) and Pilot Monitoring (PM), including interventions by PM with associated procedures and guidance to ensure, when necessary, flight crew to discontinue an approach and execute a GA in accordance with criteria established by the Operator
- mandates an assessment of the arrival landing performance (distinct from the conditions forecast prior to departure), that includes landing distance at the time of arrival adding an additional safety margin.
- allows the use of appropriate level of automation during the approach, landing and go- around. Likewise, manual flying during operations in good weather



# 4: Training : Operators to

- Implement the consolidated TEM principles where the pilot competencies represent flight crew countermeasures
- Emphasize the proper use of stopping devices, especially when runway conditions are unfavourable

- Promote the use of root-cause analysis of SOPs non-compliance
- Work with all stakeholders to encourage operators to have their initial and recurrent training programs to include, but not be limited to, the following
  - effective determination of the take-off and landing performance calculation and emphasis on the resulting runway safety margin
  - assessment of non-normal situations not covered by SOPs
  - runway excursion contributing factors and risk mitigation preparing for a go-around in the event of deteriorations of weather conditions
  - planning and conducting approaches with appropriate contingency plans
  - effective usage of Global Reporting Format (GRF)
  - Proper techniques for stabilized approach, flare, touchdown and stopping devices



# 4: Training : Operators to

- Implement the consolidated TEM principles where the pilot competencies represent flight crew countermeasures
- Emphasize the proper use of stopping devices, especially when runway conditions are unfavourable

Operators' training programs should include, but not be limited to, the following

- scenarios based Training to develop pilots' competencies for effective threat and error management to prevent runway excursion (e.g., contaminated runway, last minute change of runway, deterioration of weather conditions...)
- manoeuvre training to specifically develop pilots flying, monitoring and intervention skills (e.g. bounce landing, take-off and landing with maximum cross wind, all engine go around at different stages of the approach, take over...)
- awareness of the impact of approach deviation from SOPs
- effective use of current and new technologies to determine landing distance in all weather
- a pre-departure and arrival briefings strategy that captures elements of TEM & mitigations

# 5. Empower and train flight crew to advise ATC when unable to comply with an instruction or a clearance that would decrease safety margins

Encourage operators to

- publish SOPs to allow flight crew to request a more favourable runway for take-off or landing, which may affect the safety of the flight and advise ATC the safety reasons.
- publish SOPs for flight crew not to conduct an approach or take off following a runway change until the appropriate set-up, planning, performance calculations, and re-briefing are completed.
- encourage pilots to report any risks or hazardous situations, as well as any experiences which could have resulted in an unstable approach or runway excursion and how this was successfully avoided, to their safety departments

Safety  
Measurement

SPIs to be developed to monitor

- Operational pressure
- Late runway changes
  - Late clearance
  - Rolling take offs
- Expedite vacating the runway

# 6. Industry to adopt methods and technologies that aid in minimizing runway excursions

- Promote the benefits of implementing runway excursions prevention methods and technologies, or outcome, such as End- Distance Signs, GRF, RESA, arrestor beds, grooved runways, etc...
- Support the understanding and use of technologies that aid minimizing runway excursions

Safety  
Measurement

Track the performance of airports and runway that have incorporated enhanced runway excursions prevention technologies

Next phase –  
Track the performance of aircraft fleet that have incorporated enhanced runway excursions prevention technologies

