ICAO MID-RGS WG/5

Runway Safety issues

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Today's Meeting

❑ **Focus Areas and Emerging Risks**

❑ **Top Contributory Factors**

❑ **Global Runway Safety Action Plan**

Identified Runway Safety issues

❑ Through a review and analysis of reactive and proactive safety information data and risk analysis, the ASRT identified runway excursions as a high risk focus area and runway incursions as an emerging risk.

❑ The ASRT also identified the top contributory factors for runway excursion and runway incursion occurrence categories
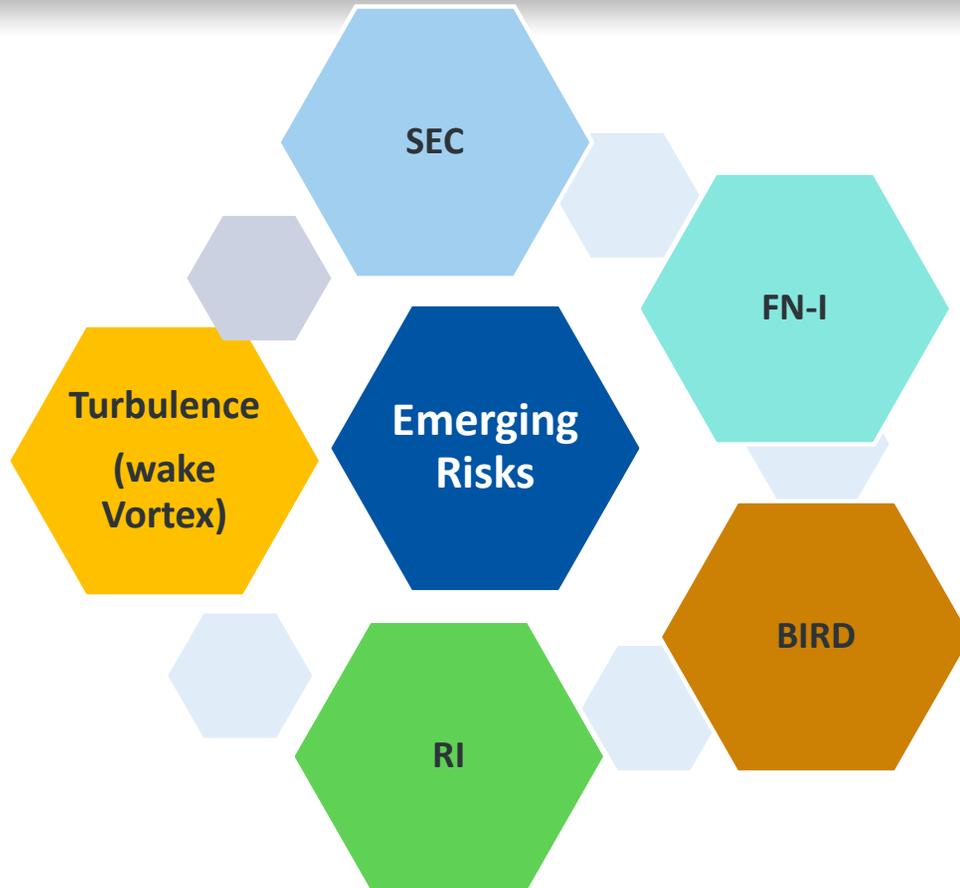
Focus Areas
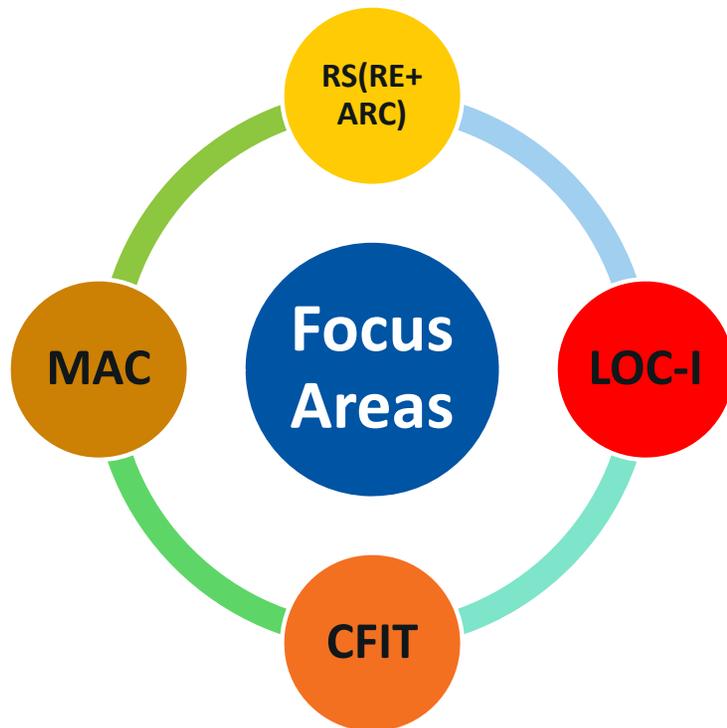
□ **Focus Areas:**

1. Runway Safety (RS); (RE and ARC during landing);

2. Loss of Control-In Flight (LOC-I);

3. Controlled Flight Into Terrain (CFIT); and

4. Mid-Air Collision (MAC

❑ **Emerging risks:**

1.   **Security Risks with impact on safety- SEC;**
2.   **Fire/smoke- (non-impact)- (FN-I);**
3.   **Runway incursion (RI);**
4.   **Birdstrike-(BIRD); and**
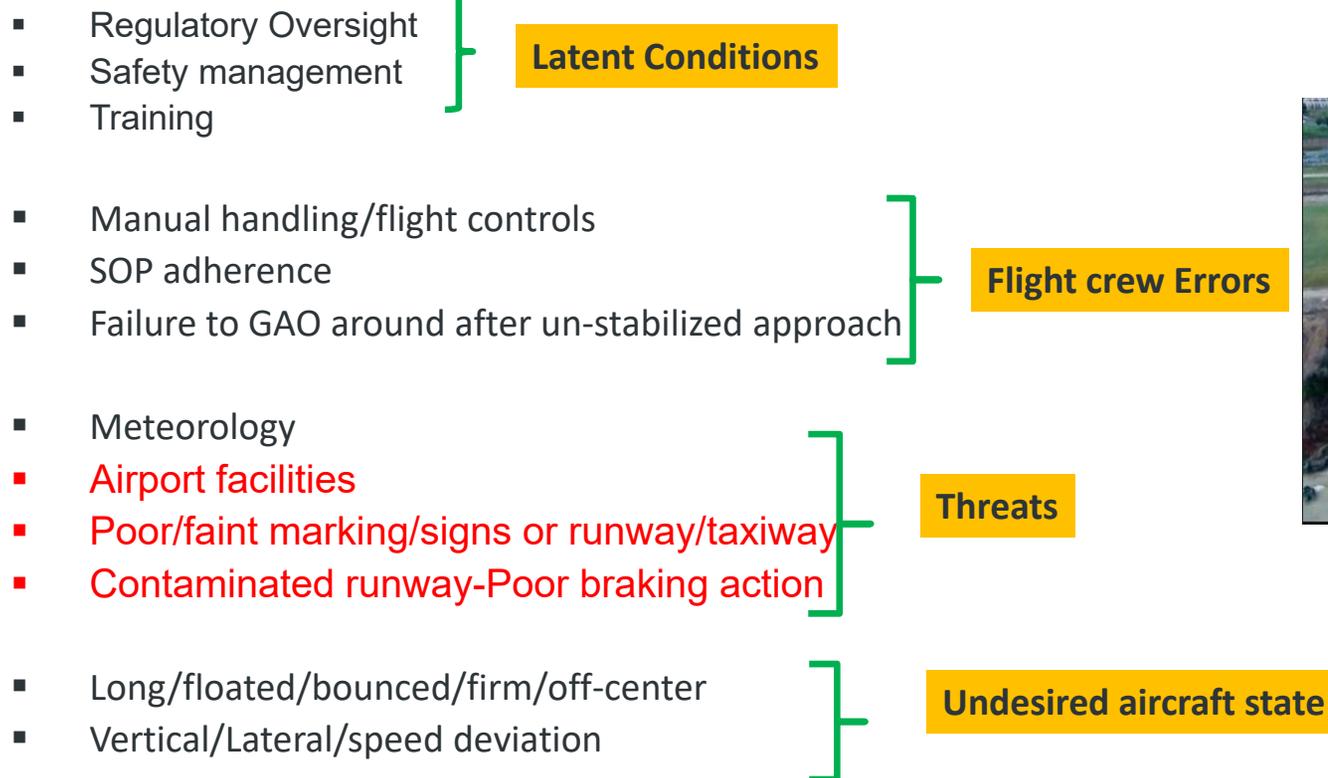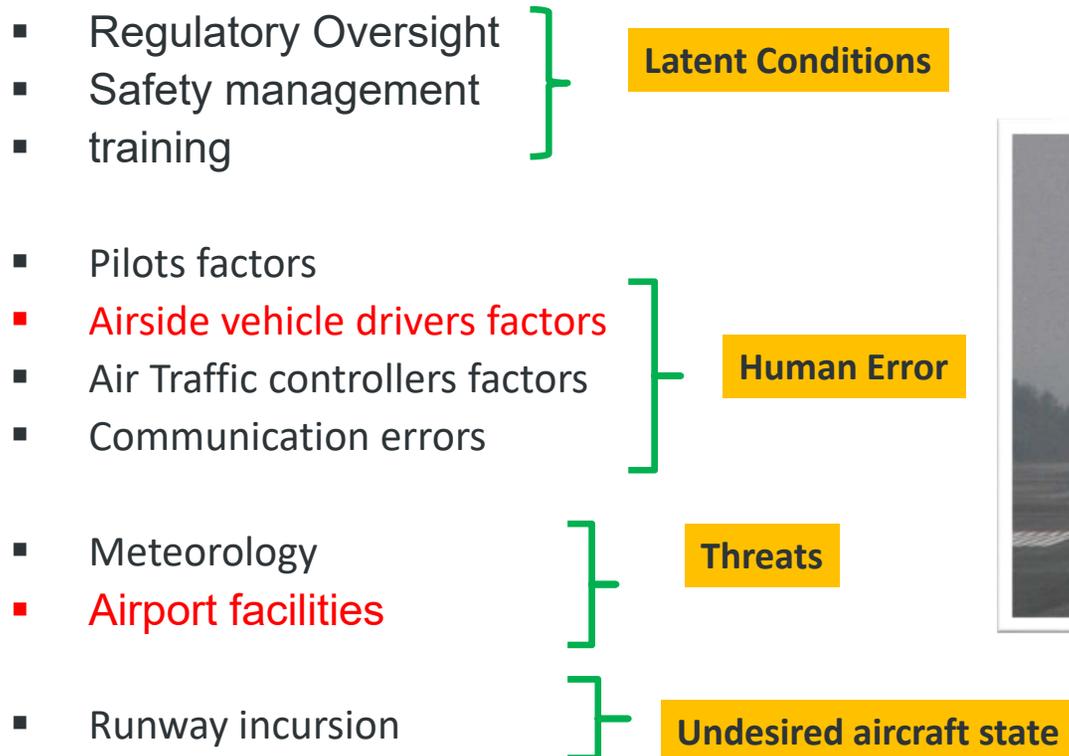5.   **Wake Vortex.**

Top Contributory Factors

Runway Excursion & Runway Incursion

Top Contributory Factors-Runway Excursion

- Regulatory Oversight
- Safety management
- Training

Latent Conditions

- Manual handling/flight controls
- SOP adherence
- Failure to GAO around after un-stabilized approach

Flight crew Errors

- Meteorology
- Airport facilities
- Poor/faint marking/signs or runway/taxiway
- Contaminated runway-Poor braking action

Threats

- Long/floated/bounced/firm/off-center
- Vertical/Lateral/speed deviation

Undesired aircraft state

Contributory Factors-Runway Incursion

- Regulatory Oversight
- Safety management
- training

Latent Conditions

- Pilots factors
- Airside vehicle drivers factors
- Air Traffic controllers factors
- Communication errors

Human Error

- Meteorology
- Airport facilities

Threats
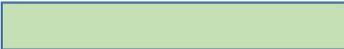
- Runway incursion

Undesired aircraft state

ICAO

Runway Safety Programme – Global Runway Safety Action Plan

❑ Since the first ICAO Global Runway Safety Symposium held in Montréal, Canada, in May 2011, ICAO and the Runway Safety Programme (RSP) Partners have been working together to minimize and mitigate the risks of runway incursions, runway excursions and other events linked to Runway Safety.

❑ In January 2017 the RSP Partners established a Runway Safety Action Plan Working Group (RSAP-WG) with the aim of reviewing the RSP achievements, objectives and priorities, and to develop a global runway safety action plan to be unveiled at the Second Global Runway Safety Symposium in Lima, Peru, 20-22 November 2017.

Runway Safety Recommended Actions

Global Runway Safety recommended actions identified by the RSAP-WG. These actions are intended to assist runway safety stakeholders in reducing their risks related to runway excursions

	Target	Color indicator
Short-Term	By 2020	
Medium-Term	By 2022	

Stakeholder	State Civil Aviation Authorities, Aircraft Operators, Air Navigation Service Providers, Aerodrome Operators and Aerospace Industry	
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.	
	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.	**Latent Conditions**
	4. actively participate in aerodrome local runway safety team (RST) activities. *Note: Aerodrome Operators shall establish and lead effective RSTs. Not applicable to Aerospace Industry.*	Regulatory Oversight
	5. Ensure that there is in place a mechanism of protection of information and non-punitive environment inside RSTs.	

Stakeholder	State Civil Aviation Authorities, Aircraft Operators, Air Navigation Service Providers, Aerodrome Operators and Aerospace Industry	
Runway Safety Priority	Runway Excursions, Runway Incursions	
Actions	6. Implement the elements of Safety Management and ensure the implementation of Safety Management Systems is in accordance with the applicable ICAO provisions. 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 (SMTP).	Latent Conditions Safety Management
	9. Ensure runway safety training (e.g. runway excursion/incursion prevention) is part of initial and recurrent/refresher training regimes for all relevant operational staff. Joint training sessions between different stakeholders groups (e.g. pilots and controllers) should be encouraged.	Latent Conditions Training

Recommended Actions- Runway Excursion

Stakeholder	Aerodrome Operators	
Runway Safety Priority	Runway Excursions	
Actions	**Action**	**Related Contributing Factor (if applicable)**
	1. All runway ends shall have a runway end safety area (RESA) as required by ICAO Annex 14 Vol I, or appropriate mitigations such as arresting systems for aircraft overruns.	**General Actions**
	2. Ensure that infrastructure restrictions such as changes to the published declared distances and runway length available are communicated in a timely and effective manner.	
	3. Establish effective airport runway safety teams (RSTs). 4. Ensure proper interface between the airport RST and the airport's SMS. 5. Conduct runway safety awareness campaigns that focus on local issues.	**Latent Conditions** Regulatory Oversight Safety Management

Stakeholder	Aerodrome Operators	
Runway Safety Priority	**Runway Excursions**	
Actions	**Action**	**Related Contributing Factor (if applicable)**
	6. Implement an enhanced global reporting format for assessing and reporting runway surface conditions as set out in the amendment to ICAO Annex 14 Vol I (applicable 2020) and ensure staff are appropriately trained on its use (ICAO training material to be published in 2018). 7. Ensure that runways, runway strips, manoeuvring areas and their associated visual aids such as signage, marking, lighting, etc. conform to ICAO Annex 14 Vol I specifications. In particular, paved runways shall be constructed or resurfaced as to provide such friction characteristics at or above the minimum friction level set by the State.	**Threats** Contaminated runway/taxiway Meteorology
	8. Make use of any available technologies, such as wind shear warning systems, where appropriate.	
	9. Ensure that runway conditions are reported in a timely manner.	

Stakeholder	Aerodrome Operator	
Runway Safety Priority	Runway Incursions	
Actions	**Action**	**Related Contributing Factor (if applicable)**
	1. Through the RST conduct safety risk assessments to evaluate risks posed by operational changes such as: a) the volume and density of aircraft and vehicle traffic increases significantly; b) operations in lower visibility conditions than currently permitted are planned; and c) the aerodrome layout has changed, i.e. new runways, taxiways, or aprons are brought into operation. And develop specific recommendations to reduce identified risks. 2. Conduct runway safety awareness campaigns that focus on local issues and mitigations.	**Latent conditions** Regulatory Oversight Safety Management

Stakeholder	Aerodrome Operator
Runway Safety Priority	Runway Incursions

| Actions | 3. Establish and implement a formal "maneuvering area driver training and assessment programme" and periodically review driver guidelines. Pay particular attention to the following areas:

 a) Improving requirements and training for driving in adverse weather conditions, particularly low visibility and driving at night.

 b) Reviewing Airside Vehicle Driver training programme against available best practices and guidelines.

 c) Ensuring that procedures for the control of all vehicles on the maneuvering area are developed and implemented in coordination with air traffic control. | **Active Human Performance** |
| | 4. Co-ordinate and ensure implementation of Low Visibility procedures. | **Threats**
 Meteorology |

Stakeholder	Aerodrome Operator
Runway Safety Priority	Runway Incursions

Actions	5. Through the RST identify local runway incursion "Hot Spots" through investigation reports and other suitable data and take actions as follows:
	
	  a) Publish charts showing hot spots and ensure they are checked regularly for accuracy, revised as needed, distributed locally, and published in the AIP.
	
	  b) Employ suitable strategies to remove or mitigate hazards associated with identified "Hot Spots" at the earliest opportunity.
	
	6. Consider implementing available technologies such as A-SMGCS and Autonomous Runway Incursion Warning System (e.g. runway status lights).
		Aerodrome Design
		
		Active Human Performance

Stakeholder	Aerodrome Operator
Runway Safety Priority	Runway Incursions
Actions	7. Ensure that any new infrastructure or changes to existing infrastructure take runway incursion risks and their mitigations into consideration. Make use of available best practices and guidance materials. 8. Ensure that any planned works undergoes a safety assessment by the aerodrome RST and SMS to identify any risks and take appropriate mitigation actions. Ensure all relevant stakeholders (ANSPs, Operators etc.) are properly informed of any planned works in advance, including the results of the risk analysis. 9. Ensure that any signs with the potential for confusion during works in progress are properly concealed.

ACTION BY THE MEETING

The meeting is invited to:

1. encourage MID States to share with ASRT their accident, serious incident, incident reports and their analysis data related to Runway Safety;

2. encourage MID States to implement the recommended actions developed by the Runway Safety Action Plan Working Group (RSAP-WG) related to the runway excursions and incursion to address the safety risks related to Runway Safety;

3. propose mitigation measures, plan of actions and expedite its implementation process to meet the agreed Safety targets; and

4. support MID-ASRT activities as required.

THANK YOU!