60th CONFERENCE OF DIRECTORS GENERAL OF CIVIL AVIATION ASIA AND PACIFIC REGIONS

Sendai, Japan
28 July - 1 August 2025

AGENDA ITEM 3: AVIATION SAFETY

ENHANCING REGIONAL COLLABORATION BY TRACKING AND ENCOURAGING IMPLEMENTATION OF GLOBAL ACTION PLAN FOR PREVENTION OF RUNWAY INCURSIONS (GAPPRI) IN ASIA PACIFIC REGION

(Presented by Singapore, co-sponsored by Bangladesh, Fiji, Macau China, Thailand, Airports Council International, Association of Asia Pacific Airlines, Flight Safety Foundation and International Air Transport Association)

SUMMARY

This paper presents the initial results and analysis of the enhanced APRAST OPS Working Group (OPS WG) process for the tracking of regional runway safety efforts across the Asia Pacific region.

Using the Global Action Plan for Prevention of Runway Incursions (GAPPRI) guidance materials as a reference, a prioritised tracking document was developed by the OPS WG to identify common regional implementation challenges. The results and analysis in the paper are based on responses from eight States/Administrations to the Asia Pacific Regional Aviation Safety Team (APRAST). The paper also proposes follow-up actions to address runway incursions risk in the APAC region.

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1. INTRODUCTION

1.1 The Regional Aviation Safety Group-Asia Pacific (RASG-APAC) oversees safety outputs for the APAC region, including overseeing the work of the APAC Regional Aviation Safety Team (APRAST) which develops technical and operational guidance, such as the implementation of Safety Enhancement Initiatives (SEIs) and the development of the APAC-Regional Aviation Safety Plan (AP-RASP).

1.2 Regional collaboration through the RASG and APRAST platforms is vital as aviation safety challenges extend beyond individual States. These platforms enable countries to share best practices, build capacity through knowledge transfer, and drive harmonised safety improvement efforts which are crucial to facilitating the safety growth of Asia-Pacific's aviation sector.

1.3 APRAST's OPS Working Group (formerly called the SEI WG) develops SEIs to guide States/Administrations and industry on mitigations to address an identified safety risk under one of the High-Risk Categories (HRCs) detailed in the Global Aviation Safety Plan (GASP), as well as other safety risks identified by APRAST members.

1.4 Following discussions at the RASG-APAC/13 and APRAST/21 Meetings, the APRAST and OPS WG Co-Chairs highlighted that the current SEI monitoring system was not granular enough to shed light on the specific implementation challenges faced by States/Administrations and service providers. Furthermore, the rigorous and long SEI development process may not take into consideration new and existing guidance materials that are often already publicly available.

1.5 Hence, at APRAST/22, the OPS WG proposed to shift its focus towards driving the implementation of existing safety guidance and recommendations, particularly by identifying and prioritising a few key, high-impact deliverables that would significantly improve safety outcomes when implemented by States/Administrations and service providers. It would begin by tracking APRAST Members' implementation of the actions in the Global Action Plan for Prevention of Runway Incursions (GAPPRI), which was published by FSF and partners in 2024 and is a current and comprehensive set of recommendations to address the High-Risk Category (HRC) of Runway Incursions[1].

1.6 This paper presents the initial insights from the regional tracking, prioritisation and tracking of the GAPPRI. It highlights key insights from responding States, identifies common implementation challenges, and proposes follow-up actions to support States in enhancing runway safety within the Asia Pacific region.

2. DISCUSSION

2.1 The APRAST OPS WG has since categorised the 127 GAPPRI recommendations into Essential, Intermediate, and Advanced implementation levels to help States prioritise their runway safety initiatives.

Categorisation	**Explanation**
Essential	These are considered "low hanging fruit" that can be easily implemented with notifications/minor changes to procedures and require minimal or no training, cost, and resources, OR, are critical, basic standards that are required to maintain a minimally acceptable level of safety.

[1] APRAST/22 – WP/08: *Establishing a Mechanism for Addressing Global High-Risk Categories – Runway Safety* by the SEI WG

Intermediate/Mid-term	These are considered to be more complex recommendations that enhance safety beyond basic standards and may carry some associated implementation difficulty, cost, resources, or training. Implementation may require a staged approach and risk assessment. They may not be applicable to all States. This may include "off the shelf" technology solutions that are available but carry an associated cost. They are strongly recommended best practices that support standards.
Advanced/Long-term	These are considered to be advanced recommendations that require significant effort and resources to implement. The standards for these recommendations may not yet have been developed. These may be emerging technologies that are not yet widely available. They may have a long implementation timeline.

2.2 States were requested via State Letter *AP001/25 (FS)* to complete an implementation tracking template, focusing on service providers handling approximately 80% of international operations. To date 8 APAC States/Administrations have submitted their GAPPRI implementation tracking responses, consisting of 17 international aerodromes, 19 air operators, 10 regulatory authorities, and 8 ANSPs; which have yielded the following insights:

	Aerodrome Recommendation Implementation	Air Operator Recommendation Implementation	Regulator Recommendation Implementation	ANSP Recommendation Implementation
Essential	95%	92%	92%	73%
Intermediate/Mid-term	44%	42%	90%	40%
Advanced/Long-term	44%	47%	70%	75%

2.3 The following can be summarised based on the results (full results in Annex A):

a) The results reflect expectations that those recommendations deemed as “Essential” by the APRAST OPS WG achieve the highest implementation percentages.

b) The ANSP implementation rate of “Essential” recommendations is substantially lower than other stakeholders.

c) While the GAPPRI recommendations were intended to be ‘synchronised’, the survey results show this may not yet be the case (e.g. regulatory implementation is significantly higher than the service provider implementation). This may indicate that additional time, guidance, training, and resources may be necessary for successful synchronised implementation.

2.4 The below detailed analysis has focused on the top Essential and Intermediate/Mid-term recommendations. The tracking exercise revealed varying levels of implementation across various areas:

a) **Aerodrome Operators (ADR):** The key challenges relate to infrastructure, and policy & procedures, information & training, and the performance of the runway safety teams. The most pressing recommendation relates to the implementation of runway entry stopbars and implementing policy and procedures for H24[2] usage as these substantially lower the risk of runway incursions and enhance overall safety.

[2] H24 refers to …[explain as it is important for readers who are not familiar to understand that this means 24-hour stopbar operations regardless of visibility conditions]

i. The top three challenge areas all involve infrastructure investment:

- *H24 stopbars (ADR-20);*
- *GNSS/ADS-B vehicle tracking (ADR-31); and*
- *Dashboard cameras for runway vehicles (ADR-15f).*

ii. The other top challenge areas relate to –

- Local Runway Safety Team (LRST) performance: *LRST to establish leading/lagging SPIs (ADR-11),* and *LRST to conduct peer reviews (ADR-10*);
- Information and Training: *Identifying/mapping protected areas (ADR-18a),* and *Familiarisation of airside drivers (ADR-18b*); and
- *Infrastructure*: *Usage of LED technology for stop bars* (*ADR-20)*.

b) **Aircraft Operators (AO):** The key challenges relate to policy and procedures, information & training, and technical solutions requiring regulatory approval. Significantly, several air operators have yet to implement flight deck moving map technology. Most operators have already implemented Electronic Flight Bags (EFBs) but have yet to seek operational approval for moving map solutions. These solutions are a cost-effective means to improve pilot situational awareness on the ground.

i. The top three challenge areas relate to technical solutions, and policies & procedures:

- *Implementing flight deck moving map technology (AO-10);*
- *Procedures for the use of rapid exit/angled taxiways for line-up (AO-20);* and
- *Allowing both pilots to operate as PF on the ground (AO-16*).

ii. The other top challenge areas related to:

- Policy & procedures: *Managing the threats from early runway clearances (AO-27)*, and *Policies on extended runway occupancy time (AO-21*); and
- Information & training: T*raining for Autonomous Runway Incursion Warning Systems (ARIWS*) *(AO-23)*.

c) **Air Navigation Service Providers (ANSP)**: The key challenges all relate to policy & procedures. Significantly, in relation to the use of standard taxi routes, several ANSPs have not yet implemented these procedures. Also, the implementation of risk mitigation policies in relation to the issuance of clearance to aircraft before and during taxi, which may be challenging due to enroute clearance and slot requirements.

i. The top three challenge areas relate to policy & procedures:

- *Exploring new procedures/technology to facilitate runway inspections (ANSP-9f);*
- *Establishing standard taxi routes (ANSP-18);* and
- *Avoiding the issue of "immediate departure" (ANSP-25)*.

ii. The other top challenge areas also relate to policy & procedures: *Using the phrase "HOLD POSITION" when passing a revised clearance (ANSP-14),* and *Passing clearances to aircraft before taxi (ANSP-13*).

d) **Civil Aviation Authorities / Regulators (REG):** The key challenges relate to regulatory oversight policy & procedures, and information & training. Significantly, some regulators indicated that GAPPRI guidance material has not been implemented as a key source of information and training for key stakeholders (pilots, air traffic controllers, and manoeuvring area vehicle drivers).

i. The top challenge areas relate to regulatory oversight, and information & training:

- *Using GAPPRI as a reference document for training (REG-2*);
- C*ivil/military operations (stop bars) (ADR-12);*
- *Civil/military operations (publishing procedural differences) (ADR-10)*; and
- *Assessing the operational use of ground lighting (e.g. stop bars) (ADR-7)*.

2.5 To help address the common challenges, the APRAST OPS WG will continue to review the specific details on challenges to regional implementation that States have provided. The WG will assess if the existing guidance material relating to the recommendations is sufficient, relevant, and available in APAC.

2.6 Additionally, to address the common areas of concern, the APRAST OPS WG in collaboration with the Asia Pacific Centre for Aviation Safety (AP-CAS) is planning to conduct a webinar on runway safety, in Q4 2025. The aim of the webinar is to bring together APAC stakeholders and technical experts to address common challenges to effective implementation of GAPPRI recommendations.

3. ACTION BY THE MEETING

3.1 The Meeting is invited to:

a) Encourage States to participate in APRAST and RASG meetings and efforts to enhance regional aviation safety;

b) Encourage more States to provide responses to the GAPPRI implementation tracking template (AP001/25 (FS)) to widen the analysis of common challenges in APAC;

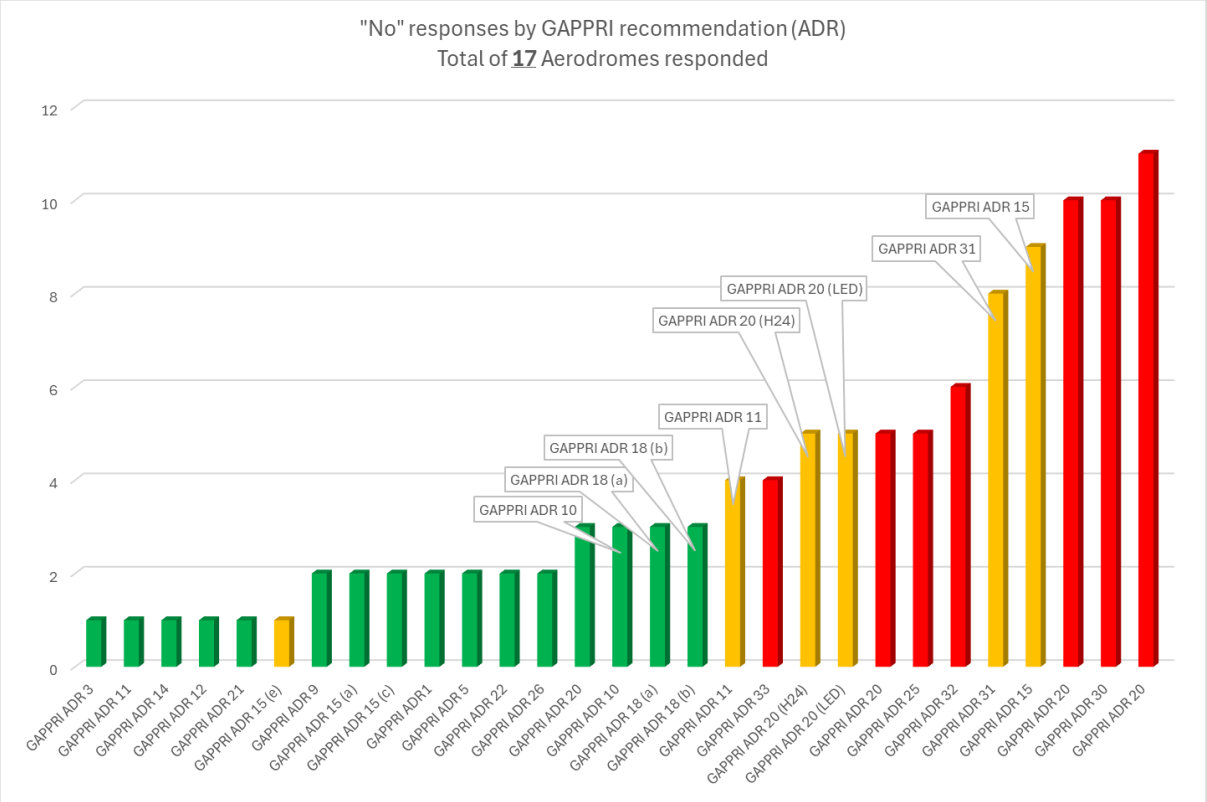
c) Encourage States and Industry to continue driving the effective implementation of GAPPRI recommendations and report their progress to APRAST; and

d) Encourage States and Industry to actively participate in the upcoming webinar.

— END —

ANNEX A: Detailed analysis of GAPPRI implementation tracker results

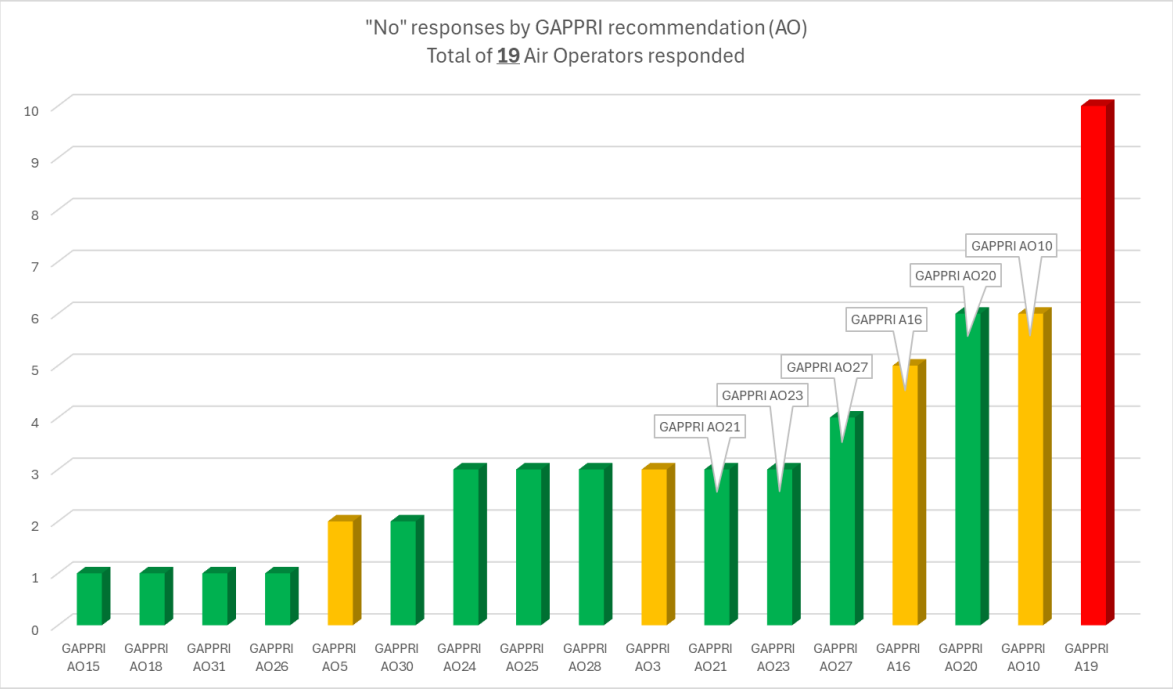
GAPPRI Aerodrome Operator implementation



GAPPRI reference	ADR Recommendation	"No" responses	Summary of areas of concern
GAPPRI ADR 15	f. Vehicles entering a runway should be equipped with a dashboard camera recording the outside view from the vehicle, to collect information about actual and potential risks of runway incursion. The information would be used exclusively for safety improvement.	9	Policy & Procedures; Infrastructure
GAPPRI ADR 31	Enable the tracking of vehicle movements in the manoeuvring area when possible. Facilitate situational awareness by adopting technologies that enable ATC and other parties to locate and identify traffic in the manoeuvring area. Commensurate with the level of aerodrome complexity and minimally for vehicles that operate in the runway area.	8	Policy & Procedures; Infrastructure
GAPPRI ADR 20 (H24)	In cooperation with ANSPs, implement H24 stop bars or other lighting systems at all active runway holding positions, providing an equivalent level of safety commensurate with the level and complexity of operations and the potential risk of runway incursion.	5	Policy & Procedures; Infrastructure
GAPPRI ADR 11	Establish leading runway safety performance indicators.	4	Runway Safety Team performance
GAPPRI ADR 10	Implement peer reviews to assess runway safety, the state of airside infrastructure and operational processes.	3	Runway Safety Team performance
GAPPRI ADR 18 (a)	a. In coordination with ANSPs, identify the protected area for each runway and produce a chart/map of aerodrome protected areas.	3	Information & Training
GAPPRI ADR 18 (b)	b. Ensure that drivers of vehicles operating on the manoeuvring area are familiar with the protected area map.	3	Information & Training

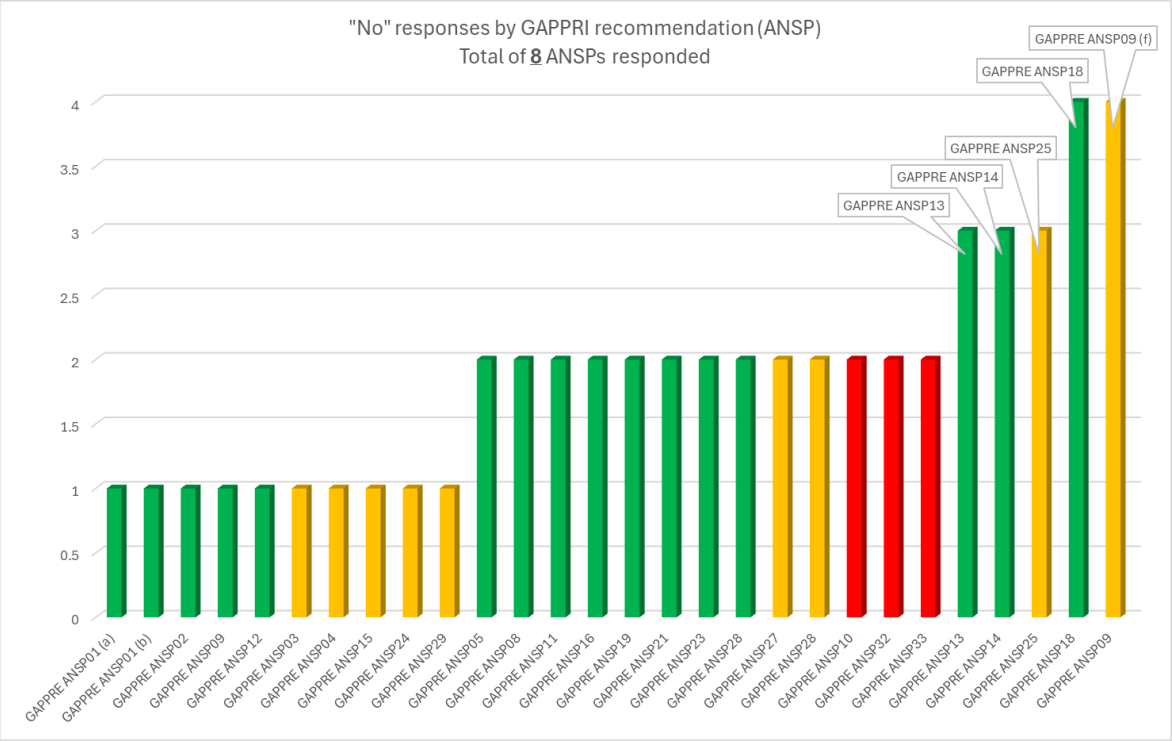
GAPPRI ADR 20 (LED)	Consider use of LED technology to improve stop bar clarity.	3	Policy & Procedures; Infrastructure

GAPPRI Air Operator implementation



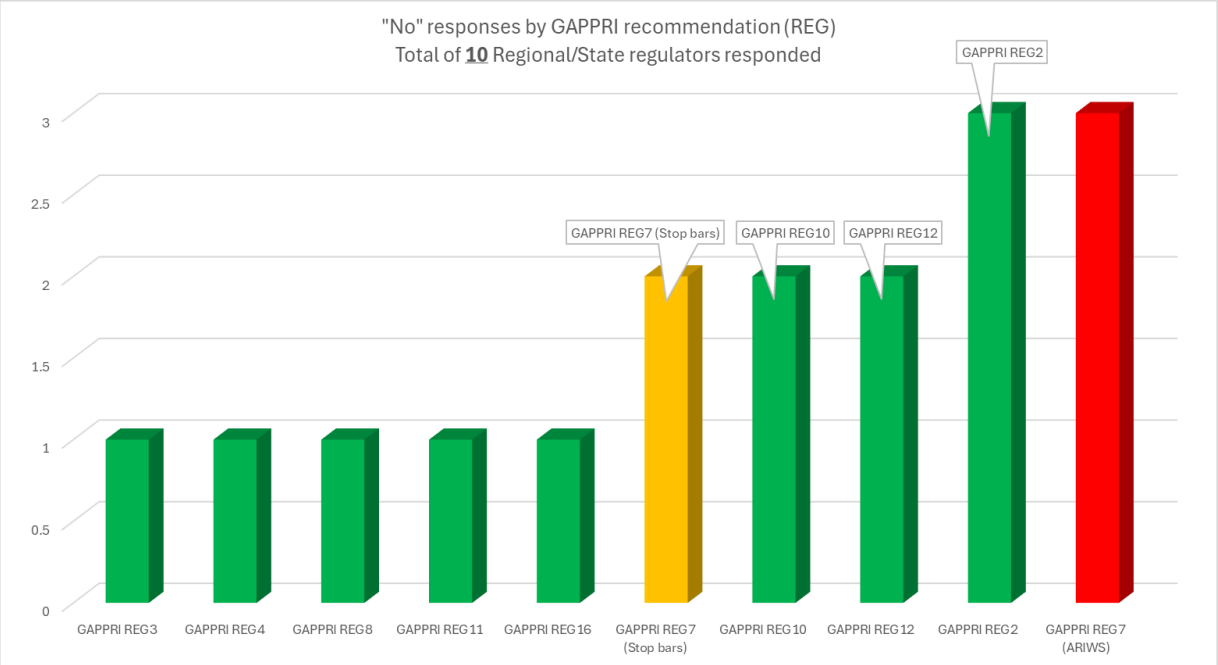
GAPPRI reference	AO Recommendation	"No" responses	Summary of areas of concern
GAPPRI AO10	Operators should consider implementation of flight deck moving map technology, where feasible, and provide crews with training and procedures for use of moving maps, including any built-in runway incursion prevention systems.	6	Technical solution requiring regulatory approval
GAPPRI AO20	Aircraft operators should implement policy and procedures that mitigate the runway incursion risks associated with using rapid exit taxiways or angled taxiways for line-up or crossing; these taxiways can limit the ability of the flight crew to see the runway threshold or the final approach area.	6	Policy & Procedures
GAPPRI AO16	Aircraft operators should train and allow both pilots to be the pilot flying (PF) on the ground, commensurate with aircraft configuration and systems. Where not feasible, the right-seat pilot should be trained in intervention strategies and handover procedures which effectively mitigate runway incursion risks.	5	Policy & Procedures
GAPPRI AO27	Aircraft operators should implement policy and procedures to manage the threat of early runway clearances (take off, line up, cross, land). Policy should include tools to help flight crew recognition of the threat, and if there is any uncertainty, crews shall request confirmation of clearance before entering the runway.	4	Policy & Procedures
GAPPRI AO23	Aircraft operators should provide flight crews with guidance and training on ARIWS (e.g,. runway status lights (RWSL), where relevant to the operation. Guidance should include technical information, guidance on inclusion in flight crew briefings, and clear policy for dealing with activation (e.g., “Red means Stop”).	3	Information & Training
GAPPRI AO21	Aircraft operators should implement policies for flight crews in relation to extended time on the active runway before take-off and the associated runway incursion risks. The policy should include guidance on, but not limited to, entering a runway when not ready for departure, engine run-ups, departure path assessment and back-tracks.	3	Policy & Procedures

GAPPRI ANSP implementation



GAPPRI reference	AO Recommendation	"No" responses	Summary of areas of concern
GAPPRE ANSP9 (f)	In coordination with the aerodrome operators, periodically review the procedures for runway inspections and other runway works. This should include: f. New procedures and technologies (e.g., unmanned aircraft systems) for runway inspection should be assessed for future implementation.	4	Policy & Procedures
GAPPRE ANSP18	In relation to standard taxi routes: a. Assess the risk potential of taxiing traffic confusion on or near the runway and mitigate it by implementing, whenever practicable, the use of standard taxi routes. b. If standard taxi routes are implemented, they should be published with clear designators. c. To reduce complexity during taxi operations, the number of published standard taxi routes should be restricted to only the routes with potential risk of taxiing traffic confusion.	4	Policy & Procedures
GAPPRE ANSP25	Assess the policy, procedures and practices related to the use of "immediate departure" to avoid, as far as practicable, its use or mitigate the associated runway incursion risks.	3	Policy & Procedures
GAPPRE ANSP14	Ensure that air traffic controllers always use the phrase: "HOLD POSITION" when passing a revised clearance to an aircraft that is at a holding position or on the runway.	3	Policy & Procedures
GAPPRE ANSP13	Ensure that, whenever practicable, en route clearances are passed prior to taxi, and, in order to avoid flight crew distractions during taxi, consider passing any revision to the en route clearance whilst the aircraft is stopped.	3	Policy & Procedures

GAPPRI CAA/Regulator implementation



GAPPRI reference	REG Recommendation	"No" responses	Summary of areas of concern
GAPPRI REG2	Ensure that the GAPPRI is used in runway incursion prevention training and familiarisation for all key stakeholders — pilots, air traffic controllers and manoeuvring area vehicle drivers.	3	Information & Training
GAPPRI REG12	GAPPRI recommendations on infrastructure (e.g., stop bars) should be implemented at civil/military joint-use aerodromes where civil aircraft operations are permitted.	2	Regulatory Oversight
GAPPRI REG10	Differences in the application of civil and military traffic procedures that can affect operational safety should be published in accordance with ICAO Annex 15, Aeronautical Information Services.	2	Policy & Procedures
GAPPRI REG7 (Stop bars)	As part of regulatory oversight, assess the operational use of aerodrome ground lighting (e.g., stop bars) to ensure a robust policy to protect the runway from the incorrect presence of traffic. Wherever practicable, the use of H24 stop bars at all runway holding positions should be considered, as this has been shown to be an effective runway incursion prevention barrier.	2	Regulatory Oversight