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OPS

Runway Overrun Awareness and Alerting System (ROAAS)

1.0 INTRODUCTION

1.1 Annex 6, Part I, Chapter 6, paragraph 6.26.1, as introduced by Amendment 47), requires that all turbine-engined aeroplanes of a maximum certificated take-off mass (MCTOM) in excess of 5,700 kg, for which the individual certificate of airworthiness is first issued on or after 1 January 2026, be equipped with a Runway Overrun Awareness and Alerting System (ROAAS), or an equivalent system accepted by the State of Registry.

1.2 This Standard was adopted by the ICAO Council in March 2022 and forms part of a wider package of amendments (Amendment 47 to Annex 6, Part I) addressing extended diversion time operations, ground proximity warning systems, and runway overrun protection.

1.3 The requirement is aligned with, and is comparable in substance to, the equivalent European Union Aviation Safety Agency (EASA) requirement at Commission Regulation (EU) 2015/640, Annex I (Part-26), paragraph 26.205 and Certification Specification CS-26.205, which similarly mandates ROAAS for large aeroplanes used in commercial air transport with a first certificate of airworthiness issued on or after 1 January 2026. Operators conducting parallel operations under EASA or other ROAAS mandates may therefore expect a consistent baseline of equipment and functionality across regulatory regimes.

1.4 ICAO Annex 6, Part I and the associated CAAF Standard are given effect in support of the ICAO Global Runway Safety Action Plan (GRSAP), which places emphasis on improving flight crew awareness of landing performance and on supporting timely decision-making during the approach and landing phases. This includes the use of systems capable of providing real-time monitoring and alerting to assist flight crews with land/go-around decisions, and to indicate when additional deceleration is required to achieve a safe stop within the available runway length.

1.5 ROAAS represents one such solution. It is a flight-deck safety enhancement tool that provides real-time information and alerts to flight crews during the approach, landing, and rollout phases, with the intent of reducing the risk of runway excursions upon landing. The purpose of this Aeronautical Information Circular (AIC) is to advise operators, flight crews, and other stakeholders of the new equipage requirement, to set out its regulatory background, and to provide guidance on the operational use and limitations of ROAAS.

2.0 BACKGROUND

2.1 Runway excursions - occurrences in which an aircraft veers off, or overruns, the runway surface during take-off or landing— are widely recognised as one of the most significant operational risks in commercial air transport. Industry accident data consistently identifies runway excursions as the single most frequent accident category, ahead of any other end-state. ICAO has reported that, over an extended multi-year review period, runway safety-related occurrences accounted for approximately half of all aviation accidents reported to the Organization, of which around one third resulted from runway excursions. Separately, the International Air Transport Association (IATA) global accident database has recorded runway excursions as the cause of close to a quarter of all commercial aviation accidents over the period 2005 to 2019, a proportion that has remained largely unchanged for over a decade despite sustained industry attention.

2.2 The overwhelming majority of runway accidents that do occur are excursions rather than incursions, and excursions on landing are disproportionately represented among events involving aircraft damage, injury, and (less frequently but significantly) fatalities. This persistent risk profile has driven over a decade of coordinated rulemaking and industry safety activity, including the Flight Safety Foundation/EUROCONTROL Global Action Plan for the Prevention of Runway Excursions (GAPPRE), IATA's Runway Excursion Risk Reduction toolkit and Detailed Implementation Plan, and the ICAO Global Runway Safety Action Plan referenced at paragraph 1.4 above.

2.3 Technical work on an avionics-based solution began with EASA's 2013 proposal (NPA 2013-09) for certification standards covering runway overrun prevention systems on new large aeroplane designs. This was followed in 2015 by EUROCAE Working Group 101, tasked with developing Minimum Operational Performance Standards (MOPS) for a Runway Overrun Awareness and Alerting System; this work was published as EUROCAE ED-250. The MOPS, together with the corresponding EASA certification specification (CS-26.205) and the ICAO Standard at Annex 6, Part I, paragraph 6.26.1, together form the technical and regulatory basis for ROAAS as it is now being introduced into newly delivered aircraft.

2.4 In recognition of supply chain and avionics certification constraints affecting some aircraft types, several regulators (including EASA and the United Kingdom Civil Aviation Authority) have issued limited, time-bound exemptions or deferred applicability arrangements for specific aircraft models unable to meet the 1 January 2026 date. Operators should refer to applicable airworthiness directives, type certificate holder service information, and any exemption issued by the State of Registry or State of the Operator where ROAAS equipage cannot yet be demonstrated on a newly delivered aeroplane.

> **OPERATIONAL EMPHASIS: ROAAS shall not be used as the sole landing or go-around decision-making tool. It supplements, but does not replace, established performance-based landing distance assessments and operator standard operating procedures (SOPs).**

3.0. CONTRIBUTING FACTORS

3.1 Investigation and safety analysis of historical runway overrun events have identified several recurring contributory factors on the flight deck, most of which relate to a lack of flight crew awareness that:

- the current aircraft energy state (i.e., height above glide slope and ground speed) may lead to an overrun.
- the current autobrake setting may be insufficient and may lead to an overrun.
- the actual aircraft braking capability, given actual runway surface conditions, differs materially from that which was planned, and may lead to an overrun.
- the aircraft is approaching the wrong (shorter) runway, or the runway being approached is shorter than planned, such that an overrun is imminent.

3.2 A further significant contributory factor identified in accident and incident data concerns wrong or late decisions: specifically, delayed or incorrect decisions to adjust the aircraft's energy state and/or configuration during the approach, or delayed or incorrect decisions to execute a go-around, or to apply maximum deceleration once a runway overrun risk has materialised. Unstabilised approaches continue to be identified by IATA as a significant precursor to a meaningful proportion of approach-and-landing accidents.

4.0 THE ROAAS SOLUTION

4.1 ROAAS is an onboard avionics system developed to provide an aid to:

a) flight crew awareness of the aircraft's predicted stopping point relative to the runway being approached, based on real-time, energy-based calculations; and

b) flight crew decision-making concerning a go-around, and the timely application of all available stopping devices (e.g., maximum manual braking, speed brakes/spoilers, and reverse thrust), during a developing runway overrun situation.

4.2 ROAAS performs real-time energy-based calculations of the predicted landing stopping point using the runway and runway-condition data selected from the Flight Management System (FMS), and compares that predicted stopping point against the location of the end of the runway. The system requires no additional flight crew data entry beyond the runway selection and runway condition information already entered for normal FMS performance calculations.

4.3 The underlying design philosophy is to minimise impact on the flight deck from the standpoint of crew workload and additional training, while materially improving crew awareness of an impending runway overrun and supporting timely crew decision-making. Consistent with EASA CS-26.205 and EUROCAE ED-250, the system is required, at minimum, to provide:

- in-flight, timely, and unambiguous predictive alert(s) of a runway overrun risk during the approach and landing; and
- on-ground, timely, and unambiguous predictive alert(s) of a runway overrun risk during the landing roll, where increased deceleration is required to bring the aircraft to a safe stop before the end of the runway.

4.4 The result, in typical implementations, is an intuitive graphical display — commonly presented on the primary flight display or navigation display — that provides real-time, contextualised indications of the energy-based predicted stopping point, accompanied by timely aural and/or visual alerts where a pilot response is required. Systems providing flight crew alerting of an impending runway overrun, sometimes marketed under proprietary names such as Runway Overrun Protection System (ROPS) or Runway Awareness and Advisory System (RAAS)-adjacent functionality, have previously been developed and certified on other aeroplane types in advance of the regulatory mandate, and may already be familiar to some operators and flight crews.

5.0. PRECAUTIONS & CONCLUSIONS

5.1 ROAAS does not guarantee successful recovery from a developing runway overrun. Its effectiveness is subject to variability in factors such as the speed and quality of pilot response, actual aircraft performance on the day, and actual runway length and surface condition at the time of landing. ROAAS functionality may also not be available on all runways worldwide, depending on the currency and completeness of the runway database loaded into the aircraft system.

5.2 ROAAS is not intended to be used as the sole landing or go-around decision-making tool. It does not substitute for pre-flight and in-flight landing distance assessments, nor for normal FMS take-off and landing performance calculations based on the Aeroplane Flight Manual (AFM) and the operator's specific Standard Operating Procedures (SOPs) for stabilised approach criteria. Crews remain fully responsible for compliance with stabilised approach gates, go-around policy, and landing performance assessment requirements irrespective of ROAAS indications.

5.3 The pilot should be able to manually inhibit aural warnings in order to avoid false and/or nuisance warnings arising from a faulty or incomplete database, applicable Minimum Equipment List (MEL) items, local NOTAMs, or other known data limitations. The use of ROAAS should form part of pilot initial and recurrent training, addressing system capabilities, limitations, and crew response procedures. ROAAS-equipped aircraft operators should develop clear and

unambiguous SOPs and standard callouts for ROAAS operation, including expected crew responses to in-flight and on-ground alerts, and should incorporate ROAAS scenarios into recurrent simulator training where practicable.

5.4 Operators introducing ROAAS-equipped aircraft into their fleet or retrofitting ROAAS to existing aircraft on a voluntary basis, are encouraged to notify CAAF of their implementation timeline and to ensure that associated SOP amendments, training syllabi, and Minimum Equipment List provisions are reviewed and, where required, approved prior to entry into service.

6.0 Summary of Applicability

6.1 The table below summarises the key applicability parameters of the ROAAS requirement for ease of reference. This summary is provided for guidance only; the authoritative text remains the CAAF Standards Document and ICAO Annex 6, Part I referenced at Section 7.

Parameter	Detail
Aircraft affected	Turbine-engined aeroplanes, MCTOM > 5,700 kg
Trigger date	First individual certificate of airworthiness issued on or after 1 January 2026
Basis	Forward-fit only; no retrofit mandate for in-service aircraft
Source standard	ICAO Annex 6, Part I, para. 6.26.1 (Amdt 47)
Comparable rule	EASA Part-26 / CS-26.205 (EU 2015/640) — same 1 January 2026 applicability date
Operator action	Update SOPs and callouts; incorporate ROAAS into initial/recurrent training; confirm MEL provisions

6.2 CAAF will include this Standard domestically through the Civil Aviation (Air Navigation) Regulations and the corresponding CAAF Standards Document, consistent with Fiji's three-tier regulatory framework (Act — Regulation — Standards Document) for transposing ICAO Standards and Recommended Practices (SARPs).

7.0 References

a) ICAO Annex 6, Part I International Commercial Air Transport - Aeroplanes, Chapter 6, paragraph 6.26.1 (Amendment 47).
b) ICAO Global Runway Safety Action Plan (GRSAP), 2nd Edition (2024).
c) Commission Regulation (EU) 2015/640, Annex I (Part-26), paragraph 26.205; EASA Certification Specification CS-26.205.
d) EUROCAE ED-250, Minimum Operational Performance Standard for a Runway Overrun Awareness and Alerting System.

e) Flight Safety Foundation / EUROCONTROL, Global Action Plan for the Prevention of Runway Excursions (GAPPRE).