



INTERNATIONAL CIVIL AVIATION ORGANIZATION

Second Meeting of the Safety Management and Oversight Sub-Group (SMO/SG2)

Dakar, Senegal, from 29 June to 3 July 2026

Agenda Item 5: Activities to be coordinated with the IIM and AAO Sub-Groups

(Presented by the Secretariat.)

SUMMARY	
This working paper outlines activities requiring coordination between the Safety Management and Oversight Sub-Group (SMO/SG) and the other two AASPG contributory sub-groups, the Infrastructure and Information Management Sub-Group (IIM/SG) and the Airspace and Aerodrome Operations Sub-Group (AAO/SG). The paper aims to support the harmonization and alignment of activities across the three Sub-groups in support of the effective implementation of regional aviation safety priorities. Action by the Meeting is in Paragraph 3.	
REFERENCES	• Annex 19 • GASP • AFI- RASP • USOAP-CMA Audit Reports
<i>Strategic Goals</i>	Every flight is safe and secure

1. INTRODUCTION

- 1.1. The Africa-Indian Ocean Aviation System Planning and Implementation Group (AASPG), established through Decision EO/01 of the Extraordinary Meeting of APIRG and RASG-AFI on 19 July 2024, comprises three contributory Sub-Groups:
 - the Infrastructure and Information Management Sub-Group (IIM/SG),
 - the Airspace and Aerodrome Operations Sub-Group (AAO/SG), and
 - the Safety Management and Oversight Sub-Group (SMO/SG)
- 1.2. Effective coordination among these Sub-Groups is essential to ensure harmonized planning, efficient implementation of AASPG related activities.
- 1.3. This paper identifies the priority areas requiring coordination between the Sub-Groups and proposes actions for the meeting's consideration.

2. DISCUSSION

Several operational safety matters require coordinated across Sub-Group engagement. The following areas have been identified as priority items for coordination.

2.1. Significant Safety Concerns (SSCs) related to Instrument Flight Procedures (IFP) design, validations and oversight and Flight Inspection of Navigational Aids

- 2.1.1. Significant Safety Concerns (SSCs) have been identified in the AFI region through USOAP CMA activities conducted in the States. These SSCs are related to Air Navigation Services, particularly in relation to the flight validation and approval of Instrument Flight Procedure (IFP) and the flight calibration of navigational aids.
- 2.1.1. While these issues fall within the technical scope of AAO/SG and IIM/SG, their prevention and resolution depend on effective State safety oversight capabilities, under the mandate of SMO/SG. In particular, the SSCs often reflect insufficient oversight mechanisms, highlighting essential role of SMO/SG.
- 2.1.2. To address these SSCs in a coordinated manner, it is proposed to:
 - establish a joint coordination mechanism, involving relevant Project Teams from SMO/SG, AAO/SG and IIM/SG;
 - conduct a root-cause analysis of identified ANS-related SSCs.
 - develop and implement a regional SSC prevention and resolution programme, including targeted technical assistance, capacity-building for qualified personnel, and State-specific corrective action plans (CAPs).
- 2.1.3. Progress should be systematically monitored and reported through established AASPG governance structures.

2.2. Safety Data Collection and Processing Systems (SDCPS)

- 2.2.1. The establishment and operationalization of Safety Data Collection and Processing Systems (SDCPS) at national and regional level, as required by Annex 19, remains a cross-cutting priority for all Sub-Groups.
- 2.2.2. A coordinated regional approach is required to ensure the standardized collection of safety data and safety information, as well as the development of effective safety intelligence to support informed decision-making.
- 2.2.3. In this regard, it is proposed that:
 - SMO/SG, through the SDCPS Project team in coordination with other relevant SMO/SG teams, develop a regional SDCPS, including the harmonized occurrence taxonomies (compatible ADREP/ECCAIRS), reporting frameworks and data-protection mechanisms, in accordance with the Annex 19.
 - IIM/SG provide validated safety data/occurrence related CNS, AIM and MET occurrence data, including navigation-aid failures, aeronautical information data-quality events, MET-related occurrences, and aviation cybersecurity events affecting communication and information

systems, formatted to the agreed taxonomy; and

- AAO/SG provide validated ATM and aerodrome operations safety data/occurrence data, including runway incursion and excursion events, loss-of-separation occurrences and aerodrome safety events, formatted to the agreed taxonomy.

2.2.4. The above contributions should support the establishment of regional safety data capability and inform AASPG outputs, including the Annual Safety Report.

2.3. Alignment AFI-RASP with the GASP 2026–2028

2.3.1. The revision of the AFI Regional Aviation Safety Plan (AFI-RASP) to align with the GASP 2026–2028 Edition has been assigned to SMO/SG as a cross-cutting priority.

2.3.2. This revision requires coordinated inputs addressing the five Global High-Risk Categories of occurrences (G-HRCs), controlled flight into terrain (CFIT), loss of control in-flight (LOC-I), mid-air collision (MAC), runway excursion (RE) and runway incursion (RI) and calls upon States, regions and industry to address the associated precursors and contributing factors leading to these occurrences.

2.3.3. In this regard, it is proposed that a coordinated, cross-domain revision of the AFI-RASP be led by SMO/SG AFI-RASP Project Teams. Additionally, IIM/SG provide inputs on CNS, AIM and MET-related safety risks, and AAO/SG provide inputs on aerodrome and ATM-related safety risks, including support for the development of associated Safety Enhancement Initiatives (SEIs).

2.3.4. Furthermore, the revision of the AFI-RASP should also be grounded in the analysis of regional safety data to identify additional region-specific safety risks and associated SEIs not addressed by the Global High-Risk Categories (G-HRCs) outlined in ICAO Doc 10161 (Global Aviation Safety Roadmap). The Sub-Groups may consider the illustrative examples of potential additional contributing factors provided in the Appendix to support the data analysis at national and regional, while recognizing that these examples are not exhaustive.

2.4. Enhancement of monitoring mechanisms for AASPG Decisions and Conclusions and those of its Contributory Bodies

2.4.1. The Improved Conclusion and Decision Monitoring Project Team, established under SMO/SG, compiled relevant decisions and conclusions from the first RASG-AFI meeting. The project team analyzed their relevance and effectiveness of these decisions and conclusions and consolidated the results. Among other findings, it identified gaps in the follow-up mechanisms, accountability and integration of decisions into national and regional plans.

2.4.2. To address these gaps, it is proposed to:

- develop a centralized monitoring mechanism for Conclusions and Decisions, applicable across AASPG and its contributory bodies
- ensure the necessary traceability from adoption to implementation, clear assignment of responsibilities, timelines and visibility of progress for decision-makers

2.4.3. The mechanism may include a centralized dashboard platform to support monitoring, reporting, and actions taken.

- 2.4.4. The meeting is invited to provide guidance on setting up a joint coordination mechanism between AASPG's contributory bodies, with the aim of establishing mechanism for the analysis and monitoring of decisions and conclusions.

3. ACTION BY THE MEETING

- 3.1.1. The meeting is invited to:

- a) Take note of the safety matters requiring cross-sub-group coordination as presented in this working paper;
- b) Request the SMO/SG, AAO/SG and IIM/SG Project Teams to develop joint SSC prevention and resolution programs/plans for IFP design, maintenance, validation and oversight and flight inspection of navigational aids; and
- c) Agree to leverage the existing Sub-Groups coordination meeting to discuss the establishment of a joint mechanism for:
 - sharing of occurrences data and associated contributing factors
 - integration of safety data and information into the regional data collection system
 - a centralized mechanism for monitoring the implementation of decisions and conclusions of regional meetings.

— END —

APPENDIX

CONTRIBUTING FACTORS – DOC 10161 APPENDIX B OPS ROADMAP EXTRACT					
Note: Lists are examples only and are not exhaustive					
Occurrence Category (CICIT / GASP)		SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
1.1.	COMPONENT 1 — G-HRCs	Part 1: States			
1.1.1.	CFIT - Controlled Flight Into Terrain	SEI-1	States	SEI-1 / 1C-a)	Flight in adverse environmental conditions
1.1.2.	CFIT - Controlled Flight Into Terrain	SEI-1	States	SEI-1 / 1C-b)	Inaccurate approach design and inadequate documentation (for APV or LPV approaches)
1.1.3.	CFIT - Controlled Flight Into Terrain	SEI-1	States	SEI-1 / 1C-c)	Phraseology used (standard vs. non-standard)
1.1.4.	CFIT - Controlled Flight Into Terrain	SEI-1	States	SEI-1 / 1C-d)	Pilot fatigue, sensory illusion and loss of situational awareness
1.1.5.	CFIT - Controlled Flight Into Terrain	SEI-1	States	SEI-1 / 1C-e)	GNSS RFI
1.1.6.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-a)	Distraction
1.1.7.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-b)	Adverse weather
1.1.8.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-c)	Complacency
1.1.9.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-d)	Inadequate standard operating procedures (SOPs) for effective flight management
1.1.10.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-e)	Insufficient height above terrain for recovery
1.1.11.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-f)	Automation dependency leading to degraded pilot proficiency in manual flying, lack of awareness or competence in procedures for recovery from unusual aircraft attitudes
1.1.12.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-g)	Startle effect, inappropriate flight control inputs in response to sudden awareness of an abnormal aircraft state (for example, bank angle, angle of attack or stall)
1.1.13.	LOC-I - Loss of Control In-Flight	SEI-2	States	SEI-2 / 2C-h)	GNSS RFI
1.1.14.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-a)	Traffic conditions: considerations include traffic density, complexity and the mixture of aircraft types and capabilities
1.1.15.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-b)	ATC performance: factors such as workload, competence, teamwork and adherence to procedures. Additionally, the influence of the ANSP's SMS
1.1.16.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-c)	Flight crew training and organizational (corporate) culture: aspects such as workload management, competence, teamwork, adherence to procedures and the impact of the operator's SMS
1.1.17.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-d)	ATC systems: elements such as flight data processing, communication systems, STCA systems, as well as the interaction between the human operators and the aircraft systems and the procurement policies of ANSPs
1.1.18.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-e)	Aircraft equipment: considerations include autopilot systems, transponders and ACAS, as well as aircraft performance characteristics (such as rate-of-climb) and their physical dimension
1.1.19.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-f)	Surveillance systems: coverage and quality of surveillance technologies used to monitor aircraft positions and movements
1.1.20.	MAC - Mid-Air Collision	SEI-3	States	SEI-3 / 3C-g)	Flight plan processing: the efficiency and reliability of processes related to flight plan submission, approval and distribution
1.1.21.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-a)	Ineffective SOPs
1.1.22.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-b)	Lack of adherence to SOPs

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Note: Lists are examples only and are not exhaustive

Occurrence Category (CICIT / GASP)		SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
1.1.23.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-c)	Long/floated/bounced/firm/off-centre/crabbed landing
1.1.24.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-d)	Unstabilized approach
1.1.25.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-e)	Inadequate reporting of runway surface conditions
1.1.26.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-f)	Inadequate approach procedures design
1.1.27.	RE - Runway Excursion	SEI-4	States	SEI-4 / 4C-g)	Inadequate regulatory oversight
1.1.28.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-a)	Operations in low visibility conditions
1.1.29.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-b)	Complex or inadequate aerodrome design, equipment and signage
1.1.30.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-c)	Diversity and complexity of traffic (such as multiple simultaneous line-ups)
1.1.31.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-d)	Conditional clearances
1.1.32.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-e)	Simultaneous use of intersecting runways
1.1.33.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-f)	Late issue of or late changes to departure clearances
1.1.34.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-g)	Unintentional deviations from ATC clearances by flight and ground crew
1.1.35.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-h)	Phraseology use (such as non-standard versus standard; call-sign confusion)
1.1.36.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-i)	Concurrent use of more than one language for ATC communications
1.1.37.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-j)	English language proficiency
1.1.38.	RI - Runway Incursion	SEI-5	States	SEI-5 / 5C-k)	Inadequate manoeuvring area driver training and assessment programme
1.2.	COMPONENT 1 — G-HRCs Part 2: Regions				
1.2.1.	CFIT - Controlled Flight Into Terrain	SEI-6	Regions	SEI-6 / 6C-a)	Flight in adverse environmental conditions
1.2.2.	CFIT - Controlled Flight Into Terrain	SEI-6	Regions	SEI-6 / 6C-b)	Inaccurate approach design and inadequate documentation (for APV or LPV approaches)
1.2.3.	CFIT - Controlled Flight Into Terrain	SEI-6	Regions	SEI-6 / 6C-c)	Phraseology used (standard vs. non-standard)
1.2.4.	CFIT - Controlled Flight Into Terrain	SEI-6	Regions	SEI-6 / 6C-d)	Pilot fatigue, sensory illusion and loss of situational awareness
1.2.5.	CFIT - Controlled Flight Into Terrain	SEI-6	Regions	SEI-6 / 6C-e)	GNSS RFI
1.2.6.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-a)	Distraction
1.2.7.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-b)	Adverse weather
1.2.8.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-c)	Complacency
1.2.9.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-d)	Inadequate SOPs for effective flight management
1.2.10.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-e)	Insufficient height above terrain for recovery
1.2.11.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-f)	Automation dependency leading to degraded pilot proficiency in manual flying, lack of awareness or competence in procedures for recovery from unusual aircraft attitudes
1.2.12.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-g)	Startle effect, inappropriate flight control inputs in response to sudden awareness of an abnormal aircraft state (for example, bank angle, angle of attack or stall)
1.2.13.	LOC-I - Loss of Control In-Flight	SEI-7	Regions	SEI-7 / 7C-h)	GNSS Radio frequency interference
1.2.14.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-a)	Traffic conditions: considerations include traffic density, complexity and the mixture of aircraft types and capabilities
1.2.15.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-b)	ATC performance: factors such as workload, competence, teamwork and adherence to procedures. Additionally, the influence of the ANSP's SMS

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Occurrence Category (CICIT / GASP)		SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
1.2.16.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-c)	Flight crew training and organizational (corporate) culture: workload management, competence, teamwork, adherence to procedures and impact of operator's SMS
1.2.17.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-d)	ATC systems: flight data processing, communication systems, STCA, interaction between human operators and aircraft systems, procurement policies of ANSPs
1.2.18.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-e)	Aircraft equipment: autopilot systems, transponders and ACAS, aircraft performance characteristics and physical dimension
1.2.19.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-f)	Surveillance systems: coverage and quality of surveillance technologies
1.2.20.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-g)	Flight plan processing: efficiency and reliability of processes
1.2.21.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-h)	Airspace design: complexity of airspace structure, route layouts, extent of controlled/uncontrolled airspace, proximity of military operational or training areas
1.2.22.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-i)	Flight in adverse environmental conditions that may influence conflict management and collision avoidance
1.2.23.	MAC - Mid-Air Collision	SEI-8	Regions	SEI-8 / 8C-j)	GNSS RFI
1.2.24.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-a)	Ineffective SOPs
1.2.25.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-b)	Lack of adherence to SOPs
1.2.26.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-c)	Long/floated/bounced/firm/off-centre/crabbed landing
1.2.27.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-d)	Unstabilized approach
1.2.28.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-e)	Inadequate reporting of runway surface conditions
1.2.29.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-f)	Inadequate approach procedures design
1.2.30.	RE - Runway Excursion	SEI-9	Regions	SEI-9 / 9C-g)	Inadequate regulatory oversight
1.2.31.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-a)	Operations in low visibility conditions
1.2.32.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-b)	Complex or inadequate aerodrome design, equipment and signage
1.2.33.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-c)	Diversity and complexity of traffic (such as multiple simultaneous line-ups)
1.2.34.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-d)	Conditional clearances
1.2.35.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-e)	Simultaneous use of intersecting runways
1.2.36.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-f)	Late issue of or late changes to departure clearances
1.2.37.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-g)	Unintentional deviations from ATC clearances by flight and ground crew
1.2.38.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-h)	Phraseology use (such as non-standard versus standard; call-sign confusion)
1.2.39.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-i)	Concurrent use of more than one language for ATC communications
1.2.40.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-j)	English language proficiency
1.2.41.	RI - Runway Incursion	SEI-10	Regions	SEI-10 / 10C-k)	Inadequate manoeuvring area driver training and assessment programme
1.3. COMPONENT 1 — G-HRCs Part 3: Industry					
1.3.1.	CFIT - Controlled Flight Into Terrain	SEI-11	Industry	SEI-11 / 11C-a)	Flight in adverse environmental conditions
1.3.2.	CFIT - Controlled Flight Into Terrain	SEI-11	Industry	SEI-11 / 11C-b)	Inaccurate approach design and inadequate documentation (for APV or LPV approaches)
1.3.3.	CFIT - Controlled Flight Into Terrain	SEI-11	Industry	SEI-11 / 11C-c)	Phraseology used (standard vs. non-standard)
1.3.4.	CFIT - Controlled Flight Into Terrain	SEI-11	Industry	SEI-11 / 11C-d)	Pilot fatigue, sensory illusion and loss of situational awareness
1.3.5.	CFIT - Controlled Flight Into Terrain	SEI-11	Industry	SEI-11 / 11C-e)	GNSS RFI

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Occurrence Category (CICIT / GASP)		SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
1.3.6.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-a)	Distraction
1.3.7.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-b)	Adverse weather
1.3.8.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-c)	Complacency
1.3.9.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-d)	Inadequate SOPs for effective flight management
1.3.10.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-e)	Insufficient height above terrain for recovery
1.3.11.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-f)	Automation dependency leading to degraded pilot proficiency in manual flying, lack of awareness or competence in procedures for recovery from unusual aircraft attitudes
1.3.12.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-g)	Startle effect, inappropriate flight control inputs in response to sudden awareness of an abnormal aircraft state (for example, bank angle, angle of attack or stall)
1.3.13.	LOC-I - Loss of Control In-Flight	SEI-12	Industry	SEI-12 / 12C-g)	GNSS RFI
1.3.14.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-a)	Traffic conditions: considerations include traffic density, complexity and the mixture of aircraft types and capabilities
1.3.15.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-b)	ATC performance: factors such as workload, competence, teamwork and adherence to procedures. Additionally, the influence of the ANSP's SMS
1.3.16.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-c)	Flight crew training and organizational (corporate) culture: aspects such as workload management, competence, teamwork, adherence to procedures and the impact of the operator's SMS
1.3.17.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-d)	ATC systems: elements such as flight data processing, communication systems, STCA systems, as well as the interaction between the human operators and the aircraft systems, and the procurement policies of ANSPs
1.3.18.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-e)	Aircraft equipment: considerations include autopilot systems, transponders and ACAS, as well as aircraft performance characteristics (such as rate-of-climb) and their physical dimension
1.3.19.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-f)	Surveillance systems: coverage and quality of surveillance technologies used to monitor aircraft positions and movements
1.3.20.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-g)	Flight plan processing: the efficiency and reliability of processes related to flight plan submission, approval and distribution
1.3.21.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-h)	Airspace design: the complexity of airspace structure, route layouts and the extent of controlled or uncontrolled airspace and proximity of military operational or training areas
1.3.22.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-i)	Flight in adverse environmental conditions that may influence conflict management and collision avoidance
1.3.23.	MAC - Mid-Air Collision	SEI-13	Industry	SEI-13 / 13C-j)	GNSS RFI
1.3.24.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-a)	Ineffective SOPs
1.3.25.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-b)	Lack of adherence to SOPs
1.3.26.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-c)	Long/floated/bounced/firm/off-centre/crabbed landing
1.3.27.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-d)	Unstabilized approach
1.3.28.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-e)	Inadequate reporting of runway surface conditions
1.3.29.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-f)	Inadequate approach procedures design
1.3.30.	RE - Runway Excursion	SEI-14	Industry	SEI-14 / 14C-g)	Inadequate regulatory oversight
1.3.31.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-a)	Operations in low visibility conditions

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Note: Lists are examples only and are not exhaustive

Occurrence Category (CICIT / GASP)		SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
1.3.32.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-b)	Complex or inadequate aerodrome design, equipment and signage
1.3.33.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-c)	Diversity and complexity of traffic (such as multiple simultaneous line-ups)
1.3.34.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-d)	Conditional clearances
1.3.35.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-e)	Simultaneous use of intersecting runways
1.3.36.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-f)	Late issue of or late changes to departure clearances
1.3.37.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-g)	Unintentional deviations from ATC clearances by flight and ground crew
1.3.38.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-h)	Phraseology use (such as non-standard versus standard; call-sign confusion)
1.3.39.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-i)	Concurrent use of more than one language for ATC communications
1.3.40.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-j)	English language proficiency
1.3.41.	RI - Runway Incursion	SEI-15	Industry	SEI-15 / 15C-k)	Inadequate manoeuvring area driver training and assessment programme
2.1. COMPONENT 2 — Other Global Risk Categories Part 1: States					
2.1.1.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-a)	Adverse weather conditions (such as tailwind, crosswind, turbulence or wind shear)
2.1.2.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-b)	An unstabilized approach continued to land
2.1.3.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-c)	Inappropriate aircraft configuration (weight and balance, trim setting/CG position and flap setting)
2.1.4.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-d)	Mishandling of crosswind
2.1.5.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-e)	Mistrimmed stabilizer, rotation at improper speed, excessive rotation rate
2.1.6.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-f)	Holding off in the flare
2.1.7.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-g)	Over-rotation during go-around
2.1.8.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-h)	Improper use of the flight director
2.1.9.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-i)	Under-inflated oleo-pneumatic shock absorber
2.1.10.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-j)	Slow or late rotation
2.1.11.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-k)	Performance calculation errors
2.1.12.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-l)	Tail strikes, tip strikes, pod strikes and nose wheel first touch down
2.1.13.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-m)	Illuminated touchdown zones could be a contributing factor to hard landings and tail strikes due to the black hole effect at night
2.1.14.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-n)	The absence of centre runway lights could be a contributing factor to off-centre landings
2.1.15.	ARC - Abnormal Runway Contact	SEI-16	States	SEI-16 / 16C-o)	Non-standard approach profiles, improperly calibrated visual approach aids
2.1.16.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-a)	Inadequate maintenance practices
2.1.17.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-b)	Material defects and quality issues
2.1.18.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-c)	Environmental conditions
2.1.19.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-d)	Deterioration due to ageing components

CONTRIBUTING FACTORS – DOC 10161 APPENDIX B OPS ROADMAP EXTRACT					
Note: Lists are examples only and are not exhaustive					
	Occurrence Category (CICTT / GASP)	SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
2.1.20.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-e)	Design issues
2.1.21.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-f)	Manufacturing deficiencies
2.1.22.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-g)	Repair issues
2.1.23.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-h)	Repair interval extensions
2.1.24.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-i)	Mechanical overload and stress
2.1.25.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-j)	Human performance, including human factors issues
2.1.26.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-k)	Improper handling and shipping of parts
2.1.27.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-l)	Deficiencies in maintenance programmes
2.1.28.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-m)	Inadequate oversight
2.1.29.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-n)	Improper implementation of reliability programmes and condition monitoring
2.1.30.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-o)	Damage (accidental or environment)
2.1.31.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-p)	Failure to adhere to the appropriate SOPs
2.1.32.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-17	States	SEI-17 / 17C-q)	SUPs (suspected unapproved parts)
2.1.33.	TURB - Turbulence Encounter	SEI-18	States	SEI-18 / 18C-a)	Seasonality, rough terrain and location
2.1.34.	TURB - Turbulence Encounter	SEI-18	States	SEI-18 / 18C-b)	Weather and convective activity
2.1.35.	TURB - Turbulence Encounter	SEI-18	States	SEI-18 / 18C-c)	Jet stream/clear air turbulence
2.1.36.	TURB - Turbulence Encounter	SEI-18	States	SEI-18 / 18C-d)	Wake vortex

CONTRIBUTING FACTORS – DOC 10161 APPENDIX B OPS ROADMAP EXTRACT					
Note: Lists are examples only and are not exhaustive					
	Occurrence Category (CICIT / GASP)	SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
2.1.37.	TURB - Turbulence Encounter	SEI-18	States	SEI-18 / 18C-e)	Availability of timely weather reporting
2.2.	COMPONENT 2 — Other Global Risk Categories Part 2: Regions				
2.2.1.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-a)	Adverse weather conditions (such as tailwind, crosswind, turbulence or wind shear)
2.2.2.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-b)	An unstabilized approach continued to land
2.2.3.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-c)	Inappropriate aircraft configuration (weight and balance, trim setting/CG position and flap setting)
2.2.4.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-d)	Mishandling of crosswind
2.2.5.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-e)	Mistrimmed stabilizer, rotation at improper speed, excessive rotation rate
2.2.6.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-f)	Holding off in the flare
2.2.7.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-g)	Over-rotation during go-around
2.2.8.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-h)	Improper use of the flight director
2.2.9.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-i)	Under-inflated oleo-pneumatic shock absorber
2.2.10.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-j)	Slow or late rotation
2.2.11.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-k)	Performance calculation errors
2.2.12.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-l)	Tail strikes, tip strikes, pod strikes and nose wheel first touch down
2.2.13.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-m)	Illuminated touchdown zones could be a contributing factor to hard landings and tail strikes due to the black hole effect at night
2.2.14.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-n)	The absence of centre runway lights could be a contributing factor to off-centre landings
2.2.15.	ARC - Abnormal Runway Contact	SEI-19	Regions	SEI-19 / 19C-o)	Non-standard approach profiles, improperly calibrated visual approach aids
2.2.16.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-a)	Inadequate maintenance practices
2.2.17.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-b)	Material defects and quality issues
2.2.18.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-c)	Environmental conditions
2.2.19.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-d)	Deterioration due to ageing components
2.2.20.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-e)	Design issues
2.2.21.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-f)	Manufacturing deficiencies
2.2.22.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-g)	Repair issues

CONTRIBUTING FACTORS – DOC 10161 APPENDIX B OPS ROADMAP EXTRACT					
Note: Lists are examples only and are not exhaustive					
	Occurrence Category (CICIT / GASP)	SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
2.2.23.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-h)	Repair interval extensions
2.2.24.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-i)	Mechanical overload and stress
2.2.25.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-j)	Human performance, including human factors issues
2.2.26.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-k)	Improper handling and shipping of parts
2.2.27.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-l)	Deficiencies in maintenance programmes
2.2.28.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-m)	Inadequate oversight
2.2.29.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-n)	Improper implementation of reliability programmes and condition monitoring
2.2.30.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-o)	Damage (accidental or environment)
2.2.31.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-p)	Failure to adhere to the appropriate SOPs
2.2.32.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-20	Regions	SEI-20 / 20C-q)	SUPs
2.2.33.	TURB - Turbulence Encounter	SEI-21	Regions	SEI-21 / 21C-a)	Seasonality, rough terrain and location
2.2.34.	TURB - Turbulence Encounter	SEI-21	Regions	SEI-21 / 21C-b)	Weather and convective activity
2.2.35.	TURB - Turbulence Encounter	SEI-21	Regions	SEI-21 / 21C-c)	Jetstream and clear air turbulence
2.2.36.	TURB - Turbulence Encounter	SEI-21	Regions	SEI-21 / 21C-d)	Wake vortex
2.2.37.	TURB - Turbulence Encounter	SEI-21	Regions	SEI-21 / 21C-e)	Availability of timely weather reporting
2.3.	COMPONENT 2 — Other Global Risk Categories Part 3: Industry				
2.3.1.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-a)	Adverse weather conditions (such as tailwind, crosswind, turbulence or wind shear)
2.3.2.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-b)	An unstabilized approach continued to land
2.3.3.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-c)	Inappropriate aircraft configuration (weight and balance, trim setting/CG position and flap setting)
2.3.4.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-d)	Mishandling of crosswind
2.3.5.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-e)	Mistrimmed stabilizer, rotation at improper speed, excessive rotation rate
2.3.6.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-f)	Holding off in the flare

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Note: Lists are examples only and are not exhaustive

Occurrence Category (CICIT / GASP)		SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
2.3.7.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-g)	Over-rotation during go-around
2.3.8.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-h)	Improper use of the flight director
2.3.9.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-i)	Under-inflated oleo-pneumatic shock absorber
2.3.10.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-j)	Slow or late rotation
2.3.11.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-k)	Performance calculation errors
2.3.12.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-l)	Tail strikes, tip strikes, pod strikes and nose wheel first touch down
2.3.13.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-m)	Illuminated touchdown zones could be a contributing factor to hard landings and tail strikes due to the black hole effect at night
2.3.14.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-n)	The absence of centre runway lights could be a contributing factor to off-centre landings
2.3.15.	ARC - Abnormal Runway Contact	SEI-22	Industry	SEI-22 / 22C-o)	Non-standard approach profiles, improperly calibrated visual approach aids
2.3.16.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-a)	Inadequate maintenance practices
2.3.17.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-b)	Material defects and quality issues
2.3.18.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-c)	Environmental conditions
2.3.19.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-d)	Deterioration due to ageing components
2.3.20.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-e)	Design issues
2.3.21.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-f)	Manufacturing deficiencies
2.3.22.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-g)	Repair issues
2.3.23.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-h)	Repair interval extensions
2.3.24.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-i)	Mechanical overload and stress
2.3.25.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-j)	Human performance, including human factors issues

CONTRIBUTING FACTORS – DOC 10161 APPENDIX B OPS ROADMAP EXTRACT					
Note: Lists are examples only and are not exhaustive					
	Occurrence Category (CICIT / GASP)	SEI #	Stakeholder	CF Ref.	Additional Contributing Factor
2.3.26.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-k)	Improper handling and shipping of parts
2.3.27.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-l)	Deficiencies in maintenance programmes
2.3.28.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-m)	Inadequate oversight
2.3.29.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-n)	Improper implementation of reliability programmes and condition monitoring
2.3.30.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-o)	Damage (accidental or environment)
2.3.31.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-p)	Failure to adhere to the appropriate SOPs
2.3.32.	SCF-NP - System/Component Failure or Malfunction (Non-Powerplant)	SEI-23	Industry	SEI-23 / 23C-q)	SUPs
2.3.33.	TURB - Turbulence Encounter	SEI-24	Industry	SEI-24 / 24C-a)	Seasonality, rough terrain and location
2.3.34.	TURB - Turbulence Encounter	SEI-24	Industry	SEI-24 / 24C-b)	Weather and convective activity
2.3.35.	TURB - Turbulence Encounter	SEI-24	Industry	SEI-24 / 24C-c)	Jet stream/clear air turbulence
2.3.36.	TURB - Turbulence Encounter	SEI-24	Industry	SEI-24 / 24C-d)	Wake vortex
2.3.37.	TURB - Turbulence Encounter	SEI-24	Industry	SEI-24 / 24C-e)	Availability of timely weather reporting