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ASSEMBLY — 37TH SESSION

TECHNICAL COMMISSION

Agenda Item 26: Safety management and safety data

INDONESIA'S IMPLEMENTATION OF THE STATE SAFETY PROGRAMME

(Presented by Indonesia)

EXECUTIVE SUMMARY

This working paper provides a progress report on Indonesia's safety management activities necessary to achieve global aviation safety. It covers the implementation of Indonesia's State Safety Programme and Safety Management Systems.

Action: The Assembly is invited to:

a) note the information of this paper;
b) consider scheduling more frequent USOAP Auditor training to meet the need of auditors for Contracting States to be able to conduct their own internal audits based on the USOAP Audit Protocols;
c) encourage States to share with ICAO, information related to their Safety Programme to facilitate the harmonization of an efficient global safety data use;
d) encourage States to use/develop the same/compatible database system and common taxonomies and definitions for aviation accident and incident reporting systems. Promote this initiative through regular and continuous programme of ICAO database system socialization and training; and
e) encourage States to use the same approach as Indonesia on the implementation of the State Safety Programme.

Strategic Objectives:	This working paper relates to Strategic Objective A.
Financial implications:	N/A
References:	Annex 13 — *Aircraft Accident and Incident Investigation* ICAO Doc 9935, *Report of the High-level Safety Conference (2010)* ICAO Doc 9859, *Safety Management Manual (SMM)* Indonesia Aviation Law No. 1, year 2009 Minister of Transportation Decree No. 20, year 2009 Minister of Transportation Decree No. 8, year 2010

1. INTRODUCTION

1.1 According to ICAO Doc 9859 — *Safety Management Manual (SMM)*, the State Safety Programme (SSP) is an integrated set of regulations and activities aimed at improving safety, it includes:

a) regulations and directives promulgated by the State to support fulfillment of its responsibilities concerning safe and efficient delivery of aviation activities in the State;

b) specific safety activities that must be performed by the State, i.e. carrying out the regulator portion of responsibility to mitigate risks from technical, economics and natural hazards;

c) a management system for management of safety by the State; and

d) includes safety management system (SMS) requirements for aviation service providers.

1.1.1 It is about who is doing what, where and when on hazard identification, risk assessment and mitigation, safety assurance and safety promotion (HIRAMSASP).

1.1.2 **The long-term, strategic objective** of the SSP is the improvement of safety in the State; while the **short-term, tactical objectives** are efficient and effective delivery of safety responsibilities and accountabilities by the State and efficient inspections, surveys and audits of safety responsibilities and accountabilities by the State (risk-based safety oversight). Risk-based safety oversight can only be realized by the support of effective safety data collection, analysis and exchange which is the heart of the interactive nature of the SSP and the SMS.

1.1.3 **The ultimate goal of the SSP** is to achieve and maintain an **"acceptable level of safety (ALOS)"** – the minimum degree of safety that must be assured by the SSP in actual practice. For this purpose, States shall develop a procedure to establish the acceptable level of safety (ALOS) related to the SSP, comprising a combination of **safety measurement** by the State and **safety performance measurement** by service providers.

1.1.4 **Safety measurement** shall include the quantification of the outcomes of high-level, high-consequence events or high-level State functions, such as accident rates, serious incident rates and regulatory compliance.

1.1.5 **Safety performance measurement** shall include the quantification of the outcomes of low-level, low-consequence processes that provides a realistic measure of the maturity of a national aviation safety system beyond accident rates and/or regulatory compliance. Examples are the number of service difficulty/incidents, the number of foreign object debris (FOD), events per specified number of ramp movement and the number of unauthorized ground vehicle events on taxiways against the number of airport operations or during a specified period of time.

1.2 Indonesia's SSP which has been developed based on the above document and principles, has been mandated by Law Number 1, year 2009 concerning Aviation on 12 January 2009. The implementing regulations include Minister of Transportation Decrees Number 20, year 2009 concerning

SMS dated 17 February 2009 and Number 8, year 2010 concerning the National Aviation Safety Programme dated 2 February 2010.

2. SSP IMPLEMENTATION APPROACH

2.1 DGCA functional safety responsibilities (Appendix A)

2.1.1 The DGCA SMS is the Republic of Indonesia SSP. The allocation of functional safety responsibilities within the DGCA is similar to those SMS implementation within the industry.

2.1.2 The responsibilities and accountabilities are shared among Accountable Executive, State Safety Review Board, Office of SSP and State Safety Action Group.

2.1.3 Within the Office of SSP, Safety Auditors are appointed to ensure regulatory compliance (as one mean of State Safety Measurement) by the DGCA through annual internal audit. USOAP Audit Protocols are used as the tool for this audit. By this approach, the DGCA will exercise regular self-checks of its continuous compliance with ICAO Standards and Recommended Practices (SARPs).

2.2 National safety database system (Appendix B)

2.2.1 Measurement is one essence of management. It will not be possible to manage what cannot be measured and measurement requires data. Safety data collection, analysis and exchange are at the heart of the interactive nature of the SSP and the SMS. For this purpose, the DGCA is developing an Integrated National Database System.

2.2.2 The DGCA is seeking advice so that the database will be compatible with the ICAO, and other authorities/agencies database system. C**ommon taxonomies and definitions** for aviation accident and incident reporting systems are used for this purpose. To serve the need for data exchange, the DGCA will require that the safety database of the industry be compatible to this National Safety Database System.

2.3 Safety measurement by the State and safety performance measurement by service providers (Appendix C)

2.3.1 *Safety measurement*

In terms of fatal accidents, the DGCA is committed to pursue that for the initial safety target, the fatal accident rate should be not more than that of the global accident rate.

2.3.2 *Safety performance measurement*

Similar to the USA FAA FAR 121.703, the Indonesian DGCA CASR 121.703 requires holders of an air operator certificate to report the occurrence or detection of each failure, malfunction, or defect to their aircraft. In addition, Annex 13 — *Aircraft Accident and Incident Investigation* to the Convention on International Civil Aviation requires that the State of Occurrence forward a notification of an accident or serious incident. The requirements of this Annex are mandated by Indonesia in the CASR 830.5 Immediate Notification, similar to the USA 49 CFR 830.5. The occurrences and example of serious incidents taken from the aforementioned document are as listed in Appendix C.

2.3.3 The DGCA will use the items listed in Appendix C as safety performance indicators for air operators, air traffic service providers and aerodrome operators. As a rule, the acceptable maximum number of occurrences for a specified reference value (e.g. per flight hours/cycles, per ground movement, per sq meter) shall be commensurate with the size, nature, and complexity of an individual aviation organization's specific operational contexts; safety hazards and the associated risks; the availability of an aviation organization's resources to address these safety risks; and the result of consultation and agreement with the respective operator, organization and service provider.

3. CONCLUSIONS

3.1 The approach of the implementation of the SSP is similar to SMS implementation within the industry and will support the interaction between the SSP and the operation of the industry's SMS.

3.2 Performance of internal audit using USOAP Audit Protocols will be an effective means for a State's regular self-check of its continuous compliance with ICAO SARPs, and thus supports the implementation of the Continuous Monitoring Approach programme.

3.3 Use of common taxonomies and definitions for aviation accident and incident reporting systems will serve the need for data exchange. When all Contracting States use similar approach, the data that traditionally could only be used individually, would then be used globally.

3.4 The requirement of mandatory occurrence reports would have been implemented by all Contracting States. The use of the term occurrences to be reported as safety performance indicators will be consistent with ICAO SARPs. This will also make it possible to identify, analyze and take necessary measures on common global aviation safety problem areas.

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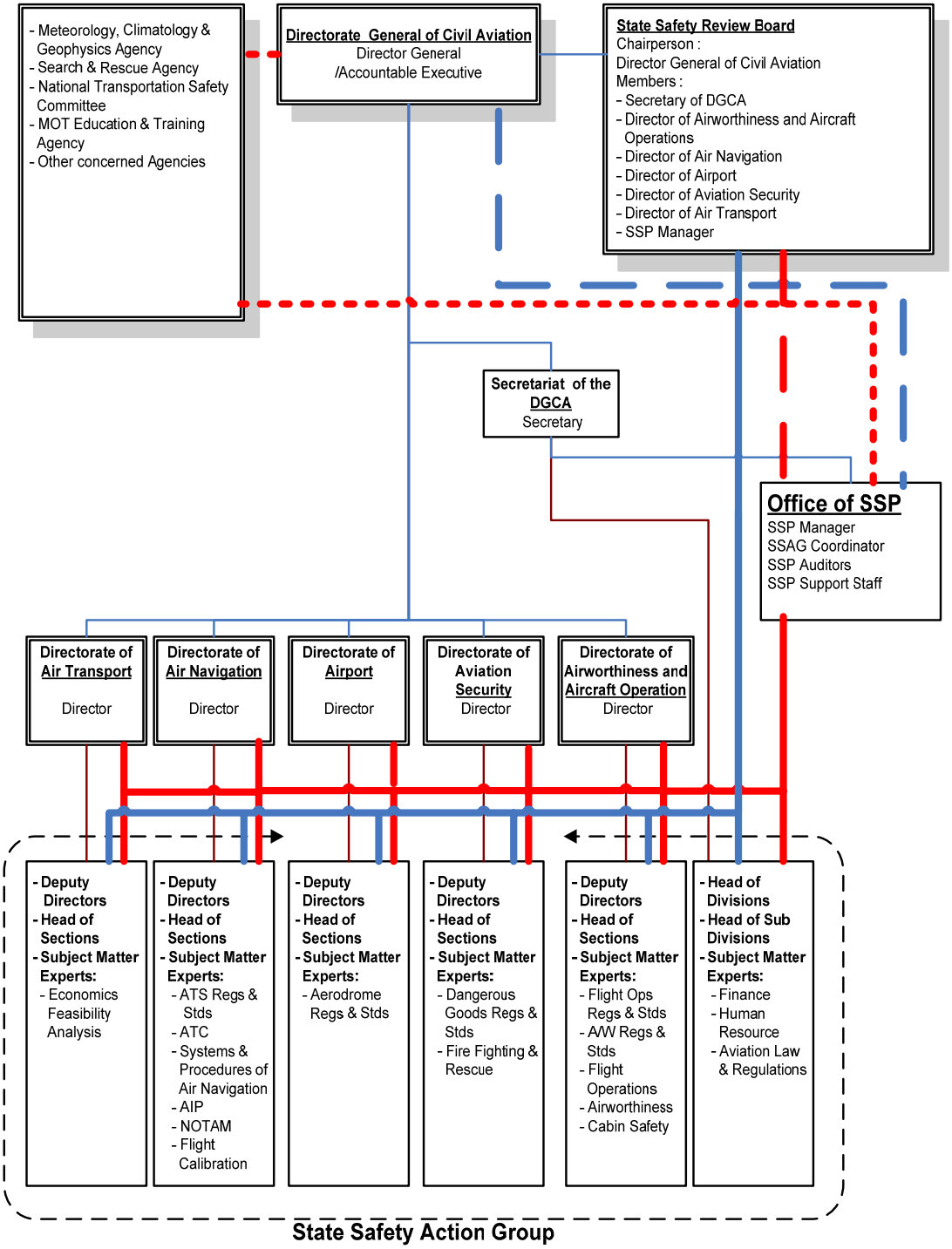
APPENDIX A

Appendix A: Functional Safety Responsibilities and Accountabilities



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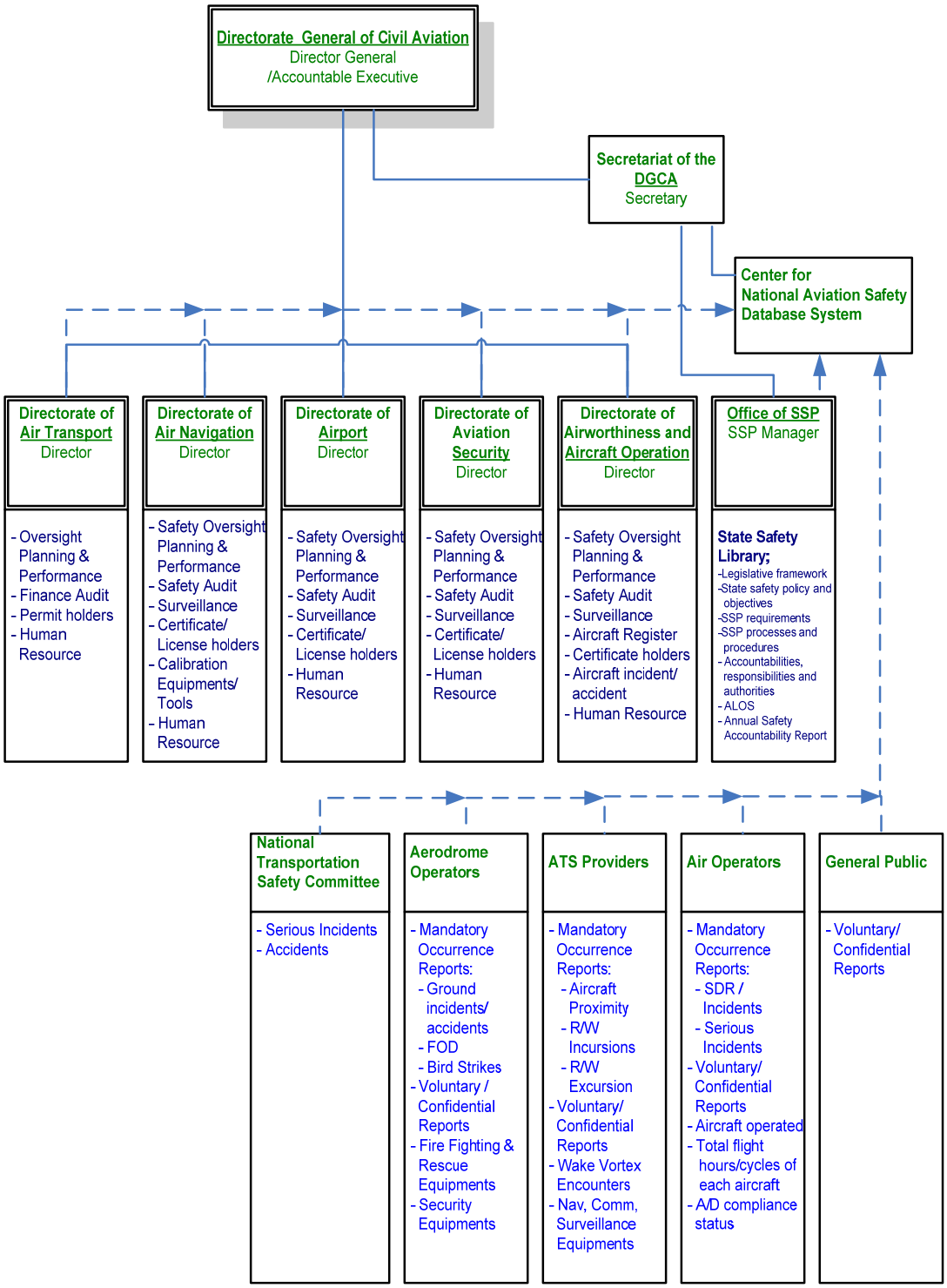
APPENDIX B

Appendix B: National Aviation Safety Database System



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APPENDIX C

INDUSTRY SAFETY PERFORMANCE INDICATORS

SAFETY PERFORMANCE INDICATORS (Air Operator)	ACCEPTED MAX NUMBER OF OCCURRENCES
A. Occurrence or detection of each failure, malfunction, or defect concerning:	
1. Fires during flight and whether the related fire warning system functioned properly	
2. Fires during flight not protected by a related fire warning system	
3. False fire warning during flight	
4. An engine exhaust system that causes damage during flight to the engine, adjacent structure, equipment, or components	
5. An aircraft component that causes accumulation or circulation of smoke, vapor, or toxic or noxious fumes in the crew compartment or passenger cabin during flight	
6. Engine shutdown during flight because of flameout	
7. Engine shutdown during flight when external damage to the engine or aeroplane structure occurs	
8. Engine shutdown during flight due to foreign object ingestion or icing	
9. Engine shutdown during flight of more than one engine	
10. A propeller feathering system or ability of the system to control over speed during flight	
11. A fuel or fuel dumping system that affects fuel flow or causes hazardous leakage during flight	
12. An unwanted landing gear extension or retraction, or an unwanted opening or closing of landing gear doors during flight	
13. Brake system components that result in loss of brake actuating force when the aeroplane is in motion on the ground	
14. Aircraft structure that requires major repair	
15. Cracks, permanent deformation, or corrosion of aircraft structures, if more than the maximum acceptable to the manufacturer or the DGCA	
16. Aircraft components or systems that result in taking emergency actions during flight (except action to shut down an engine)	
17. Emergency evacuation systems or components including all exit doors, passenger emergency evacuation lighting systems, or evacuation equipment that are found defective, or that fail to perform the intended functions during an actual emergency or during training, testing, maintenance, demonstrations, or inadvertent deployments	

18. Failure to mitigate high-risk hazards identified as part of a safety risk assessment	
19. Results of internal audits and surveys conducted in the internal oversight, evaluation, and quality assurance programs	
20. Results of DGCA scheduled safety audits	
B. Serious Incidents:	
1. Flight control system malfunction or failure	
2. Inability of any required flight crewmember to perform normal flight duties as a result of injury or illness	
3. Damage to property	
4. In-flight failure of electrical systems which requires the sustained use of an emergency bus powered by a backup source such as a battery, auxiliary power unit, or air driven generator to retain flight control or essential instruments (For large multi engine aircraft >12,500 lbs MTOW)	
5. In-flight failure of hydraulic systems that results in sustained reliance on the sole remaining hydraulic or mechanical system for movement of flight control surfaces (For large multi engine aircraft >12,500 lbs MTOW)	
6. Sustained loss of the power or thrust produced by two or more engines (For large multi engine aircraft >12,500 lbs MTOW)	
7. An evacuation of an aircraft in which an emergency egress system is utilized (For large multi engine aircraft >12,500 lbs MTOW)	
8. Near collisions requiring an avoidance maneuver to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate	
9. Controlled flight into terrain only marginally avoided	
10. Aborted take-offs on a closed or engaged runway	
11. Take-offs from a closed or engaged runway with marginal separation from obstacle(s)	
12. Landings or attempted landings on a closed or engaged runway	
13. Gross failures to achieve predicted performance during take-off or initial climb	
14. Fires and smoke in the passenger compartment, in cargo compartments or engine fires, even though such fires were extinguished by the use of extinguishing agents	
15. Events requiring the emergency use of oxygen by the flight crew	
16. Aircraft structural failures or engine disintegrations not classified as an accident	

17. Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft	
18. Fuel quantity requiring the declaration of an emergency by the pilot	
19. Take-off or landing incidents. Incidents such as undershooting, overrunning or running off the side of runways	
20. System failures, weather phenomena, operations outside the approved flight envelope or other occurrences which could have caused difficulties controlling the aircraft	
21. Failures of more than one system in a redundancy system mandatory for flight guidance and navigation	

SAFETY PERFORMANCE INDICATORS (Air Traffic Service Providers)	**ACCEPTED MAX NUMBER OF OCCURRENCES**
A. Occurrence or detection of each failure, malfunction, or defect concerning:	
1. Service availability of Air Traffic Control equipment	
2. Pilot deviations (air traffic control contributed)	
3. ATC operational error rates	
4. Operational deviation rates	
5. Missed equipment preventative maintenance	
6. Expired equipment certifications	
7. Missed periodic flight inspections	
8. Failure to mitigate high-risk hazards identified as part of a safety risk assessment	
9. Results of internal audits and surveys conducted in the internal oversight, evaluation, and quality assurance programs	
10. Results of DGCA scheduled safety audits	
B. Serious Incidents:	
1. Loss of separation	
2. Near midair collisions (air traffic control contributed)	
3. Runway incursion rates (at controlled airports)	
4. ATO related accident rates	

SAFETY PERFORMANCE INDICATORS (Aerodrome Operators)	**ACCEPTED MAX NUMBER OF OCCURRENCES**
A. Occurrence or detection of each failure, malfunction, or defect concerning:	
1. Unauthorised personnel on the airside on other parts of movement area	
2. Violation of local traffic rules (vehicles) on other parts of movement area	
3. FOD cases potential (weight of foreign object debris in grams per m2) in apron	
4. FOD cases potential (weight of foreign object debris in grams per m2) in runway	
5. Worn markings	
6. Disruption of primary power supply	
7. Reduced serviceability of one or more light systems	
8. Un-serviceability of one or more light systems	
9. One or more obstacle lights unserviceable more than x hours at a time	
10. Signs out of service	
11. Un-serviceability of aircraft parking aids	
12. Cases of increased alert level (Fire Fighting and Rescue)	
13. Exercise frequency, all types (Fire Fighting and Rescue)	
14. Response time more than 90 seconds (Fire Fighting and Rescue)	
15. Reduced category in relation to traffic (Fire Fighting and Rescue)	
16. Certain resources out of service more than xx hours at a time (Fire Fighting and Rescue)	
17. Use of not fully qualified personnel (Fire Fighting and Rescue)	
18. Un-serviceability of crash alarm	
19. An aircrew being misled by lights which may cause confusion or endanger the safety of aircraft	
20. Runway friction level below minimum standards allowable	
21. Failure to mitigate high-risk hazards identified as part of a safety risk assessment	
22. Results of internal audits and surveys conducted in the internal oversight, evaluation, and quality assurance programs	
23. Results of DGCA scheduled safety audits	
B. Serious Incidents:	
1. Foreign Object Damage to engines or other parts of the aeroplane	
2. Bird strikes	

3. Aeroplane colliding with another aeroplane on other parts of movement area	
4. Aeroplane colliding with vehicle on other parts of movement area	
5. Aeroplane colliding with pedestrian on other parts of movement area	
6. Aeroplane colliding with wildlife on other parts of movement area	
7. Aeroplane colliding with structure other parts of movement area	
8. Aeroplane departing taxiways (aerodrome design and operation related)	
9. Aeroplane undershoot(aerodrome design and operation related)	
10. Aeroplane overrun(aerodrome design and operation related)	
11. Aeroplane veer-off (aerodrome design and operation related)	
12. Aeroplane departing taxiways (aerodrome design and operation related)	
13. Aeroplane colliding with another aeroplane on the runway	
14. Aeroplane colliding with vehicle on the runway	
15. Aeroplane colliding with pedestrian on the runway	
16. Aeroplane colliding with wildlife on the runway	
17. An aeroplane colliding with obstacles during approach	
18. An aeroplane colliding with obstacles during low over-flight	
19. An aeroplane colliding with obstacles during climb-out	

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