

# Advisory Circular

## REPORTING AND INVESTIGATION OF REPORTABLE SAFETY MATTERS

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### GENERAL

Advisory Circulars (ACs) are issued by the Director-General of Civil Aviation (DGCA) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. ACs contain information about standards, practices and procedures acceptable to CAAS. An AC may be used, in accordance with section 11 of the Air Navigation Act (Cap. 6) (ANA), to demonstrate compliance with a statutory requirement. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.

### PURPOSE

This AC provides guidance to demonstrate compliance with, and information related to, the requirements for mandatory reporting of reportable safety matters (RSMs)<sup>1</sup> and their investigation.

### APPLICABILITY

This AC is applicable for the operator operating in accordance with ANR-91, ANR-121, ANR-135, ANR-125 or ANR-137.

### RELATED REGULATIONS

This AC is related to:

- i) Regulation 50 and Third Schedule of ANR-91
- ii) Regulation 24 of ANR-92
- iii) Regulation 26 of ANR-119
- iv) Regulation 46 of ANR-125
- v) Regulation 24 of ANR-137

### RELATED ADVISORY CIRCULARS

- AC 92-3-2 Reporting of Dangerous Goods Occurrences

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<sup>1</sup> 'Reportable safety matters' are previously referred to as 'mandatory reportable occurrences' and the associated reports were known as 'mandatory occurrence reports (MORs)'

## **CANCELLATION**

This revision 2 supersedes revision 1 of AC 91-2-2. In this revision, more examples are provided for various reportable safety matters, and the guidance on reporting procedure is updated. Operators are reminded to conduct investigations as required under the respective regulations.

## **EFFECTIVE DATE**

This AC is effective from 8 January 2024.

## **OTHER REFERENCES**

- European Union Regulations, (EU) 2015/1018
- ECCAIRS Aviation 1.3.0.12 Data Definition Standard

## **1 INTRODUCTION**

- 1.1 Pursuant to Section 29 of the Air Navigation Act 1966 that requires a responsible person to report certain safety matters, Regulation 50 of ANR-91 requires a responsible person, identified as either the Singapore operator in the case of an aircraft operated by a Singapore operator, or the pilot-in-command in any other case involving a Singapore registered aircraft, to make such reports for the safety matters listed in the Third Schedule of ANR-91. The Third Schedule of ANR-91 also sets out the timeline that reports shall be made.
- 1.2 RSMs are one of the safety data sources that are used in safety performance monitoring. It is imperative that the operator reports any incident that meets the description of the RSM in the Third Schedule of ANR 91, including such an incident that the operator has assessed to have no undesirable safety outcome.
- 1.3 Notwithstanding the list in the Third Schedule, the responsible person should report any incident which is deemed to be related to or has the potential to affect its flight safety. This will provide CAAS with the data it needs to trend, analyse and identify impending safety issues and emerging risks.
- 1.4 These reports received by CAAS will be uploaded into the SAIRS<sup>2</sup> by CAAS to manage the RSM. It is based on the ECCAIRS software and the data is in the format aligned with ICAO taxonomy. CAAS makes use of the SAIRS to collate, analyse and monitor the safety trends of the Singapore aviation industry.
- 1.5 This AC provides examples and elaborates on some common incidents that are reportable. It also specifies the reporting and investigation processes.

## **2 EXAMPLES OF REPORTABLE SAFETY MATTERS**

- 2.1 The Third Schedule of the ANR-91 lists broadly the reportable safety matters. The following provides some examples of such incidents found in Paragraph 1(b) of the Third Schedule of the ANR-91. The examples provided are non-exhaustive. If any doubt exists as to whether an incident classifies as a reportable safety matter, the incident should be reported to CAAS regardless.

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<sup>2</sup> SAIRS – Singapore Aviation Accident / Incident Reporting System.

**Item (1) A near collision**

- *An occurrence, either in flight or on the ground, where pilot intervention was required to avoid a collision or an unsafe situation or when an avoidance action would have been appropriate.*

**Item (2) An incident that occurs during a critical phase of flight that has a high potential of causing an accident.**

- *The critical phase of flight refers to taxi, take-off, climb, approach and landing.*
- *This includes but is not limited to actual or marginally avoided undershoots, overruns or running off the side of runways/helipads, or runway or taxiway incursions or excursions.*

**Item (3) A take-off, landing, or attempted take-off or landing, on a closed, unassigned, or engaged runway or helipad**

- *This includes incidents on the taxiway.*

**Item (4) An incident when Controlled Flight into Terrain (CFIT) was only marginally avoided**

- *This includes but is not limited to, incidents when an emergency pull-up manoeuvre was conducted.*
- *This includes any genuine GPWS (Ground Proximity Warning System)/TAWS (Terrain Awareness and Warning System) issued terrain proximity and closure alert that was both appropriate and necessary. An alert against objects or terrain not in the system database is still a genuine warning.*

**Item (5) Any difficulty in controlling the aircraft**

- *This includes:*
  - *incidents due to system failure, weather phenomena or operations outside the approved flight envelope;*
  - *a loss of control both in flight or on ground;*
  - *an aircraft upset, exceeding normal pitch attitude, bank angle or airspeed appropriate for the phase of flight.*

**Item (6) Any flight crew incapacitation**

- *This refers to any reduction in the human performance of a pilot to a degree or of a nature that affects the pilot's capacity to maintain vigilant engagement, physically or mentally, in his / her tasks as a flight crew.*
- *It includes "medical" causes, "external" factors (hypoxia, smoke inhalation, effects of a laser beam on vision, etc) and "flight environment" effects (that resulted in Spatial Disorientation, loss of Situational Awareness, etc.)*

**Item (7) An evacuation of crew, passengers or both.**

- *This includes any evacuation not involving the use of emergency slides.*

**Item (8) Any use of fire extinguishing agent or fire suppression agent;**

- *This includes the automatic discharge of fire extinguishing or fire suppression agents.*

**Item (9) A fire or smoke event, including an event where the fire was extinguished.**

- *This includes:*
  - *any burning, melting, smoke, fumes, arcing, overheating, fire or explosion including presence of smoke in the lavatories, ovens, galley or cabin as a result of aircraft equipment or other articles e.g. passenger PEDs;*
  - *contaminated air in the cockpit or in the passenger compartment which has or could have endangered the aircraft, its occupants or any other person;*
  - *genuine activation of fire or smoke warning systems.*

**Item (10) An event requiring the emergency use of oxygen.**

- *This does not include the use of oxygen by non-crew due to medical conditions.*
- *This includes the inadvertent deployment of the passenger oxygen system and any situation where the aircraft's cabin pressure warning system is genuinely activated.*

**Item (11) Any gross failures to achieve predicted performance during take-off or initial climb**

- *This includes failures during a go-around.*

**Item (12) A declaration of emergency**

- *Refers to the declaration of emergency (PAN or MAYDAY) such as due to low fuel state, or system or component malfunctions/failures (exclude declaration of emergency for priority landing due to medical reason).*

*Note: For situations where long holding time might result in low fuel states, operating crew should take the most appropriate course of action without jeopardising aircraft safety.*

**Item (13) Any failure of, or significant damage to, aircraft structure or disintegration of any part of the engine or external part of the aircraft, or uncontained turbine engine failures, that is not classified as an accident**

- *This includes:*
  - *tail, blade, wingtip or nacelle strike during take-off or landing;*
  - *loss or failure of any part of the structure in flight;*
  - *structural damage resulting from any cause which requires any permanent or temporary repair affecting the airworthiness of the aircraft.*

**Item (14) Any failure of more than one system in a multiple-redundancy system mandatory for flight guidance and navigation, not being circumstances permitted under the minimum equipment list;**

- *This excludes instances where a multi-redundancy system is required to be deactivated for the purposes of flight in response to a checklist.*

**Item (15) An incident of multiple malfunctions of one or more aircraft systems that seriously affected the operation of the aircraft**

- *This includes repeated malfunctions of one or more systems during flight despite corrective actions being applied and which requires active intervention by the crew during each instance of occurrence.*

**Item (16) A dangerous goods incident**

- *This includes:*
  - *spillage, leakage of dangerous goods or damage to packages containing dangerous goods packages when such goods are transported on an aircraft or handled on the ground while under the responsibility of the air operator;*
  - *unsecured and incorrect labelling, packaging and handling of dangerous goods.*

**Item (17) Any carriage of dangerous goods in a manner that does not conform with the provisions of Annex 18 to the Chicago Convention and its Technical Instructions**

- *This includes the discovery of undeclared, mis-declared or prohibited dangerous goods transported as cargo or in air mail or passenger baggage.*

**Item (18) Any violation of local safety legislation or requirements**

- *This includes:*
  - *fewer staff/crew members at the workplace than required by regulation;*
  - *rest time less than required by regulation;*
  - *operation with an invalid license or certification, or carrying out an operation not covered by the license;*
  - *the exceedance of the duty time by a person.*

**Item (19) An air turn-back**

- *Refers to a scenario where the aircraft becomes airborne and is required to return to the point of departure prior to the completion of the flight's original intentions.*
- *This does not include air turnback due to medical reasons except where it involves crew members.*

**Item (20) A diversion**

- *This does not include diversions due medical reasons except where it involves crew members.*

**Item (21) A rejected take-off**

- *Refers to any rejected take-off manoeuvre that occurs after the engine thrust is applied for the commencement of take-off.*
- *This includes low-speed rejected take-offs regardless of the reason why a take-off was rejected.*

**Item (22) A significant safety or security-related event**

- *This includes:*
  - *a bomb threat, a hijack or similar event, a security breach, a stowaway;*
  - *severe turbulence when the pilot deems the turbulence to be severe or when the aircraft deviates from the intended level due to turbulence;*
  - *any security incidents that the operator is cognisant of that may endanger the operation of an aircraft, or which causes or may cause a danger to persons or property;*
  - *any security incidents related to the Aircraft Network Security Programme (ANSP).*

**Item (23) Any circumstances requiring a manoeuvre to avoid collision with another aircraft other than a near collision**

- *This includes the activation of Airborne Collision Avoidance System (ACAS) Resolution Advisory (RA).*
- *This does not include ACAS Traffic Advisory (TA).*

**Item (24) Any activation of ground proximity warning system other than an incident described in item (4)**

- *This includes all GPWS advisory, caution, and warning activations.*

**Item (25) Any shutdown of an engine in flight**

- *This includes intentional and unintentional shutdowns.*

**Item (26) A hard landing**

- *This includes:*
  - *any time the flight crew suspects a hard landing has occurred and the technical log has been annotated as such, regardless of whether it is subsequently confirmed;*
  - *any landing which requires a hard landing check.*

**Item (27) Any windshear requiring pilot to initiate recovery action**

- *This includes windshear avoidance initiated without a system-generated warning.*

**Item (28) An activation of stall warning or stick shaker**

- *This includes:*
  - *activation of low-speed protections and warnings e.g. Alpha Floor;*
  - *momentary activations resulting from configuration changes or the use of speedbrakes.*

**Item (29) An air traffic control-related (ATC) event**

- *This includes:*
  - *unclear or conflicting instructions and misinterpretation in communicating with ATC;*
  - *unsafe or wrong ATC clearance.*

**Item (29A) A loss of communication with air traffic control (ATC)**

- *This includes poor, intermittent or loss of communication with ATC (by voice and other means).*

**Item (30) Any unintentional deviation of airspeed, intended track or altitude that result in the activation of a deviation notification**

- *This includes:*
  - *a level bust;*
  - *an unintended deviation of track that is due to wrong selection of waypoint/track during navigation or incorrect manipulation of the aircraft controls and/or autopilot;*
  - *an unintended deviation from the intended horizontal and vertical approach path;*
  - *an unintended deviation from the intended approach path as a result of false or inaccurate approach guidance;*
  - *an unintended deviation from the intended airspeed, whether over or underspeed, including as a result of external factors e.g. turbulence, windshear, etc.*

*Note: All unintentional deviation should be reported as there are some aircraft that do not have deviation notification warning system.*

**Item (31) A taxi error**

- *This includes:*
  - *an error resulting from incorrect ATC clearance;*
  - *an exceedance of the parking bay stop position markings;*
  - *taxiing on a closed or unserviceable taxiway;*
  - *taxiing on a taxiway unsuitable for the aircraft type;*
  - *excursion from the prepared taxiway surface.*

**Item (32) An unstabilised approach**

- *This includes approaches that are unstable as a result of external factors e.g., adverse weather and wake turbulence.*

**Item (33) A lightning strike**

- *This includes:*
  - *all lightning strikes regardless of whether the occurrence results in aircraft damage;*
  - *evidence of lightning strike discovered on the ground.*

**Item (34) A bird strike**

- *This includes evidence of bird strike discovered during ground checks.*

**Item (35) Any incapacitation of a cabin crew member that renders that cabin crew unable to perform critical safety duties**

- *This includes any injuries sustained in turbulence and self-caused injuries for example, due to helping passengers with baggage, scalding during meal service, and unserviceability of service equipment etc.*
- *Crew fatigue which may also result in inability to perform critical safety duties should also be reported.*

**Item (36) An aircraft abnormality or engine vibration**

- *This includes but is not limited to:*
  - *malfunction or defect of any indication system when this results in misleading indications to the crew;*
  - *uncontrollable cabin pressure;*
  - *abnormal functioning of flight controls such as asymmetric or stuck / jammed flight controls such as ailerons, elevators, rudder, flaps, slats and spoilers;*
  - *fuel system malfunctions or defects, which had an effect on fuel supply and/or distribution;*
  - *failure or significant malfunction of any part or controlling of a propeller, rotor or powerplant;*
  - *damage to or failure of main / tail rotor or transmission and/or equivalent systems;*
  - *failure or malfunction of an APU when required for flight dispatch (Extended Diversion Time Operations (EDTO) or Minimum Equipment List (MEL));*
  - *engine operating limitation exceedance, including overspeed or inability to control the speed of any high-speed rotating component such as APU, air starter, air cycle machine, air turbine motor, propeller or rotor;*
  - *failure or malfunction of any part of an engine, powerplant, APU or transmission resulting in any one or more of the following:*
    - *thrust-reversing system failing to operate as commanded;*
    - *inability to control power, thrust or revolutions per minute (rpm);*
    - *non-containment of components/debris.*
  - *loss of a hydraulic system;*
  - *loss of any other system that is significant for flight safety.*

**Item (37) A blown tire or wheel failure**

- *This includes:*
  - *tire deflation, puncture, flat spot, or tread loss that renders the tire unserviceable;*
  - *evidence of wheel or tire damage discovered during ground checks.*

**Item (38) Any damage to aircraft by a foreign object**

- *This includes external damage to aircraft where the source or damage cannot be determined.*

**Item (39) Any use of incorrect or contaminated fuel, oil or other fluid**

- *This includes oxygen, nitrogen or potable water.*



**Item (40) Any underfuelling**

- *This includes incidents of critically low fuel quantity or fuel quantity at destination below required final reserve fuel.*

**Item (41) A loading or load sheet error**

- *This includes:*
  - *handling or loading of passengers, baggage, mail or cargo, regardless of whether it has a significant effect on aircraft mass and/or balance, including any error in securing loads;*
  - *any error in loadsheet or loading instruction report (LIR) calculation or annotation. This includes circumstances where the flight crew require an amendment to correct incorrect loading information.*

**Item (42) Any significant spillage or leakage of oil, fuel or other fluid**

- *This includes occurrences where the leakage required an intervention such as a ramp clean-up or maintenance action to the aircraft.*

**Item (43) Any other occurrence that endangers or may endanger the operation of an aircraft, or which causes or may cause a danger to persons or property**

- *This includes:*
  - *unlawful interference or air rage;*
  - *wake-turbulence encountered;*
  - *use of incorrect data or erroneous entries into equipment used for navigation or performance calculations;*
  - *abnormal functioning of flight controls such as asymmetric or stuck/jammed controls;*
  - *exceedance of aircraft flight manual limitation;*
  - *landed fast at a speed significantly higher than the reference approach speed;*
  - *landing outside of the touch-down zone (short, long, or laterally);*
  - *activation of fire or smoke warning systems when no fire was eventually found to be present e.g., spurious events;*
  - *failure of any emergency or rescue system or equipment which has or could have endangered the aircraft, its occupants or any other person;*
  - *cracks, permanent deformation, delamination, debonding, burning, excessive wear or corrosion of aircraft structure or major aircraft components that exceed specified limits, including defects found during maintenance of the aircraft or component.*

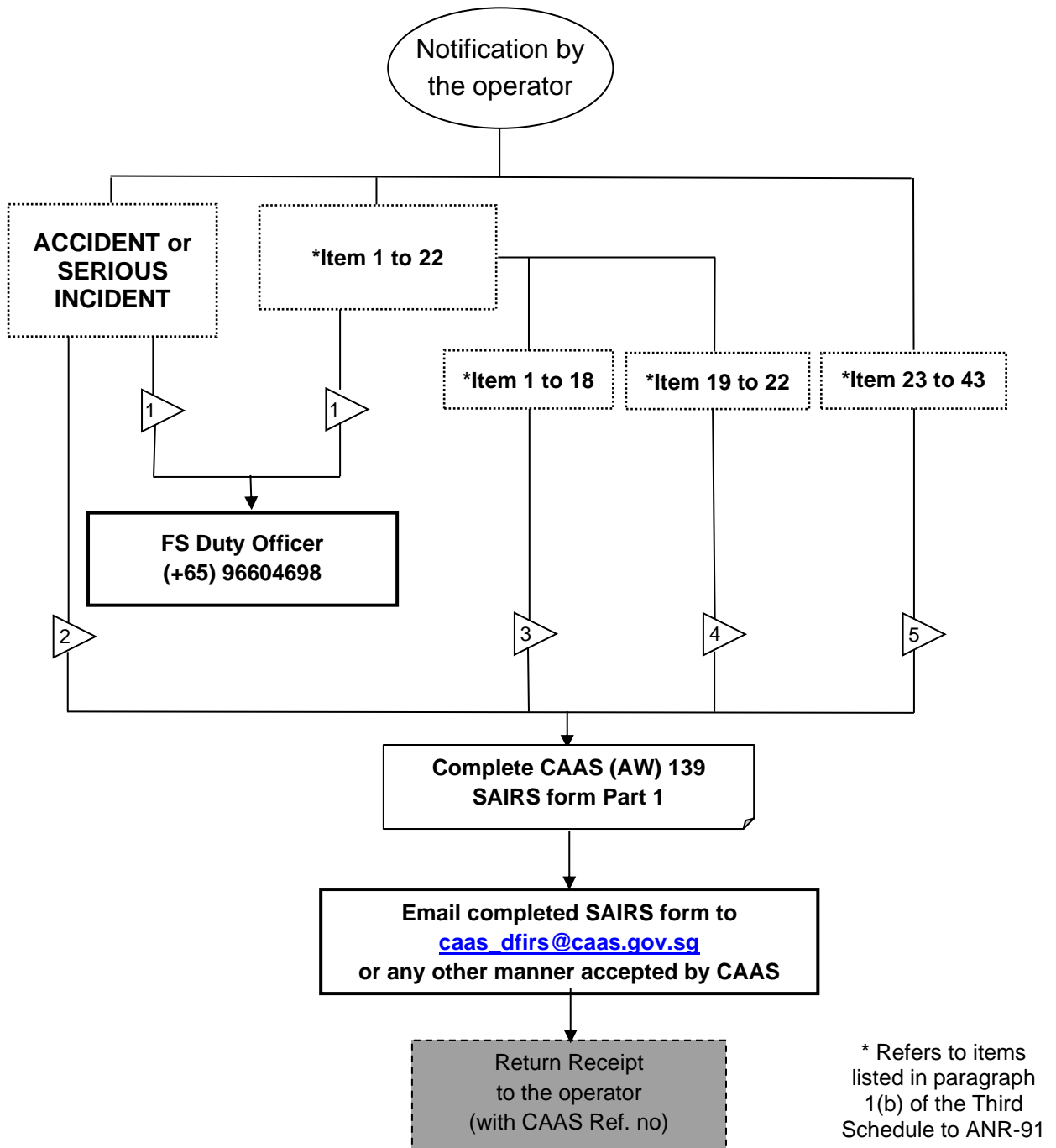
### **3 REPORTING PROCEDURE**

- 3.1 A formal notification should be made using the CAAS(AW)139 SAIRS form – Part 1: Initial Notification. The form can be downloaded from the CAAS website at [www.caas.gov.sg](http://www.caas.gov.sg).
- 3.2 The operator or pilot-in-command should provide all available and accurate information in the initial notification. However, the operator or pilot-in-command should not delay the initial notification because of incomplete information. Follow-up reports should be provided as more information becomes available. The operator or pilot-in-command is strongly advised to provide prompt information to CAAS on the results of investigations and the actions taken to control the situation to minimise direct CAAS involvement in the investigative activity.
- 3.3 Formal notification are to be made by the operator through the submission of the completed CAAS(AW)139 form to CAAS via email or in any other manner acceptable to the Authority. Submission should be made to [caas\\_dfirs@caas.gov.sg](mailto:caas_dfirs@caas.gov.sg).
- 3.4 The Appendix provides the reporting process and the stipulated reporting deadlines.
- 3.5 For the reporting of occurrences related to the transport of dangerous goods as described in items (16) and (17) of paragraph 1(b) of the Third Schedule of ANR-91, only Part 4 of CAAS AW139 needs to be completed. Operators may refer to CAAS Advisory Circular AC 92-3-2 *Reporting of Dangerous Goods Occurrences* on the reporting of such occurrences to CAAS.

### **4 RSM INVESTIGATION AND FOLLOW-UP**

- 4.1 Regulation 26 of ANR-119, regulation 46 of ANR-125 and regulation 24 of ANR-137 require the respective operator to conduct the necessary investigation after an RSM occurs.
- 4.2 The outcome of investigations into RSMs that are classified as accidents or serious incidents are to be submitted to CAAS. CAAS may also request the operator to submit an investigation report for an incident that is not classified as an accident or serious incident. CAAS may also request the operator for a summary of its investigation reports of all its RSMs periodically.

**APPENDIX SAIRS PART 1: INITIAL NOTIFICATION FLOW PROCESS**



Verbal Notification

1 Immediate through most expeditious means (i.e. telephone, SMS)

Written Notification

2 Within 3 hrs from immediate verbal notification

3 Within 24 hrs

4 Within 72 Hrs

5 Within 3 working days