Australian Government

Australian Transport Safety Bureau

SIIMS

Occurrence Type
Coding Manual

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Introduction

The aim of the SIIMS Occurrence Type Coding Manual is to ensure consistent and efficient coding of ATSB occurrences to the SIIMS Occurrence Type taxonomy. The taxonomy is listed on pages 8-9 of this manual.

The SIIMS Occurrence Type taxonomy

The Occurrence Type taxonomy is the SIIMS coding scheme for recording '*What*' happened in an occurrence. An independent but related coding scheme, the SIIMS Safety Factor taxonomy, is used to record the '*How*' and '*Why*' of an occurrence.

A guiding principle behind the SIIMS Occurrence Type taxonomy is that a relatively simple coding scheme will greatly increase the quality of the data that are recorded in the occurrence database. Experience with earlier schemes for coding aviation safety data has shown that trying to code occurrences to a high level of detail is counterproductive. Using a complex coding scheme greatly increases the chance that there will be significant variations in the coding of occurrences. This is particularly the case when data are being coded by a range of different people.

The SIIMS Occurrence Type taxonomy follows a data-driven approach in that a particular occurrence type is only included in the taxonomy if either;

- it is an occurrence type commonly reported to the ATSB - for example:
    - Birdstrikes,
    - Operational non-compliance
    - Breakdown of co-ordination

- it is an uncommon but important occurrence type – for example:
    - CFIT
    - In-flight break up
    - Mid-air collisions

The SIIMS Occurrence Type taxonomy is a three level hierarchy. In general, the structure of the hierarchy follows the ICAO ADREP 2000 model, and is divided into the following Level 1 Occurrence Type groupings;

- *Operational* – occurrences that relate specifically to aircraft operations that involve a human element.
- *Technical* – occurrences that relate specifically to a failed aircraft component or system.
- *Airspace* – occurrences that relate specifically to controlled and uncontrolled air space issues.
- *Infrastructure* – occurrences that relate specifically to the failure or anomalies with aerodrome and ATC facilities that direct affect an aircraft operation.
- *Environment* – occurrences specifically related to external influences that have a direct impact on aircraft operations.
- *Consequential Events* – occurrences that relate specifically to an operational necessity as the result of one of the other Level 1 groupings.

Note: A Consequential Event is never to be coded as 'primary' occurrence type.

Each of the Level 1 Occurrence Type groupings is sub-divided into a number of related Level 2 groupings. In turn, Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings. The full three-level SIIMS Occurrence Type taxonomy is shown in Figure 3.

The hierarchical nature of the SIIMS Occurrence Type taxonomy is of fundamental importance. It allows Level 3 data to be logically aggregated into Level 2 groupings, and then subsequently into Level 1 groupings. This is essential for higher-level data analysis.

It is prudent to recognise that in some cases an occurrence type may fall across two or more Level 1 groupings. Rather than create a specific coding for each Level 1 grouping, the hierarchy has been designed to capture it under the more common of the occurrence types. For example, a 'fuel starvation' occurrence may be the result of a flight crew fuel management mistake or a mechanical failure. Statistical data from SIIMS shows that the common cause of fuel starvation is fuel management and has been listed as an *'Operational'* occurrence *(Fuel related/Starvation)*.

Operational

Aircraft control
Airframe overspeed
Control issues
Hard landing
Incorrect configuration
In-flight break-up
Loss of control
Stall warnings
Unstable approach
Wheels up landing
Other

Aircraft loading
Dangerous goods
Loading related
Other

Communications
Air-ground-air
Callsign confusion
Transponder related
Other

Crew & cabin safety
Intercrew communications
Cabin injuries
Cabin preparations
Depressurisation
Flight crew incapacitation
Passenger related
Unrestrained
occupants/objects
Other

Fire, Fumes & Smoke
Fire
Fumes
Smoke

Flight preparation/Navigation
Aircraft preparations
Flight below minimum
altitude
Lost / unsure of position
VFR into IMC
Other

Fuel related
Contamination
Exhaustion
Leaking or venting
Low fuel
Starvation
Other

Ground operations
Foreign object
damage/debris
Ground handling
Jet blast/Prop/Rotor wash
Taxiing collision/near
collision
Other

Ground proximity alerts / warnings

Miscellaneous
Missing aircraft
Security related
Warning device other
Other

Runway events
Depart/App/Land Wrong
Runway
Runway excursion
Runway incursion
Runway undershoot
Other

Terrain collisions
Collision with terrain
Controlled flight into terrain
Ground strike
Wirestrike

Technical

Airframe
Doors/exits
Furnishings and fittings
Fuselage/wings/empennage
Landing gear/indication
Objects falling from aircraft
Windows
Other

Powerplant/Propulsion
Abnormal engine indications
Auxiliary Power Unit
Engine failure or malfunction
Propeller/Rotor malfunction
Transmission & Gearboxes
Other

Systems
Air/Pressurisation
Anti-ice protection
Avionics/Flight instruments
Datalink (UAS)
Electrical
Fire protection
Flight controls
Fuel
Hydraulic
Other

Airspace

Aircraft separation
Airborne collision alert system warning
Collision
Loss of separation
Loss of separation assurance
Near collision (airborne)
Issues

Airspace infringement

ANSP Operational Error
Failure to pass traffic Information / Procedural error
Other

Encounter with RPA
Collision with RPA
Near encounter with RPA
Sighting

Breakdown of Co-ordination
Operational non-compliance
Other

Encounter with remotely piloted aircraft
Collision with RPA
Near encounter with RPA
Sighting

Infrastructure

ATM
Navaids
Radar
Runway lighting
Other

Environment

Interference with aircraft from the ground

Weather
Icing
Lightning strike
Microburst
Turbulence / Windshear / Microburst
Unforecast Weather
Other

Wildlife
Animal strike
Birdstrike
Other

Other

Consequential Events

Ditching
Diversion/Return
Emergency Evacuation/
Emergency /Precautionary descent
Forced/Precautionary landing
Fuel dump/burn off
Missed Approach/Go-around
Rejected take-Off
Other

Figure 3. SIIMS Occurrence Type taxonomy structure

Why standardisation is important

Standardisation in the way the Occurrence Types are coded is extremely important to ensure that the ATSB has a high level of quality safety data available for reporting and analysis.

The two main mechanisms to ensure standardisation of Occurrence Type coding are,

- clear and comprehensive definitions and guidance material
- adherence to a defined quality assurance process

The objective of the SIIMS Occurrence Type Coding manual is to provide clear and comprehensive definitions and guidance material.

Occurrence Type coding

The aim of Occurrence Type coding is to succinctly describe the *'what'* happened during an occurrence.

It is important to note that Occurrence Type coding is intended to summarise and record only the essential aspects of what happened. It is not the intent of the Occurrence Type coding process to exhaustively list all of the discrete events that make up the investigation analysis timeline.

The 'What happened' test

To help understand how to code Occurrence Types, imagine that you were the person involved in the occurrence that you are coding, and that someone has just asked you "What happened?" What would your initial reply be before you elaborated in more detail? How would you describe the gist of the occurrence in just a few words?

There are two aspects to the 'What happened' test. Firstly, you would not omit any essential aspect of the occurrence in your description, but equally, you would not cloud the picture with unnecessary detail.

Evidence-based coding

The principle of evidence based coding requires that Occurrence Type coding must be based solely on actual information contained in the occurrence summary or report. Coding must not be based on an assumption of what probably, or might have, occurred. While this may seem an obvious requirement, in practice, care must be taken to ensure that the rule is always applied.

Relationship between Occurrence Types and Safety Factors

In some cases, the same aspect of an occurrence can potentially be coded as either an Occurrence Type or as a Safety Factor. For example, occurrences involving weather fall into this category. The best way to approach this question is to remember that Occurrence Types describe '*What'* happened, while Safety Factors describe '*How'* and '*Why'* it happened. If weather is the main event, then code it as an Occurrence Type. If, however, weather is best thought of as an explanation as to how or why some other event occurred, then code the turbulence as a Safety Factor.

Potential pitfalls in Occurrence Type coding

Always ensure that the Occurrence Type assigned to a particular occurrence event correctly fits under the related top level hierarchy of the Occurrence Type taxonomy

(namely, *Operational*, *Mechanical*, *Airspace*, or *Infrastructure, Environment and Consequential Events*). If care is not taken with this aspect of coding, then the aggregated *Operational* data will be contaminated with *Mechanical* occurrences. Hence, the data will be less reliable, and any analysis and safety action based on the data will be less well-founded.

Some occurrences that appear similar are, in fact, quite different. For example, 'Fuel starvation' related occurrences could include a pilot selecting the incorrect fuel tank (coded as *Operational / Fuel related / Starvation*), or being the result of a mechanical issue *(Mechanical / Systems / Fuel)*. It would be wrong to code these two Occurrence Types the same way because they actually relate to two different deficiencies in the aviation system. If subsequent analysis requires adding the two types of 'Fuel starvation' occurrences together, then that can be done quite easily. However, if the two groups are not coded separately, then a later requirement to compare *Operational* and *Airspace* 'Fuel starvation' occurrences would be difficult.

When coding Occurrence Types, be wary of being overly influenced by the specific wording used in an occurrence report or summary. For example, a pilot might report that they carried out a 'forced landing', when in fact the Occurrence Type is more correctly coded as a precautionary landing (see page 159).

The Primary Occurrence Type

The Primary Occurrence Type is the key or pivotal event in the occurrence sequence.

If only one Occurrence Type is coded for an occurrence, then by definition that is the Primary Occurrence Type.

Where there is a choice, deciding on the Primary Occurrence Type is largely a matter of applying the 'What happened' test. In this case, what *single* event best describes what happened in the occurrence.

The Primary Occurrence Type is not necessarily the first Occurrence Type in the time sequence of events.

In practice, the Primary Occurrence Type is largely characterised by the relative safety significance of the Occurrence Type, compared to other Occurrence Types coded for that occurrence. For example, in the following cases the Occurrence Type in bold italics would be coded as the Primary;

- ***Wirestrike***, Wheels up landing
- Hydraulic system failure, ***Wheels-up landing***
- Loss of control, ***In-flight break-up***

If it is difficult to decide between two possible choices for Primary Occurrence Type, another practical test that can be applied is to consider whether one of the Occurrence Types is largely an inevitable consequence of the other. In that case, the earlier event in the occurrence sequence is coded as the Primary, rather than the consequent event. For example, in the following cases the Occurrence Type in bold italics would be coded as the Primary;

- ***Engine failure***, Forced landing
- Door-Exit, ***Depressurisation***, Emergency descent
- ***Windshear,*** Missed approach

It should be noted that the Primary Occurrence Type is determined relative to other Occurrence Types coded for that particular occurrence. Hence, it is not an indication, in an overall sense, that the Occurrence Type is a particularly compelling example of that type of event. For example, wirestrikes coded as the Primary Occurrence Type should not be considered of any greater significance, or better examples of wirestrikes, that those not coded as the Primary Occurrence Type.

> **Note: If in doubt about assigning a particular occurrence type as the Primary then seek assistance from Safety reporting management.**

Statistical reports of Occurrence Type data should include all occurrences of a particular type and not just occurrences where a Primary Occurrence Type was coded.

The practical importance of the Primary Occurrence Type in the SIIMS database is that it is the Occurrence Type used to populate certain fields that require a single entry, such as the 'What' part of the occurrence title 'What - Where - When'. The Primary Occurrence Type also forms part of the default title for related investigations.

> **Note: Consequential Events should never be coded as single or primary occurrence type.**

Occurrence descriptors

The majority of occurrence types have associated descriptors – commonly referred to as '4th Level Descriptors'. These are incorporated primarily to value add for the purposes of statistical and research analysis. While not predominantly 'mandatory', users are to add information where it is provided in a report. If there is contradiction across multiple reports please refer the matter to a Notifications manager. The descriptors form part of the *'occurrence type'* that is imported or added to the occurrence record.

Writing occurrence summaries

Introduction

It is important that summaries are entered into SIIMS in a manner that is easily understood by stakeholders and the general public. It is equally important that summaries remain contextually consistent for the various occurrence types. The summary should be written in plain English without being overcomplicated by technical jargon. Summaries are rarely, if ever, read in isolation of other key data fields such as aircraft details, date and location and therefore do not require a 'war and peace' narration.

General information on the writing style that should be used can be found in the *'ATSB's little book of style'*. The information provided below is specifically aimed at the conventions for writing public occurrence summaries.

Key summary points

While there are many types of occurrences, the structure of the summary remains essentially the same and should 'tell the story' in a simplified manner. The following is a general guide in terms of the key points that should be considered when writing a summary, keeping in mind that the written information must be relevant.

- **The Where it happened** (or the situation) – for example:
    - passing 4,000 ft (climb/descent)
    - during the take-off run at 60 kts
    - while conducting an instrument approach to runway 14 (where relevant to occurrence)
    - the Brasilia aircraft was inbound on the reciprocal track at FL 140.

- **What happened** and any associated crew, ATC or technical action
    - '…. resulting in a loss of separation.'
    - '…. the crew received a hydraulic system warning and returned to Essendon. An engineering inspection revealed that the right engine hydraulic pump had failed.'
    - '….. the aircraft struck a bird.' (use species if known)
    - 'The aircraft entered controlled airspace without a clearance.'
    - 'The crew responded to an ATC instruction intended for another aircraft with a similar callsign.'
    - 'Passing 4,000 ft on climb……..'
    - 'During take-off at about 50 kts……'

- **The result** – for example:
    - the engine was shut down and the aircraft diverted to Sydney
    - descent was delayed until clear of the other aircraft
    - there was an infringement of separation standards
    - the aircraft sustained minor damage to the right skid
    - the pilot was fatally injured.
    - The pilot sustained minor injuries
    - The aircraft landed hard resulting in minor damage to the tail

- **Any other contributing circumstances or factors** – for example:
    - o the controller did not resolve the incorrect read-back by the pilot
    - o the pilot later advised that he deviated from track to avoid weather
    - o the student pilot was on a solo navigation exercise (only if relevant)
    - o the fuel was found to be contaminated with water
    - o the left main gear brake hydraulic line had failed
    - o the smoke detector was found to be faulty and was replaced
    - o During touchdown with a strong crosswind

Acknowledge the source

When conflicting reports or subjective reporter assessments are received, it may be prudent to acknowledge the source of information as the accuracy (or otherwise) depends upon the integrity and reliability of that source. This ensures that data entered into the occurrence database may be taken in the context of the information source from which it was obtained.

Such phrases may include:
- 'The pilot reported that ….'
- 'ATC reported that .…'

When distances, times, speeds et cetera are not verified, the term 'approximately' should be used. For example, 'At approximately 500 ft above the ground……'.

Don'ts

When writing a summary, avoid using:

- Emotive language – Using terms such as 'violent', 'evasive' or 'near miss' can give the perception that the occurrence is a lot more serious than it actually is.

- Vertical and horizontal distances in 'near collision' occurrences for Loss of Separation or 'near collisions', Use the phrase for 'near collision' passed in close proximity' and for LoS use '…*resulting in a loss of separation' or 'A loss of separation occurred between…'*. The relative positions and tracks of the involved aircraft are usually of more importance and provide the reader more context as to what actually happened.

- ***Unnecessary passages*** that refer to issues that did not occur. For example:

  - There were no injuries.
  - The aircraft was not damaged.
  - There was no loss of separation standard.
  - The aircraft landed safely.

Standard conventions

The following conventions are used when writing summaries that relate to or include;

E/GPWS - include the actual warning message in full capital text
    e.g. …. the crew received an E\GPWS BANK ANGLE warning

SID/STARS - include the full name of the SID/STAR as published in the AIP
    e.g. …. the aircraft did not adhere to the height requirement of the DEENA 4 SID.

Aircraft models - Only include aircraft manufacturer and model details in a summary where there is more than one aircraft involved. Use the short name for the manufacturer and the basic model details

    e.g. 'Boeing 737' instead of The Boeing Company 737-823
    e.g. 'Embraer ERJ-190' instead of Empresa Brasileira de Aeronáutica ERJ-190
    e.g. 'Airbus A320' instead of Airbus Industrie A320-200

Use of acronyms

Only approved acronyms listed on the National Aviation Occurrence Database section of the ATSB website are to be used in public occurrence summaries. The only exception is when the unabbreviated term is used in the summary once followed by the abbreviation. In all cases the term is to be followed by the abbreviation capitalized and in brackets. All subsequent uses of the term in the summary can then be written in the abbreviated form.

    e.g. primary flight display (PFD)
    e.g. electronic engine control (EEC)

Safety Factor coding

The widespread and consistent coding of safety factors allow for deeper analysis of occurrences in Research Investigations where the 'how' and 'why' of particular occurrence types of can be determined. As such, it is important to code safety factors for all occurrences where information exists.

As a general rule, for non-investigated occurrences, Notification Reports that contain information relating to a contributing factor(s), where the probability of that factor existing and relating in some way to the occurrence is more likely than not (>=50%), then an appropriate Safety Factor code must be assigned to the occurrence record. When an involved person (eg. pilot, air traffic controller) reports that something contributed to the occurrence, even when there is no other proof, it should be taken as meeting the 50% rule and coded as a safety factor.

Safety factors are used internally for the analysis of groups of occurrences only, and are never given publically for individual occurrences. As such, the safety factor description field can be a copy & paste directly from the reporter's original text in the Notification Report.

Safety Factor coding for all investigations is the responsibility of the IIC. For short investigations, occurrence safety factors are coded according the facts described in the investigation report. For complex investigations, safety factor coding is part of the SIIMS Investigation Analysis module.

> *Note: Details for coding safety factors can be found in Appendix D of the ATSB Safety Investigation Tools – Analysis Supplement.*

Coding injuries

For the most part, coding injuries is straight forward as per the definition provided in Chapter 1, ICAO Annex 13. However, caution must be taken when coding issues relating 'incapacitation' where the level of seriousness is not reported but for symptoms the individual experienced. For example, a flight crew member suffering food poisoning or a stomach virus may continue to perform duties in a limited manner whereas others may be totally incapacitated and hospitalised. It may be necessary to follow up with operators to ascertain the level of severity to accurately record the injury level.

> *Note: Care should be taken when requesting this information given the sensitivities the relating to flight crew and private health matters.*

Users are to be aware of the use of reports by others describing injuries caused by aircraft handling. For example, if a cabin crew member reports an injury as the result of a hard landing, then the operator should be contacted to verify that a hard landing actually occurred, particularly as the 'hard landing' is a reportable matter.

Events

Reports coded as an 'Event' relate specifically to those occurrences that do not meet the definition of a 'Transport Safety Matter' as prescribed in Section 23 of the TSI Act. These are imported to the SIIMS Occurrence database in the same manner as any TSI reportable occurrence with the exception that they are not currently subject to a 'quality assurance' review.

'Other' as an occurrence type

'Other' should only be coded when users are satisfied that there is not a relevant occurrence type within the taxonomy hierarchy. If unsure of a suitable coding, please contact Safety Reporting Management to discuss.

The 'Other' levels will be reviewed on an as required basis to ascertain if data captured under specific categories require a new code in its own right.

Structure of the SIIMS Coding Manual

The SIIMS Occurrence Type Coding Manual includes three types of information in relation to Occurrence Types:

- a definition of the Occurrence Type
- guidelines for applying the description
- examples of the Occurrence Type

Note: Where relevant, examples of 'Events' will be included (TCAS RA's – no separation issue, GPWS terrain warnings in VMC, and so on.)

Where possible, Occurrence Type definitions are based on existing definitions developed by the ATSB, ICAO, or other reputable international organisations. The guidelines for applying the definition provide explanatory and guidance material to aid the coder in applying the definition in practice.

The examples are intended to highlight both common and not so common examples of the particular Occurrence Type.

The examples used in this manual are based on actual ATSB occurrences. However, the summary text of the occurrences has, in some cases, been edited for brevity and to highlight the aspects of the occurrence most relevant to the particular Occurrence Type in question. Hence, the summary texts from this manual should not be used for any other purpose, or reproduced outside the ATSB.

Operational groupings

Introduction   This chapter provides the **Operational** Occurrence Type groupings and relate specifically to aircraft operations in general

Background   Each of the Level 1 Occurrence Type groupings is sub-divided into a number of related Level 2 groupings. In turn, Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This chapter contains the following sections.

Aircraft control

Introduction   This section provides the **Aircraft control** Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Airframe overspeed

The airspeed limit has been exceeded for the current aircraft configuration as published in the aircraft manual.

Guidelines:

To determine if the overspeed is significant, both the degree and duration of the overspeed event should be taken into account before classifying as an Incident or an Event. As a general rule, an overspeed with duration of less than five (5) seconds and an overspeed of five (5) knots or less would be classified as an Event.

Airframe overspeed includes exceedence of:

- general airframe limits such as V_{NE}
- extension speeds for flaps, slats, spoilers etc
- undercarriage extension speed

Control issues

> **The flight crew encounter minor aircraft control difficulties while airborne or on the ground.**

Guidelines:

For this occurrence type to be coded, the control issue needs to be related to minor problems associated with aircraft handling. If the extent or duration is such that the safety of the flight was significantly compromised then it is to be classified as a serious incident and an immediately reportable matter (IRM) and coded as a *'Loss of Control'* - it may be pilot induced or due to mechanical failure.

Control issues occurrences may be associated with:

- Minor control issues
- Weather phenomenon (icing, severe turbulence, etc);
- Wake turbulence;
- Minor technical issues.

Note 1: If unsure whether to code as a 'Loss of Control' or 'Control Issue' then seek advice from Safety Reporting management.

Hard landing

The vertical deceleration limit for the aircraft set out in the aircraft's operations manual is exceeded or damage occurs during the landing.

Guidelines:

A 'Hard landing' should only be coded where evidence has been provided by the operator that limits have been exceeded. This may be via an on-board recording or sustained damage as a result of the landing.

Reports of hard landings by cabin crew or passengers, particularly where injuries are reported, must be verified through the aircraft operator. If not confirmed by the operator, then it is to be coded only as *'Crew & Cabin Safety – Cabin injuries'*.

Note1: Engineering inspections that do not detect any issues resulting from a 'possible or suspected' hard landing are to be classified as an 'Event'.

Note 2: Any incident coded as a 'Hard landing' is not to include 'Ground strike'.

Incorrect configuration

An aircraft system is incorrectly set for the current and/or intended phase of flight.

Guidelines

A configuration warning is assumed to be correct, and '*incorrect configuration*' coded, unless there is evidence to the contrary. If a fault is subsequently found with the warning system, the Occurrence Type is coded as appropriate under the '*Technical - Airframe'* or '*Technical - Systems'* grouping.

Incorrect configuration includes occurrences where flight crew:

- fail to extend the landing gear before landing (retract for amphibious operations)
- inadvertently retract the landing gear after landing
- incorrectly configure the flaps or slats
- incorrectly apply carburettor heat

For the incorrect application of carburettor heat to be coded as '*incorrect configuration'*, there must be sufficient evidence that carburettor icing had occurred, or was likely to have occurred.

Note 1: Under no circumstances are these occurrences to be coded as warning devices.

Note 2: Spurious warning devices are to be coded as Event.

In-flight break-up

> *The aircraft sustained an airborne structural failure or damage to the airframe, including rotors, to the extent that continued flight is no longer possible.*

Guidelines:

In-flight break-up of an aircraft implies that a major structural failure has occurred during flight but does not necessarily mean that the aircraft has broken into several pieces.

Loss of Control

> **When control of the aircraft is lost or there are significant difficulties controlling the aircraft either airborne or on the ground.**

Guidelines:

For 'Loss of control' (LoC) to be coded it must be evident that the safety of the flight was severely compromised from the control loss. LoC occurrences do not necessarily result in a collision but are considered to be a serious incident. Many LoC occurrences in the air are recovered to normal flight. LoC may be the result of pilot error, weather phenomenon, or a mechanical issue/failure. Occurrences relating to minor controllability problems of a short duration are to be coded as *'Control issues'.*

Normally, an unavoidable loss of control that is a direct consequence of a preceding event would not be coded under this occurrence type. For example, *LoC* is not coded where it follows, rather than precedes, an in-flight break-up or a wirestrike. Care needs to be taken not to code '*LoC'* simply because that phrase is used in the original report's text. It should only be used in the ATSB summary where the LoC is factually known.

LoC occurrences include:

- an unintentional ground loop of an aircraft[1]
- unintentional departure from normal flight necessitating recovery action or resulting in a terrain collision
- helicopter dynamic rollover

Note 1: LoC should always be coded as a Serious Incident.

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1 A ground loop is an 'involuntary uncontrolled turn while moving on the ground, especially during take-off or landing' (Bill Gunston, *The Cambridge Aerospace Dictionary*, New York, New York; Cambridge University Press, 2004, p. 275).

Stall Warnings

Any cockpit warning or alert that indicates the aircraft is approaching an aerodynamic stall.

Guidelines:

For a 'stall warning' to be recorded as an occurrence, the aircraft's speed has decayed to the point that a stall alert or warning occurs and requires immediate flight crew action to return the aircraft to normal flight conditions.

Momentary 'stickshaker' alerts resulting from environmental and/or aircraft configuration states are to be recorded as an 'Event'. For example, aircraft in cruise experiencing significant wind changes or turbulence or where speed was not compromised due to an incorrect configuration (common in Dash-8's) of an aircraft system.

A 'stall warning' may include:

- a pre-stall buffet
- an audible alert
- a stickshaker
- an 'angle of attack' warning (e.g. Alpha floor, alpha prot / protection)

Note: If uncertainty exists re coding a spurious stick shaker incident then check with Safety reporting management.

Unstable Approach

> **A continued approach and/or landing in contravention of the operator's standard operating procedure (SOP) relating to their 'stable approach' criteria.**

Guidelines:

An 'Unstable Approach' is to be coded where an aircraft deviates from the approach profile parameters stipulated in a company's standard operating procedures (SOPs).

Reports by a flight crew of an *Unstable Approach* should be coded as such, unless it appears that they were using the term loosely rather than referring to a specific deviation from standard operating procedures.

Note: Missed approaches conducted as the result of an 'Unstable approach' are to be coded as an 'Event' unless it relates to a critical system warning (E.g. EGPWS landing gear or Flap configuration warnings at a critical stage of the landing).

As a general guide, an operator stable approach criteria generally applies below 1,000' above the aerodrome and is generally related to:

- track / localiser deviation
- descent rate
- flight path / glideslope angle
- airspeed
- landing configuration

Wheels up landing

An aircraft contacts the intended landing area with the landing gear retracted.

Guidelines:

A *'Wheels-up landing'* relates specifically to flight crew landing an aircraft with the landing gear in a retracted state. This could be **intentional** due to a mechanical issue or **unintentional** as the result of a distraction.
If a pilot inadvertently retracts the gear while on the ground then the occurrence is coded solely as *'Incorrect configuration'*.

Any mechanical failure of the landing gear associated with a wheels-up landing is also coded as '*Technical – Airframe - Landing gear'*.

If the gear collapses without warning after a normal landing, then the occurrence is coded solely as '*Technical – Airframe - Landing gear'*.

If the landing gear collapses due to a runway excursion, then the occurrence is only coded as *'Runway excursion'* and landing gear collapse is noted in the damage description.

Note 1: Amphibious aircraft that land on water with the wheels not retracted are also coded as a 'wheels up landing'.

Note 2: Wheels up landings are considered accidents except where the damage has been assessed as 'minor' or 'nil'. In these instances, the occurrence category is to be classified as a 'Serious Incident'.

Aircraft Control - Other

Aircraft control occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as '*Aircraft Control – Other*', then a brief description of the actual event is recorded in the accompanying text box.

As an example, an intentional ground loop would be coded under this grouping.

Note: uncommanded or excessive aircraft movements (roll, pitch, yaw) are coded as a 'Control issue'.

Aircraft loading

Introduction   This section provides the **Aircraft loading** Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Topic	See page
Dangerous goods	31
Loading related	32
Aircraft loading - Other	33

Dangerous goods

The carriage of dangerous goods in contravention of Commonwealth, State or Territory law.

Guidelines:

Dangerous goods occurrences include situations in which:

- undeclared dangerous goods are discovered
- dangerous goods have spilled
- dangerous goods are incorrectly packed or stowed

When noted on the notification, the UN designator is to be recorded in the 4th level Descriptor.

Note: Dangerous Goods found to be in contravention of the legislation as a result of normal security procedures or loading processing prior to aircraft being loading are to be classified as an 'Event'.

Loading related

> **The incorrect loading of an aircraft that has the potential to adversely affect any of the following:**
>   **a) the aircraft's weight;**
>   **b) the aircraft's balance;**
>   **c) the aircraft's structural integrity;**
>   **d) the aircraft's performance;**
>   **e) the aircraft's flight characteristics.**

Guidelines:

Freight issues occurrences include:

- incorrect load sheets
- freight shifting in flight
- unrestrained or inadequately restrained freight
- spillages in a freight hold (other than dangerous goods)
- an incorrectly trimmed aircraft
- weight & balance issues

Recording load discrepancies is fully dependent on the significance of the load involved and the impact it has in relation to the aircraft type and its overall performance. Issues relating to incorrectly loaded luggage are to be recorded as an 'Event' unless it has significant trim and/or W&B factors associated with it.

Note: If the error is detected and corrected prior to the aircraft becoming airborne then it is to be coded as an 'Event'.

Aircraft loading - other

Aircraft loading occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Aircraft loading - Other*, then a brief description of the actual event is recorded in the 4th Level Descriptor text box.

Communications

Introduction   This section provides the **Communications** Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Air-ground-air

Communication difficulties, not deemed to be of a technical nature, between aircraft and Air Traffic Control, ground units or other aircraft, whether an aircraft is airborne or on the ground.

Guidelines:

Communications occurrences include situations involving:

- incorrect read back of an ATC instruction/clearance, including cleared level, route, SID, STAR, etc
- misinterpretation of an ATC instruction/clearance that leads to an 'Operational non-compliance' incident
- any miscommunication, including that due to language difficulties
- intentional frequency interference
- incorrect frequency selection
- poor communication between aircraft
- any miscommunication that results in a safety occurrence
- any communication difficulties associated with Unicom and CAGRO
- open microphones not caused by a technical issue
- over transmission by other aircraft.

'Callsign confusion' errors are coded separately under '*Communications - Call sign confusion'*.

Errors originating from ATS are not coded as *Operational - Communications*, but are coded under '*Airspace – ANSP Operational Error - Information error'*.

Callsign confusion

> *When an aircraft acknowledges and responds to an instruction issued to another aircraft, or an air traffic controller issues an instruction to the wrong aircraft.*

Guidelines:

When crews acknowledge and respond to an instruction issued to another aircraft, 'Operational non-compliance' should also be coded.

When ATC issue an instruction to an incorrect aircraft 'ANSP Operational Error – Information error' should also be coded. If the instruction is questioned by the crew then it is to be categorised as an 'Event'.

To code '*Call sign confusion'*, the call signs of the aircraft involved do not necessarily have to be phonetically similar.

Transponder related

The incorrect setting of a code and/or usage of transponder equipment.

Guidelines:

An occurrence in which the only event involves incorrect selection of the transponder code or mode of operation is coded as an Event'.

Occurrences involving mechanical failure of transponder equipment are not coded in this category, but are coded as 'Technical - Systems – Avionics/Flight instruments'.

Occurrences in which an aircraft was flown without a transponder fitted, or the transponder was not activated, in contravention of CASA regulations would be coded as 'Operational Non-compliance.

Communications - Other

Communications occurrences not specifically covered elsewhere.

Guidelines:

Communications - Other occurrences include situations in which communications are effected by:

- *atmospheric or other environmental conditions, including loss of HF communications*
- *radio frequency interference, congestion or breakthrough.*

If an occurrence is coded as Communications - Other, then a brief description of the actual event is recorded in the accompanying text box.

Crew and cabin safety

Introduction   This section provides the **Crew & cabin safety** Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Inter-crew communications

> *Relates specifically to a loss, or breakdown, of communication between flight crew, cabin crew or associated ground staff.*

Guidelines:

This occurrence type relates specifically to internal communication issues between flight and cabin crews and/or ground crews (engineers, loaders, etc) and includes:

- Crew Resource Management issues where a loss of communication leads to an error
- Loss of communication between ground staff and Flight and/or Cabin crew

Note: Cabin communications system failure (PA, IFE, etc) should be coded as 'Technical - Airframe - Furnishings and Fittings'

Cabin injuries

A cabin crew member or passenger has suffered an illness or injury.

Guidelines:

Cabin injuries and incapacitations are to be recorded as an occurrence when the injury is the direct result of an aircraft operation such as:

- Weather related event (e.g. turbulence, windshear, etc)
- An abrupt manoeuvre other than a weather related event
- Fumes, fire or smoke related
- Unrestrained objects (bags, laptops, trolleys, etc)
- From a reported hard landing

Injuries to cabin crew and passengers that relate specifically to Workplace and Health & Safety issues are to be coded as an 'Event'. Illness or incapacitation attributed to natural causes is also to be recorded as an 'Event' such as:

- Heart attack, stroke or some other deliberating condition
- Items in overhead lockers falling on passengers
- Accidental spillage of hot beverages resulting in burns or scolding
- Injuries sustained from an unruly passenger

Cabin preparation

When the aircraft cabin has not been appropriately prepared for the current phase of flight.

Guidelines:

This occurrence relates specifically to an unprepared state of the cabin (cabin crew, passengers and objects) in deference to that required by Flight Crew or standard aircraft operating procedures. This includes:

- Incorrect arming / disarming of doors
- Oven or coffee brewers left on
- Cabin systems not secured after flight

Occurrences involving unrestrained occupants or objects for take-off or landing should be coded as 'Unrestrained occupants/objects'.

Depressurisation

> **Where the air pressure inside the cabin of a pressurised aircraft reduces and an emergency or precautionary descent is required.**

Guidelines:

Depressurisation can include a full or partial loss of cabin pressure, either suddenly or gradually. The crew of the aircraft may, or may not, be aware of the loss of cabin pressure.

Depressurisation may be due to mechanical malfunction of the pressurisation system, mistaken operation of the system by the flight crew, or failure of some aircraft component or structure that allows air to escape from the cabin.

This occurrence will normally be accompanied with a coding of *'Consequential Event / Precautionary-emergency descent'* when the depressurisation occurs above FL100.

Note 1: When a technical issue and a 'Depressurisation' are coded, 'Depressurisation' should be the primary occurrence type.

Flight crew incapacitation

A Flight Crew member is restricted to nil or limited duties as a result of illness or injury.

Guidelines:

Incapacitation may be due to illness, injury, physiological or psychological factors, or environmental or other factors.

When considering whether the crew member was unable to perform their normal duties to a significant degree, both the severity and length of time of the incapacitation should be considered.

Note 1: Limited duties means the flight crew member can perform duties in a 'pilot monitoring capacity' (non-flying) only.

Note 2: If the incapacitation occurs with the aircraft on the ground (taxi or parked) then it is to be classified as an 'Event'.

Note 3: If a 'cabin crew' member is incapacitated or injured the occurrence is coded as Cabin Safety – Cabin Injuries.

Note 4: If single pilot operation regardless of duration of the incapacitation, the occurrence should be classified as a 'Serious Incident'.

Passenger related

Where the actions of a passenger adversely or potentially affects the safety of the aircraft.

Guidelines:

Any incident where the action of a passenger is inappropriate with regard to the safety of cabin crew, other passengers or the aircraft. These occurrence types are generally recorded as an Event unless it results in injury to crew or damage to the aircraft.

- passengers smoking on-board, including a confirmed toilet smoke detection systems warning – these would be coded as an 'Incident'
- disruptive passengers

Note: All cabin crew and passenger injuries/incapacitations are to be coded under 'Cabin Injuries'. Flight crew injuries/incapacitations are to be coded under 'Flight Crew Incapacitation'.

Unrestrained occupants / objects

When aircraft occupants or objects are not appropriately restrained for the aircraft operation or phase of flight.

Guidelines:

Unrestrained occupants/objects occurrences include:

- crew or passengers standing during take-off or landing
- individuals not wearing seatbelts when required to do so (either through instruction of the crew or illuminated seat belt signs)
- galley equipment not restrained when required, including during take-off or landing.

Crew and cabin safety - Other

Cabin safety occurrences not specifically covered elsewhere.

Guidelines:

- Occurrences not coded elsewhere.

If an occurrence is coded as *Cabin safety - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Fire, Fumes and Smoke

Introduction This section provides the Fire, Fumes and Smoke Level 2 grouping for the Operational Occurrence Type.

Background Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents This section contains the following topics.

Fire

Any fire that has been detected and confirmed in relation to an aircraft operation.

Guidelines:

Fire is to be recorded only where evidence exists that a fire had occurred. An 'electrical short' does not constitute a fire and is coded as *'Technical – Systems – Electrical'* with associated fumes & smoke as reported.

It should **not** be automatically assumed that smoke or fumes are associated with a fire occurrence and these must be coded separately.

The *Fire* Occurrence Type excludes:

- situations where a fire warning was subsequently found to be false - this would be coded as *Technical - Systems - Fire protection*
- a post impact fire
- Sparks

Note 1: If the fire suppression has been activated but no evidence of fire is detected then it is to be coded as 'Warning devices' and where a fault is found with the system 'Systems – Fire protection' should be coded.

Note 2: When there is smoke fumes and fire – fire is the Primary occurrence type.

Fumes

When abnormal fumes or smells are reported on board the aircraft.

Guidelines:

The *Fumes* occurrence type includes reports of abnormal smells not associated with normal aircraft operations. Any associated fire or smoke is to be coded independently of the fumes occurrence.

Fumes occurrence would include smells such as:

Burning	Chemical	Gas
Cigarette	Electrical	Fuel
Damp/Musty	Oil	Plastic
Rubber	Hydraulic	Other

Note 1: Fumes relating to personal hygiene are to be coded as 'Events'

Note 2: Fumes emanating from an external source (e.g. another aircraft exhaust, bushfire smoke, etc) should be coded as an Event.

Note 3: Where 'Fumes' and 'Smoke' occur in the same occurrence, both should be coded and 'Smoke' should be the Primary occurrence.

Smoke

When smoke is reported to be emanating from:

a) **inside the aircraft; or**
b) **an external component of the aircraft; or**
c) **a smoke alarm activates.**

Guidelines:

Smoke occurrences relate specifically to 'non-normal' situations whereby crew, ground staff or passengers detect smoke that is not associated with the normal operation of the aircraft.

It should not be automatically assumed that fire or fumes are associated with a smoke occurrence and these are to be coded separately.

Occurrences involving a passenger smoking inside an aircraft, including where a smoke detection system has been activated, are not normally coded as Smoke but as *'Cabin safety - Passenger related'*. Such occurrences are only additionally coded as Smoke if the safety of the aircraft was compromised – for example; if a waste container was smouldering as the result of a cigarette butt.

Note 1: Smoke emanating from an external source (e.g. another aircraft exhaust, bushfire smoke, etc) should be coded as 'Environment Other'.

Note 2: Where 'Smoke' and 'Fumes' occur in the same occurrence, both should be coded and 'Smoke' should be the Primary occurrence.

Flight preparation / Navigation

Introduction	This section provides the Flight preparation / Navigation Level 2 grouping for the Operational Occurrence Type.
Background	Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.
Contents	This section contains the following topics.

Aircraft preparation

> **Errors or omissions during the planning pre-flight or in-flight phase that affect or may affect aircraft safety in relation to the:**
>
> **a) aircraft's weight;**
> **b) aircraft's balance;**
> **c) aircraft's structural integrity;**
> **d) aircraft's performance;**
> **e) aircraft's flight characteristics.**

Guidelines:

Ground or airborne occurrences that result from inadequate planning including inflight planning. This includes:

- Inadequate fuel planning
- Navigation/flight planning issues including FMC data entry errors
- Inflight planning
- Deficiencies or erroneous data in navigation databases, including use of an out of date database or FMS data card
- Flying with maps, charts or guidance materials that are out of date (or neglecting to carry valid charts).
- Inadequate pre-flight inspection

Care is to be taken when coding 'Aircraft preparation' given the similarities with the 'Aircraft loading' definition. If in doubt, contact Safety Reporting Management for appropriate coding. In some cases it may be prudent to code both.

Flight below minimum altitude

An aircraft is operated below the designated or planned Lowest Safe Altitude (LSALT) or minimum altitude for the in-flight conditions and phase of flight.

Guidelines:

Any occurrence that relates to an aircraft operating below the lowest safe altitude for the planned route, or area. This includes:

- Crew error to descend below the minimum altitude
- Aircraft operating below LSALT
- ATC instruction to descend or operate below the are LSALT or Radar LSALT
- Aircraft that continue the approach below minima with no visual reference to the runway.

Lost / unsure of position

When flight crew are uncertain of the aircraft's position and/or request assistance from an external source.

Guidelines:

Occurrences where an aircraft requests navigational assistance from ATC or other external means (such as pilots of other aircraft), in determining their current position.

VFR into IMC

An aircraft operating under the Visual Flight Rules enters Instrument Meteorological Conditions.

Guidelines:

VFR into IMC occurrences include:

- occurrences where the aircraft entered cloud, but subsequently regained VMC.
- pilot requests for assistance when the aircraft was already in IMC.
- aircraft collides with terrain in circumstances indicative of VFR in IMC.

Note 1: In marginal VMC, code as VFR into IMC. If unsure check with Safety Reporting management.

Note 2: These should be classified as a 'Serious Incident'.

Note 3: Where it is subsequently confirmed that the aircraft did not enter IMC, the occurrence should be coded as 'Weather – Other' and classified as an 'Event'.

Flight preparation/Navigation - Other

Navigation - Flight planning occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Navigation / flight planning - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Fuel related

Introduction   This section provides the *Fuel related* Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Contamination

When the presence of a foreign substance is found in fuel.

Guidelines:

Examples of possible fuel contaminants include water, incorrect fuel grade or type, particulate matter, dissolved substances (such as sugar), and biological contaminants.

Fuel related - Contamination occurrences include:

- fuel that is manufactured outside the technical specifications for the fuel grade or type.
- contamination of fuel in storage or delivery systems.

Occurrences involving deliberate contamination of an aircraft's fuel supply are coded as *Fuel related - Contamination*, and are also coded as '*Miscellaneous - Security related'.*

Contamination excludes occurrences where the fuel grade used is approved by the aircraft or engine manufacturer (such as occasional use of Avgas in turbine engine aircraft).

Exhaustion

When the engine stops because the aircraft has become completely devoid of useable fuel.

Guidelines:

Occurrences in which no useable fuel remains on the aircraft. As this is a more specific coding of Technical – Powerplant / propulsion – Engine failure malfunction, only Operational – fuel related - exhaustion should be coded.

Leaking or venting

Relates specifically to the unplanned loss of fuel from a fuel tank or fuel system.

Guidelines:

To be coded as Leak or venting when it is the result of an error by flight crew or ground staff (E.g. missing or insecure fuel cap/panel).

Occurrences subsequently deemed to be the result of a Technical problem should also be coded as '*Technical / Systems / Fuel'.*

Occurrences in which the engine subsequently fails as a result of the fuel loss are also coded as Fuel exhaustion or Fuel starvation as appropriate.

Low fuel

The aircraft's supply of fuel becoming so low (whether or not the result of a technical issue) that the safety of the aircraft is compromised.

Guidelines:

Occurrence where the aircraft fuel state reduces to a point that flight crews have concerns that fuel reserves may be compromised or a fuel emergency declaration (PAN PAN or MAYDAY) is made. This may be related to:

- Unforecast weather (headwinds, adverse conditions, etc)
- Extensive, unplanned ATC holding requirements
- Technical issues resulting in available fuel not being accessible.

Occurrences where flight crews divert to another location to top up fuel before it becomes critical are to be coded as '*Operational / Fuel related / Other'* and '*Consequential event / Diversion / return'.*

Note 1: Where the system works and the crew do not declare an emergency, the occurrence should be classified as an 'Event'.

Starvation

When the fuel supply to the engine(s) is interrupted, but there is still usable fuel on board the aircraft.

Guidelines:

Fuel related - Starvation includes occurrences involving:

- mismanagement of the fuel system by flight crew.
- a mechanical failure relating to the fuel system – should also be coded as Technical – Fuel system.
- unporting of the fuel standpipes during an aircraft manoeuvre.

Occurrences in which evidence suggests the fuel supply was interrupted as a result of contamination should also be coded as '*Fuel related – Contamination'.*

As there could be rough running or the engine could stop, Technical – Powerplant / propulsion – engine failure or malfunction should also be coded.

Fuel - Other

Fuel related occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Fuel related - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Ground operations

Introduction   This section provides the *Ground operations* Level 2 grouping for the Operational Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Foreign object damage / debris

> **Any loose objects on an aerodrome, helicopter landing site or in an aircraft that have caused, or have the potential to cause, damage to an aircraft.**

Guidelines:

To be recorded only where the operation of an aircraft has been affected – i.e. causes damage, aircraft passes over object, RTO or missed approach. Objects removed from the runway as the result of routine inspections by Aerodrome Safety Officers or ATC that have no impact on aircraft operations are to be classified as an 'Event'.

Note: Bird/animal carcasses are to be recorded as a birdstrike or animal strike, not as FOD.

Ground handling

Any ground handling and aircraft servicing that caused, or has the potential to cause injury or damage to a stationary aircraft.

Guidelines:

Ground handling incidents relate specifically to ramp operations – i.e. engineering, aircraft loading, catering and refuelling services, etc. This can take place on the land or water, and include operations on ships, oil rigs, and similar platforms. This includes:

- Vehicles colliding with a stationary aircraft
- Fuel spillages
- Pushback procedures or other engineering related occurrence

Note: if collisions or near collision occur between ground crews and a moving aircraft then it is to be coded as 'Taxiing collision / near collision'.

Jet blast / prop / rotor wash

> **Any air disturbance from a ground-running aircraft propeller, rotor or jet engine that has caused, or has the potential to cause, injury or damage to property.**

Guidelines:

To be coded where any 'air' disturbance from propellers, jet engines or helicopter downwash is considered to be a hazard in that it has the potential to cause injury to persons or damage to aircraft or other property in the immediate vicinity.

Taxiing collision / near collision

> **An aircraft collides, or has a near collision, with another aircraft, terrain, person or object on the ground or on water during taxi.**

Guidelines:

Occurrences that involve any collision, or near collision, between a taxiing aircraft and:

- another aircraft,
- a vehicle,
- an object or
- a person

Taxiing collisions that are the result of surface irregularity on the movement area of an aerodrome are also coded as *Infrastructure - Other*.

Aircraft colliding with another aircraft, vehicle or person within the confines of the flight strip are to be coded as *Airspace / Aircraft separation / Collision*.

Propeller or rotor strikes **are not** coded as *'Taxiing collision / near collision'*, but coded as '*Ground strike'*.

Ground operations - Other

Ground operation occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Ground operations - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Ground proximity alerts/warnings

A Ground Proximity warning or alert.

Guidelines:

'Ground proximity' warnings are always coded

Note 1: Flight crews reporting 'Ground proximity' warnings in VMC that had no effect on flight are to be coded as an 'Event'.

Note 2: All 'Pull Up' warnings in IMC are to be coded as a 'Serious Incident'.

Note 3: As a rule, any 'bank angle' exceeding 30º AOB is an occurrence even if momentary. The only exception is the B767 which has approval to 35º AOB.

Note 4: Windshear warning where windshear has not been encountered is to be classified as an 'Event'

Miscellaneous

Introduction   This section provides the *Miscellaneous* Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Topic	See page
Missing aircraft	73
Security related	74
Warning devices	75
Other	76

Missing aircraft

The aircraft is reported as missing.

Guidelines:

An aircraft is deemed to be missing if:

- it has not arrived at its destination as expected
- communication with the aircraft has ceased (including mobile phone)
- the SARTIME has expired with no communication from the aircraft
- the aircraft fuel state is presumed to be exhausted

If credible witness reports or the presence of wreckage can reasonably verify the accident and its location, then the aircraft is not considered to be missing.

On the provision of evidence that the aircraft wreckage has found and verified, the 'Missing aircraft' classification is to be removed and replaced with the appropriate classification and associated data (E,g. 'Collision with terrain', location, etc)

Note 1: Fly-away RPAS occurrences are to be classified as an 'Accident' with the damage level classified as 'Destroyed'.

Security related

When aviation security has been, or is likely to have been, compromised.

Guidelines:

Security related occurrences include situations involving:
- weapons or prohibited items being taken onto an aircraft.
- the discovery of unidentified or suspicious objects on an aircraft.
- attempted unlawful interference, such as sabotage, hijack, vandalism etc.
- unapproved airside entry of persons or vehicles

Security related incidents on their own are to be recorded as an 'Event'.

Warning devices

> *Situations in which an aural or visual aircraft warning device activates to alert the flight crew to a situation requiring immediate or prompt corrective action.*

Guidelines:

Warning devices - should only be used for warnings or alerts that are **not** related to the occurrence types listed below:

- Stall warnings
- GPWS
- ACAS
- Landing gear indications
- Abnormal engine indications
- Low fuel

Note 1: All chip detection warnings should be coded as 'Warning devices' and where the technical reason for the warning is known the relevant Technical system should be coded.

Note 2: Propeller of rotor low RPM indications should be coded as 'Warning devices' and where the technical reason for the warning is known the relevant Technical system should be coded.

Note 3: Fire warning indications in the engine are should be coded as 'Warning devices'.

Note 3: Warnings or alerts that are subsequently deemed to be a false alarm with no technical action undertaken are to be classified as an 'Event'.

Miscellaneous - Other

Miscellaneous occurrences not specifically covered elsewhere in this manual.

Guidelines:

Miscellaneous - Other occurrences include:

- aircraft damage found during pre-flight or post-flight inspection unless due to ground operations.
- suicide or suspected suicide.
- an occurrence that does not fit into any other category within the taxonomy
- winching accidents
- parachute accident

If an occurrence is coded as *Miscellaneous - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Note: If an occurrence is reported as being a 'suicide' or 'suspected suicide' then it is to be coded as an Event and Non-TSI reportable.

Runway events

Introduction   This section provides the *Runway events* Level 2 grouping for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Topic	See page
Depart/App/Land wrong runway	78
Runway excursion	79
Runway incursion	80
Runway undershoot	81
Other	82

Depart/Approach/Land wrong runway

An aircraft that:

- *takes off*
- *lands,*
- *attempts to land from final approach*
- *operates in the circuit*

at, to or from an area other than that authorised or intended for landing or departure

Guidelines:

Depart/Approach/land wrong runway includes occurrences where a pilot unintentionally:

- approaches, takes off from, or lands on a runway other than that intended or authorised by ATC
- approaches, takes off from, or lands on a closed runway.
- approaches, takes off from, or lands on a taxiway.
- approaches and/or lands on a roadway in the vicinity of an aerodrome

Runway excursion

An aircraft that veers off the side of the runway or overruns the runway threshold.

Guidelines:

Excursion occurrences occur during take-off or landing only, and may be either intentional or unintentional.

Excursion excludes situations where the pilot deliberately taxis the aircraft off a taxiway.

Note: Taxiway excursions are to be coded as 'Ground operations – Other'

Runway incursion

The incorrect presence of an aircraft, vehicle or person on the protected area of a surface designated for the landing and take-off of aircraft.

Guidelines:

An incorrect presence is defined as:

- anything within the confines of the runway strip, irrespective of having an appropriate clearance, which hinders the operation of an arriving or departing aircraft; or
- an aircraft, vehicle or person entering the confines of the flight strip without a clearance to do so, regardless of other aircraft operations

In an ATC controlled environment, occurrences relating to landing aircraft yet to cross the threshold and involve another aircraft, vehicle or person occupying the same runway are also to be coded as a Loss of Separation Assurance.

All occurrences coded as a 'Runway Incursion' are to include an *"ICAO severity index"* designator. While this code is generally provided in the CIRRIS report, the ATSB reserves the right to classify it at a higher or lower rating based on information received at the time.

ICAO Runway Incursion severity index table

Severity Classification	Description
A	A serious incident in which a collision is narrowly avoided.
B	An incident in which separation decreases and there is significant potential for collision, which may result in a time-critical corrective/evasive response to avoid a collision.
C	An incident characterized by ample time and/or distance to avoid a collision.
D	An incident that meets the definition of runway incursion such as the incorrect presence of a single vehicle, person or aircraft on the protected area of a surface designated for the landing and take-off of aircraft but with no immediate safety consequences.
E	Insufficient information or inconclusive or conflicting evidence precludes a severity assessment.

ICAO Doc 9870 (Manual on the prevention of Runway Incursions)

Note: All runway incursions should also be coded as LOS where applicable

Runway undershoot

Any aircraft attempting a landing and touches down prior to the threshold.

Guidelines:

Any occurrence where an aircraft touches down short of the approved designated landing area of the runway – generally relates to a misjudgement by a pilot during the approach phase.

Aircraft that come into contact with vegetation or a fixed object (fence line, powerline, etc). and continues the approach, is also to be coded as *'Operational – Terrain collision – Collision with terrain'*

Runway events - Other

Runway event occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Runway events - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Terrain collisions

Introduction   This section provides the *Terrain collisions* Level 2 grouping
                 for the **Operational** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into
                 Level 3 groupings.

Contents   This section contains the following topics.

Topic	See page
Collision with terrain	84
Controlled flight into terrain (CFIT)	85
Ground strike	86
Wirestrike	87

Collision with terrain

Any collision between an airborne aircraft and the ground, water or an object, where the flight crew were aware of the terrain prior to the collision.

Guidelines:

For the purposes of occurrence coding, terrain is taken to include either ground or water, or any man-made or natural object on the ground or water.

'Collision with terrain' is coded only when the aircraft is in flight or operating on the runway (take-off/landing).

For an occurrence to be coded as *Collision with terrain*, the flight crew must have had a reasonable awareness of the local terrain. However, they may or may not have had control of the aircraft. If the flight crew were unaware of the presence of terrain, and the aircraft was under the positive control of the pilot, then the occurrence is coded as '*Controlled flight into terrain (CFIT)'* rather than '*Collision with terrain'*.

Collision with terrain occurrences include:

- impact with terrain (not including wires) from which the aircraft flies away.
- airborne collisions with fences (wires on fences are not coded as *'Wirestrike'*).
- Collision with objects on the ground during take-off and landing or within the confines of a flight strip.

Collision with terrain occurrences exclude:

- wirestrike.
- contact with the ground during take-off, landing or taxi resulting in minor damage, which is coded as '*Ground strike'*.
- while taxiing - any collision between aircraft, vehicles or persons not on the flight strip is coded as '*Taxiing collision/near collision'*

Controlled flight into terrain (CFIT)

> **When a serviceable aircraft, under flight crew control, is inadvertently flown into terrain, obstacles or water without either sufficient or timely awareness by the flight crew to prevent the collision.**

Guidelines:

To be coded as 'Controlled flight into terrain, the pilot must have been in control of the aircraft and unaware of the impending collision.

The pilot's inadequate awareness of the terrain may result from a number of operational circumstances, including operating in IMC, at night, distractions, inadequate lookout, incorrect route flown, and in some cases may be the result of operating outside the tolerances of an instrument approach.

Ground strike

When part of the aircraft drags on, or strikes, the ground or water.

Guidelines:

'Ground strike' occurrences include situations where an aircraft is taxiing (including a hover taxi for helicopters) or in the take-off or landing phase of flight in which:

- a rotor or propeller makes contact with the ground
- an engine pod, wingtip, or tail contacts the ground

Note 1: Any incident coded as a 'Hard landing' is not to include 'Ground strike' as this is consequential damage.

Note 2: Ground strike occurrences can result in substantial damage. If the aircraft subsequently collides with terrain both occurrence types are coded.

Wirestrike

> **When an aircraft strikes a wire, such as a powerline, telephone wire, or guy wire, during normal operations.**

Guidelines:

Wirestrike excludes:

- an aircraft striking a wire during a forced landing.
- an aircraft striking a wire fence.

Both of these situations should be coded as *'Collision with terrain'*.

Subsequent occurrences following a wirestrike – such as '*Collision with terrain',* *'Precautionary landing'* or '*Diversion/return'* – are also coded as appropriate.

Note 1: Wirestrikes should always be coded as either a serious incident or an accident depending on the consequences.

Technical groupings

Introduction   This chapter provides the **Technical** Occurrence Type groupings and relate specifically to aircraft operations in general

Background   Each of the Level 1 Occurrence Type groupings is sub-divided into a number of related Level 2 groupings. In turn, Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This chapter contains the following sections.

Section	See page
Airframe	89
Powerplant / Propulsion	97
Systems	104

Airframe

Introduction   This section provides the **Airframe** Level 2 grouping for the **Technical** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Doors/Exits

When a door (passenger, cargo, or emergency), or its component parts, has failed or exhibited damage.

Guidelines:

This occurrence type is in relation to any door/exit failure. This includes a departure in flight, failed locking mechanisms or seals leading to pressurisation occurrences. A flight deck door opening inadvertently is to be coded as an 'Event'.

Caution should be taken when recording a 'canopy' occurrence as these will differ between a 'door' and a 'window' depending on the circumstance. For example, the loss of a canopy in flight would be considered a 'Door' whereas a birdstrike would in all likelihood be classified as a 'Window' occurrence. Please consult with Notifications management if doubt exists as to the appropriate coding for canopy occurrences.

Furnishings and fittings

An internal aircraft furnishing or fitting, including its component parts, has failed or exhibited damage.

Guidelines:

Furnishings and fittings include any failed internal aircraft object that endangers the safety of crew and passengers. This includes:

- seatbelts,
- internal cameras and associated fittings
- seats,
- overhead lockers,
- mouldings,
- galley items,
- safety equipment (life vests, rafts, oxygen masks, etc)
- inter-crew communications equipment

A blocked toilet would not constitute an endangerment and would be coded as an 'Event'.

Fuselage / Wings / Empennage

Damage to the fuselage, wings, or empennage not caused through collision or ground contact.

Guidelines:

Any damage to the fuselage, wings, or empennage that involve:

- Cracks
- Creases
- Dents

Note: Flight control surface damage/malfunction (e.g. flaps, ailerons, rudder, etc) should be coded under 'Technical/Systems/Flight controls'

Landing gear / Indications

> **When the landing gear or its component parts (including indications), has failed or exhibited damage.**

Guidelines:

Landing gear occurrences include:

- After landing, landing gear collapse due to mechanical malfunction – **not** coded as a '*Wheels up landing*'
- Landing gear indication problems
- the use of emergency gear extension
- tyre damage/deflation
- overheated or smoking brakes
- faults with floats and emergency flotation devices

Note: Mechanical problems with the indication system e.g. globe failure, electrical connections, are to be coded with level 4 occurrence descriptor of "What - indication only".

Objects falling from aircraft

Objects inadvertently falling from or detaching from an aircraft.

Guidelines:

The 'unintentional' loss of an aircraft component or object inside or on the aircraft that falls to the ground or detaches from the aircraft during normal flight operations. This includes:

- Aerials
- Lights
- Panels
- External loads (helicopter)
- Wheels
- Windows
- Doors

Third party objects (camera, spraying arms, water bombing equipment, etc)

Windows

A window or a component part has failed or exhibited damage.

Guidelines:

Technical - Airframe - Windows occurrences include:

- the separation of fixed windows from the aircraft in flight. (this should also be coded as 'Objects falling from aircraft')
- the shattering, cracking, crazing, or delamination of any aircraft window
- failed window heater elements.

Note: Where the failure or damage relates to a 'canopy', please seek advice from Safety Reporting management as to if it relates to a 'window' or 'door' issue.

Airframe - Other

Technical - Airframe occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Airframe - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Includes:
- airframe vibrations, not attributed to another occurrence type.

Powerplant/Propulsion

Introduction   This section provides the **Powerplant/Propulsion** Level 2 grouping for the **Technical** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Abnormal engine indications

A visual or cockpit warning that indicates an engine is malfunctioning or operating outside normal parameters.

Guidelines:

Abnormal engine indications include:

- abnormal engine instrument readings, such as engine power output or temperature, oil pressure or temperature, fuel pressure, etc.
- general reports of engine trouble without further specific information.
- engine overspeed or over-torque warnings (without an accompanying mechanical fault).

NOTE: If a mechanical fault is subsequently found in the system producing the warning then Technical / Powerplant-Propulsion / Engine failure or malfunction should also be coded. If the indication is found to be a mechanical problem with the indication system then a brief description of the failure is to be recorded in the 'What failed' free-text descriptor field.

Auxiliary Power Unit

Any mechanical failure of the APU.

Guidelines:

Includes:

- APU fires
- Fumes and smoke events where the APU was identified as the source

Does not include:

- connecting systems (code as 'Air pressurisation')

Engine failure or malfunction

An engine malfunction that results in a total engine failure, a loss of engine power or is rough running.

Guidelines:

A technical fault that results in an engine failure or malfunction includes:

- reports of total power loss of an engine whether single or a multi-engine aircraft
- a loss of power that limits aircraft performance (Note: loss of power due to environmental issues such as air density, icing, are also to be coded under the applicable environment occurrence type).
- a rough running engine (coughing, spluttering, etc)
- observation of abnormal sights, sounds or vibrations by a crew member.
- any mechanical issue that results in an engine shutdown, irrespective of phase of flight. (Note: engine shutdowns based solely on abnormal engine indications are to be coded only as 'Abnormal engine indication'.)

An engine failure due to fuel exhaustion is only coded under the respective '*Fuel exhaustion*'. However, fuel starvation to an engine leading to power loss or failure will be coded as both 'Fuel starvation' and 'Engine failure/malfunction'.

Note: Single engine aircraft that experience a total engine failure are always classified as a 'Serious incident'.

Propeller / Rotor Malfunction

> **The failure or malfunction of an aircraft propeller/rotor or its associated components.**

Guidelines:

The *Technical - Powerplant / propulsion - Propeller / Rotor Malfunction'* occurrence type includes:

- failure of associated propeller accessories, such as feathering mechanisms, constant speed units, and reduction gearboxes.
- reported damage to a propeller or rotor blade including delamination
- general reports of damage to a propeller or rotors without further specific information.

Transmission and gearboxes

> *The failure or malfunction of an aircraft transmission/gearbox and/or its associated components.*

Guidelines:

This *Technical* occurrence type can apply to any transmission or gear box in the power train of either a fixed wing or rotary wing aircraft.

NOTE: Gearbox or transmission chip detector warnings – and engine chip detector warnings are to be coded under 'Warning devices' and the technical system fault is also coded.

Powerplant / propulsion - Other

Powerplant / Propulsion occurrences not specifically covered elsewhere.

Guidelines:

The *Powerplant / propulsion - Other* occurrence type includes mechanical faults involving associated engine components. Any powerplant-related issue resulting in a power loss or abnormal engine indications is coded only as 'Engine failure/malfunction' or 'Abnormal engine indication' with the Level 4 occurrence descriptor 'what failed' giving details of the issue.

If an occurrence is coded as *Powerplant / Propulsion - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Systems

Introduction   This section provides the **Systems** Level 2 grouping for the **Technical** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Air/Pressurisation

The partial or complete loss of normal functioning of an aircraft air system.

Guidelines:

The *Technical - Systems – Air/pressurisation* occurrence type includes faults involving:

- the bleed air and air conditioning system
- the pressurisation system
- pneumatic systems
- vacuum systems
- oxygen systems

The bleed air and air conditioning system includes all aircraft systems for heating, cooling, or ventilation. For example, temperature control units and ducting in heat exchange systems.

The pressurisation system covers the systems regulating aircraft cabin altitude and includes faults involving controllers, valves, and system control panels.

Pneumatic systems cover the systems which provide compressed air for aircraft systems such as anti-ice and engine systems.

The oxygen system covers the systems which provide oxygen to flight crew, cabin crew, or passengers. It includes faults involving oxygen bottles, regulators, lines, or masks, for both integral and portable oxygen systems.

If the pressurisation fault has an effect on cabin crew and passengers (e.g. dropping of oxygen masks, emergency descent) the coding is to include '*Crew & Cabin Safety – depressurisation' as the Primary occurrence type*.

Anti-ice protection

The partial or complete loss of normal functioning of aircraft anti-ice system.

Guidelines:

Anti-ice occurrence types include:

- pitot heat
- deice boots
- carburettor heat
- nacelle/engine anti-ice

Avionics / Flight instruments

> **The partial or complete loss of normal functioning of the avionics system or its components.**

Guidelines:

The aircraft electronic and communication systems, processors, and components covered in this occurrence type include:

- communication equipment, such as radio, Datalink, ACARS, etc.
- navigation equipment, such ADF, DME, VOR, INS/IRS, GPS/GNSS, etc.
- transponder mechanical failure.
- computer / microprocessor control systems such as a Flight Management System (FMS) or Engine Control Unit (ECU).
- automatic flight control systems, such as autopilot, autothrottle, altitude alert, etc.
- intra-aircraft communication systems such as public address, intercoms, etc.
- CVR and FDR.
- a fault or failure of a primary flight instrument including:
- glass cockpit (ND, PFD, EFIS, EICAS)
- analogue (IAS, VSI, AI or AH, RadAlt, etc)

The *Avionics* occurrence type includes both hardware, firmware and software faults, but does not include data related problems, for example, deficiencies in navigation database data would be coded under the '*Navigation / flight planning – Other'* occurrence type.

Datalink (RPAS)

The partial or complete loss of transmission and/or reception of digital information from a remotely piloted aircraft system (RPAS).

Guidelines:

Other RPAS system failures that are not related to the datalink are coded under the specific occurrence types.

Note 1: Includes RPAS where the signal is lost.

Electrical

> **The partial or complete loss of normal functioning of the aircraft electrical system.**

Guidelines:

The *Mechanical - Systems - Electrical* occurrence type includes any fault involving the aircraft systems for the generation or distribution of AC or DC power.

It includes faults related to the alternator or generator, battery, bus-bar, electrical fuses or circuit breakers, or relays.

Loss of radio communication due to a faulty alternator or the like would be coded as a Systems Avionics failure.

Fire protection

The partial or complete loss of normal functioning of the fire protection system.

Guidelines:

The T*echnical - Systems - Fire protection* occurrence type includes any fault relating to an aircraft fire detection or suppression system in any part of an aircraft. This includes faults or failures of system components such as detection loops, warnings, or extinguisher bottles.

Flight controls

> ***The partial or complete loss of normal functioning of a primary or secondary flight control system.***

Guidelines:

Primary flight controls include the elevator, aileron, rudder, control column or sidestick, and rudder pedals, and any associated manual reversion systems. Secondary flight controls include control surface trim tabs, spoilers, leading and trailing edge flaps, and yaw dampers. For the purposes of coding this Occurrence Type, flight controls includes any associated controls, switches, levers, or track mechanisms.

Systems - Flight controls occurrences include:

- asymmetric flap or slat problems (unless there is evidence of a false warning).
- control logic computers or similar components. (Occurrences of this type are also coded as (*Systems – Avionics')*.

Fuel

The partial or complete loss of normal functioning of the fuel system.

Guidelines:

These occurrence types cover technical faults in the fuel system that stores and supplies fuel to an engines or a fuel driven component (E.g. APU). It includes faults related to:

- fuel tanks,
- supply lines,
- pumps,
- valves,
- restrictors, or
- fuel jettison equipment.

Occurrences previously coded as '*Operational – Fuel related – Leaking or venting*' that are subsequently found to be a technical problem must also be coded to *Fuel Systems.*

Note that problems associated with fuel quantity, quality or in flight leaks are coded in the Operational - Fuel related group of occurrence types.

Hydraulic

The partial or complete loss of the hydraulic system.

Guidelines:

The*se* occurrence types cover faults in the hydraulic systems that affect flight controls, autopilot, landing gear, brakes, or steering. It includes faults related to hydraulic components such as:

- reservoirs,
- piping, or
- pumps.

Systems - Other

Technical - Systems occurrences not specifically covered elsewhere.

Guidelines:

These occurrence type are only coded where it does not fit into any of the other *Technical - Systems categories.*

If an occurrence is coded as *Systems - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Airspace groupings

Introduction   This chapter provides the **Airspace** Occurrence Type groupings
                and relate specifically to aircraft operations in general

Background   Each of the Level 1 Occurrence Type groupings is sub-divided
                into a number of related Level 2 groupings. In turn, Level 2
                Occurrence Type groupings are further sub-divided into Level 3
                groupings.

Contents   This chapter contains the following sections.

Aircraft separation

Introduction   This section provides the **Aircraft separation** Level 2 grouping for the **Airspace** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Airborne collision alert system warning

Any airborne collision avoidance system advisory or equivalent type alert.

Guidelines

All devices designed specifically for airborne traffic avoidance is to be coded as an *'Airborne collision alert system warning.'* Under **no** circumstance are they to be coded as a '*Warning devices'*.

Occurrences where separation was not compromised but an ACAS RA/TA alert was triggered, would normally be Classified as an *'Event'* unless they occur during independent visual approach (IVA) procedures into Sydney.

NOTE: Commonly referred to as TCAS in Australia

Collision

> **An aircraft collides with another aircraft either airborne or on the runway strip, or a vehicle or person on the runway strip.**

Guidelines

Collisions include:

- mid-air collisions
- collisions on the runway between two aircraft, or
- with a vehicle/person on a runway strip.

Includes collisions between an aircraft and a parachutist.

The *collision* occurrence type does not include a collision with a bird.

NOTE 1: Does not include collisions with terrain or objects, including objects on the runway strip. These are to be coded as 'Collision with terrain'.

Note 2: Does not include a collision with an RPA which should be coded under 'Encounter with Remotely piloted aircraft – collision with RPA'.

Loss of separation (LoS) – formerly Breakdown of Separation

> **The failure to maintain a recognised separation standard (vertical, lateral or longitudinal) between aircraft that are being provided with an ANSP separation service.**

Guidelines

The *LoS* is applicable in controlled airspace, and may be applicable in restricted airspace where a separation service is provided. It may result from an error by air traffic services or flight crews and may occur if only one aircraft is under the control of an air traffic separation service.

The *LoS* can include a loss of:

- procedural or surveillance/radar separation standards.
- prescribed runway or wake turbulence separation standards.
- Runway proximity occurrences relating to a departing aircraft with another aircraft, vehicle or person occupying the same runway simultaneously (also to be coded as a 'Runway Incursion' and, where applicable, 'Near Collision')
- visual separation by a pilot or air traffic controller in controlled airspace, if visual reference is lost

Occurrences relating to a landing aircraft that has yet to cross the threshold and involve another aircraft, vehicle or person occupying the same runway are to be coded as both a Loss of Separation Assurance (LOSA) and Runway Incursion.

Note 1: ATC, anticipating it is safe to do so, may authorise another aircraft, vehicle or person to enter and cross a runway with an aircraft that has been cleared to land.

Note 2: Occurrences which do not meet the criteria for 'Loss of Separation' or 'Near Collision' should be coded as 'Aircraft separation – Issues'.

Note 3: A LoS is never to be coded as an Event.

Note 4: Aircraft that infringe the buffer zone of a Restricted Area are to be coded as an 'Airspace Infringement' unless another aircraft is involved resulting in a LoS. (Airservices Australia will classify this as a LoS).

Note 5: A LoS cannot occur between two VFR aircraft as no separation standard has been applied.

Loss of separation assurance

> **Where separation has been maintained but has not been planned, actioned or monitored appropriately.**

Guidelines

Separation was never assured as a result of inadequate ANSP planning. A LoS was prevented through early ATC detection, pilot reports, Short Term Conflict Alert activation or simply good luck rather than good management. This is only coded where there was or should have been a separation standard applied by the controller.

Near collision

> **An aircraft comes into such close proximity with another aircraft either airborne or on the runway strip, or a vehicle or person on the runway strip, where immediate evasive action was required or should have been taken.**

Guidelines:

In deciding whether a '*Near collisio*n' is coded, consideration should be given to:

- one or both aircraft took significant avoiding action, or would have if time had permitted.
- one or both aircraft received an unexpected TCAS RA.
- aircraft tracks
- awareness of one aircraft to the other

All occurrences classified as a 'Near collision' are to be classified as a **'Serious Incident'**. The collision risk will always be 'high'.

A *'Near collision'* in a controlled airspace environment is also recorded with a 'Loss *of Separation'* coding where appropriate.

In an uncontrolled airspace environment (see and avoid), every endeavour should be made to have both flight crews reports to verify if the occurrence is in fact a *'Near collision'*.

Occurrences which do not meet the criteria for '*Loss of Separation'* or '*Near Collision'* should be coded as *'Aircraft separation – Issues'*.

Note 1: Does not include a near collision with an RPA which should be coded under 'Encounter with Remotely piloted aircraft – near encounter'.

Aircraft separation - Issues

Airspace - Aircraft separation occurrences not specifically covered elsewhere.

Guidelines:

Aircraft separation - Issues occurrences where separation is a concern but does not meet the definition of Loss of Separation or Near collision. These would normally relate to uncontrolled airspace where 'see and avoid' responsibilities remain with flight crews.

If an occurrence is coded as *Aircraft separation - Issues*, then a brief description of the actual event is recorded in the accompanying text box.

Reports of possible near collisions that are later not determined to be a *'Near collision'* are to be coded as an *'Aircraft separation Issues' and downgraded from a serious incident to an incident.*

Airspace infringement (formerly Violation of controlled airspace)

Where there is an unauthorised entry of an aircraft into airspace for which a clearance is required.

Guidelines:

All occurrences, in which an aircraft enters controlled, restricted or a prohibited airspace without prior approval from the airspace 'owner' is to be recorded as an Airspace Infringement. This includes incidents where an aircraft takes off from a designated position inside a controlled or restricted area before receiving approval to do so. This equally applies to aircraft departing from a controlled environment.

Note 1: Aircraft that infringe the buffer zone of a Restricted Area are to be coded as an 'Airspace Infringement' unless another aircraft is involved resulting in a LoS.

Note 2: Airspace infringement occurrences which do not result in a separation issue are not imported into the SIIMS database.

ANSP operational error

Introduction   This section provides the *ANSP operational error* Level 2 grouping for the **Airspace** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Topic	See page
Failure to pass traffic	125
Information / Procedural error	126
Other	127

Failure to pass traffic

When the ANSP fails to provide adequate traffic information to a pilot in relation to other aircraft. The information may have been incomplete, incorrect, late or absent.

Guidelines:

As per the definition.

Information / Procedural error

> **Errors relating to the assessment, delivery or display of operational information by air traffic service officers.**

Guidelines:

An information delivery error occurs when the delivery of operational information by ATS is absent, delayed, incorrect or incomplete, and is not immediately detected and rectified. It includes hear back and/or read back errors.

An information display error occurs when the display of operational information by ATS is incorrect, incorrectly interpreted and/or incorrectly entered into an air traffic system, and is not immediately detected and rectified.

A procedural error occurs when the controller fails to adhere to standard procedures.

The '*Airspace – Information/Procedural error'* occurrence type includes:

- the provision of incorrect C/ATIS or landing information.
- the provision of incorrect frequency details.
- the incorrect input or display of data into an air traffic management system (e.g. TAAATS)
- This also includes the provision of erroneous or inadequate separation instructions.
- SARTIME inadequately processed

The provision of incorrect information during ATS coordination is coded as '*Breakdown of co-ordination'*.

Occurrences involving call sign confusion are coded under the '*Communications - Call sign confusion'* occurrence type.

ANSP Operational Error - Other

ANSP operational errors occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as '*ANSP Operational Error – Other'*, then a brief description of the actual event is recorded in the accompanying text box.

Breakdown of Co-ordination

When air traffic service personnel have failed to:

- **exchange information**
- **obtain agreement on clearances**
- **process the transfer of control, advice or information to be issued to aircraft**

as necessary for the safe and efficient conduct of flight.

Guidelines:

These occurrences relate to the exchanging of incorrect information, or the late exchange of information between the various Air Traffic Control streams, international and ADF ANSP's.

Note 1: Breakdowns of Coordination as a single occurrence type record are not imported into the SIIMS database.

Note 2: Reports from Airservices (CIRRIS) will initially classify this as an Information Display Delivery Error (IDDE). To ascertain if this has been assessed as a BoC refer to the line 'Didtheerrorresultinabreakdownofcoordination' at the bottom of the report – this will provide a 'Yes/No' answer.

Operational non-compliance

Non-compliance of an ANSP verbal or published instruction.

Guidelines:

These occurrence types relate specifically to flight crews not adhering to instructions issued by an ANSP, be it a verbal instruction or a clearance that relates to a published instruction. These instructions can relate to:

- aircraft heading
- route
- altitude busts
- flying the wrong SID or STAR or flying it incorrectly.

Non-compliance with specific air traffic control instructions provided via CPDLC are also coded under this occurrence type.

Note 1: Reports of operational non-compliance where there are no safety implications are not imported into the SIIMS database.

Non-compliance of an ANSP verbal or published instruction.

Airspace - Other

Airspace **occurrences not specifically covered elsewhere.**

Guidelines:

If an occurrence is coded as *Airspace - Other*, then a brief description of the actual event is recorded in the accompanying text box.

Encounter with RPA

Introduction   This section provides the *Encounter with RPA* Level 2 grouping for the **Airspace** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Collision with RPA

An aircraft collides with an RPA either airborne or on the runway strip.

Guidelines:

Collisions include:

- mid-air collisions
- collisions on the runway between an aircraft and an RPA

Near encounter with RPA

An aircraft comes in close proximity to an RPA.

Guidelines:
In deciding whether a '*Near encounter'* is coded, consideration should be given to:

- if the aircraft or RPA took avoiding action, or would have if time had permitted.
- aircraft tracks
- awareness of one aircraft to the other
- if the pilot of an aircraft observes an RPA while flying this would normally mean the aircraft was in close proximity to the RPA (due to the size of the RPA)

Note 1: Near encounters are always coded as incidents.

Sighting

It was reported that an RPA was observed but no other aircraft was affected.

Guidelines:

Where there was no other aircraft affected this should be classified as an event.

Infrastructure groupings

Introduction   This chapter provides the *Infrastructure* Occurrence Type groupings and relate specifically to aircraft operations in general

Background   Each of the Level 1 Occurrence Type groupings is sub-divided into a number of related Level 2 groupings.

Contents   This chapter contains the following sections.

ATM

Any faults or deficiencies in the Air Traffic Management (ATM) system.

Guidelines:

This occurrence type covers hardware or software faults or deficiencies in the ATM system that has a direct effect in relation to an aircraft operation Such as:

- a console failure
- comms/frequency failure
- Temporary Information Broadcast Areas (TIBA)

Note: To be coded as an 'Event' where no aircraft is affected.

Any faults or deficiencies in the Air Traffic Management (ATM) system.

Navaids

Any faults or deficiencies in the operation of a navigation aid.

Guidelines:

This occurrence type relate specifically to a faulty or unserviceable navigation aid that results in a non-normal course of action by flight crew. This includes erroneous signal deflections below 800' agl during an ILS approach (any deflection above 800' is an event) or any failed navaid being used for the purpose of aircraft navigation. This includes:

- ILS
- NDB
- VOR
- DME
- Localiser (LOC)

Occurrences where flight crew endeavour to fly a navaid approach that has been NOTAM'd as out of service are to be recorded as *'Flight preparation-Navigation / Aircraft preparation'*

Note: To be coded as an 'Event' where no aircraft is affected.

Radar / Surveillance

Any faults or deficiencies in the operation of a radar or surveillance system used for the purpose of separating aircraft in the air or on the ground.

Guidelines:

This occurrence type relates specifically to failed radar or surveillance services, including ADS-B ground stations, where no redundancy exists, and ANSP services revert to a 'procedural' environment. Where available, the record should indicate the length of time the facility was out of service.

Where redundancy is available and there has been little or no effect on operations then the occurrence is to be classified as an *'Event'*.

Note: To be coded as an 'Event' where no aircraft is affected.

Runway lighting

Any faults or deficiencies associated with the operation of runway lighting.

Guidelines:

This occurrence type covers all types of runway lighting issues necessary for the safe operation of aircraft during the take-off and landing phases of flight. This includes:

- approach and slope guidance lighting (PAPI & HIRL)
- runway edge and centre lighting
- Pilot Activated Lighting (PAL) where the fault is linked to runway ground equipment

An aircraft departing or landing without activating the runway lighting must be coded as an *'Operational Non-Compliance'*.

It ATC fail to activate lighting associated with a departing or arriving aircraft then it is to be coded as an '*ANSP operational error – Information/Procedural error'*.

Note: To be coded as an 'Event' where no aircraft is affected.

Infrastructure - Other

Infrastructure related occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Infrastructure - Other*, then a brief description of the actual event is recorded in the accompanying text box. Includes runway or taxiway surface irregularities.

Note: To be coded as an 'Event' where no aircraft is affected.

Environment groupings

Introduction   This chapter provides the ***Environment*** Occurrence Type groupings and relate specifically to aircraft operations in general

Background   Each of the Level 1 Occurrence Type groupings is sub-divided into a number of related Level 2 groupings. In turn, Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This chapter contains the following sections.

Interference with an aircraft from the ground

Any ground based activity that interferes with the operation of an aircraft.

Guidelines:

Interference to aircraft from an object other than that expected during the normal course of aircraft operations is to be recorded under this occurrence type.
Where action is taken by flight crew as the result of the interference (e.g. avoiding manoeuvre, missed approach, etc), then it is to be recorded as an incident. All other reports are to be recorded as 'Events'.

Incidents where an RPA has interfered with an aircraft are coded in the section 'Encounter with RPA'
The following are examples of ground based interference occurrence types:

- Laser/Spotlight
- Radio frequency interference
- Weather balloons
- Yacht masts

Weather

Introduction   This section provides the Weather Level 2 grouping for the Environment Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Icing

Any icing issue that affects the performance of an aircraft.

Guidelines:

This includes occurrences in which icing adversely affects aircraft controllability and induces:

- a stall
- renders navigation equipment unusable
- changes the operating characteristics of the propellers or rotors
- the aircraft is unable to sustain level flight

Carburettor icing is not coded under this occurrence type. If the performance of an aircraft is affected by carburettor icing, then the occurrence is coded as either *Engine failure or malfunction*, as appropriate.

A failed 'anti-ice' device is to be coded under *'Systems – Anti-Ice protection'.*

Lightning strike

The aircraft is struck by lightning.

Guidelines:

All lightning strikes are to be coded as an occurrence.

Turbulence / Windshear / Microburst

> **Aircraft performance and/or characteristics are affected by turbulence, windshear or a microburst.**

Guidelines:

When coding Turbulence / *Windshear / Microburst,* the effect on aircraft performance or control must be clearly quantifiable, based on information such as:

- significant airspeed fluctuation
- significant altitude, or profile deviations
- significant changes in rate of climb or descent
- severity of encounter
- the degree of influence on aircraft control
- the degree to which the integrity of the airframe is affected
- if injury to occupants has occurred.

E/GPWS 'windshear' alerts or warnings are coded as 'Events' unless windshear is reported to have been experienced. It is then coded as an incident and is also coded as *'Ground proximity alerts/warnings'.*

The type of turbulence encountered may be turbulence associated with cloud, clear air turbulence (CAT), or wake turbulence.

Encounters which result in injury to an occupant of the aircraft are also coded as '*Crew and Cabin Safety – Cabin injuries'.*

Turbulence events resulting in aircraft control issues or injury are coded as incidents. Severe turbulence occurrences are coded as incidents, all other turbulence events are to be coded as 'Events'.

Unforecast weather

Operations affected by weather conditions that were not forecast or not considered by the flight crew.

Guidelines:

Any aircraft operation that is affected by an unforecast weather phenomenon. Also includes weather conditions not considered prior to flight or during the flight by flight crew. Includes diversions, holding, missed approaches, or flight continues through adverse weather or visibility conditions.

To be coded as an event unless another occurrence type, other than a 'Consequential event' occurrence type, is also coded.

Weather - Other

Weather occurrences not specifically covered elsewhere.

Guidelines:

For this occurrence type to be coded, the weather or environmental phenomenon must significantly affect the safety of the aircraft.

Wildlife

Introduction   This section provides the *Wildlife* Level 2 grouping for the **Environment** Occurrence Type.

Background   Level 2 Occurrence Type groupings are further sub-divided into Level 3 groupings.

Contents   This section contains the following topics.

Topic	See page
Animal strike	150
Birdstrike	151
Other	152

Animal strike

A collision between an aircraft and an animal.

Guidelines:

Animal strikes occurrences include situations in which the aircraft physically strikes any flightless animal.

A near animal strike or a suspected animal strike (where the pilot reports that they "may have hit an animal" but no evidence is found) are also coded as animal strikes but as 'Events'.

A rejected take-off or go-around that is used as a preventative means of avoiding an animal, or report of an animal on the aerodrome, are coded as '*Wildlife – Other'* and as an 'Event'. Flying through swarms of insects are reported as '*Wildlife-Other'*.

Note: Collisions with flightless birds, such as emus, are coded as an 'Animal strike'. Collisions with bats and flying foxes are coded as 'Birdstrike'.

Birdstrike

A collision between an aircraft and a bird.

Guidelines:

Birdstrike occurrences include situations in which the aircraft is in flight, or taking off or landing. Birdstrike is also coded for occurrences where a bird carcass is found on a runway. If the flight crew report that they have hit a bird, but no evidence is found, this is recorded as a 'birdstrike'.

A near birdstrike or a suspected birdstrike (where the pilot reports that they "may have hit a bird" but no evidence is found) are also coded as birdstrikes but as 'Events'.

A rejected take-off or go-around that is used as a preventative means of avoiding a bird, or report of in the area/aerodrome, are coded as "rejected take-off' or 'go-around' as required and '*Wildlife – Other'* and classified as an 'Event'.

Note: Collisions with flightless birds, such as emus, are coded as 'Animal strike'. Collisions with bats and flying foxes are coded as 'Birdstrike'.

Wildlife - Other

Wildlife related occurrences not specifically covered elsewhere.

Guidelines:

Includes:

- flying through insect plagues
- Insects in pitot tubes etc
- Reports of animals/birds on the aerodrome
- Snakes on planes

Environment - Other

Environmental related occurrences not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as *Environment - Other*, then a brief description of the actual event is recorded in the accompanying text box.

- Diversions due to natural disasters
- Radio interference from natural phenomenon (solar flares, weather related static, etc)

Consequential event groupings

Introduction   This chapter provides the Consequential event Occurrence Type groupings and relate specifically to aircraft operations in general. A consequential event cannot be coded as single occurrence type as it is the result of something occurring previous to the consequential event.

Background   Each of the Level 1 Occurrence Type groupings is sub-divided into a number of related Level 2 groupings.

Contents   This chapter contains the following sections.

Ditching

When an aircraft is forced to land on water.

Guidelines:

Ditching is, in effect, a forced or precautionary landing on water. It includes emergency landings on water by landplanes only.

Precautionary/forced landings on water by seaplanes or amphibious aircraft are coded as Precautionary/forced landings.

Diversion / Return

When an aircraft does not continue to its intended destination, but either returns to the departure aerodrome or lands at an alternative aerodrome.

Guidelines:

Diversion / return occurrences may be due to mechanical problems, weather, illness, or some other significant occurrence. The 'return' means turning back and landing at the departure aerodrome. The 'diversion' may be to a notified alternate, or to any other aerodrome other than the departure aerodrome.

Emergency evacuation

When crew and/or passengers vacate an aircraft in situations other than normal and usually under the direction of the operational crew.

Guidelines:

An *'Emergency Evacuation'* is coded when there is a level of urgency to have all crew and passengers disembark as the result of an occurrence that places them at risk of serious injury or death. This can be achieved by any number of means, including:

- emergency slides,
- integrated aircraft stairs,
- aerobridge, or
- external stairs.

Emergency / Precautionary descent

> ***Emergency descent** - Circumstances that require the flight crew to initiate an immediate high rate descent to ensure the continued safety of the aircraft and its occupants.*
>
> ***Precautionary descent** - Circumstances, other than an ATC clearance that requires the flight crew to perform a controlled descent to ensure the safety of the aircraft and its occupants.*

Guidelines:

Emergency / Precautionary descents may be due to mechanical problems, weather, illness, or some other significant occurrence.

Forced / Precautionary landing

> *<u>Forced landing</u> – Circumstances under which an aircraft can no longer sustain normal flight and must land regardless of the terrain.*
>
> *<u>Precautionary landing</u> - A landing made as a precaution when, in the judgement of flight crew, a hazard exists with continued flight.*

Guidelines:

Forced landing relates specifically to occurrences where flight crew have no alternative but to land the aircraft. These are generally attributed to major mechanical or structural problems where continued flight is no longer a viable option.

The precautionary landing relates specifically to occurrences that are generally attributed to mechanical problems, weather, illness, low fuel, or some other occurrence where continued flight to destination is no longer a viable option. The landing will normally be on a paddock, road beach, etc.

Note 1: A forced/precautionary landing on water is coded as 'Ditching' unless it involves a sea plane.

Note 2: Glider out-landings are coded as 'Miscellaneous –Other'.

Fuel dump / Burn off

When an aircraft dumps or burns off fuel in order to reduce its landing weight.

Guidelines:

Fuel dumping or burn off is generally associated with an on-board emergency whereby the aircraft returns to the departure aerodrome or diverts to another aerodrome other than that planned and has a requirement to reduce its landing weight.

Missed approach / Go-around

Any circumstance in which the aircraft discontinues its approach to land.

Guidelines:

A missed approach procedure is the procedure to be followed if an approach can no longer be continued based on the flight crew or ATC assessment that the approach has been compromised. The missed approach procedure takes into account de-confliction from ground obstacles and from other air traffic flying instrument procedures in the airfield vicinity.

Reasons for discontinuing an approach include the following:

- the required visual references have not been established by Decision Altitude/Height (DA/H) or Minimum Descent Altitude/Height (MDA/H) or is acquired but is subsequently lost
- the approach is, or has become unstabilised
- the aircraft is not positioned so as to allow a controlled touch down within the designated runway touchdown zone with a consequent risk of aircraft damage with or without a '*Runway Excursion*' if the attempt is continued
- the runway is obstructed
- a landing clearance has not been received or is issued and later cancelled

Rejected take-off

Any circumstance by which aircraft discontinues the take-off after commencement of the take-off roll.

Guidelines:

The situation which follows when it is decided to stop an aircraft during the take-off run and may be initiated by flight crew or ATC.

The decision to reject the takeoff beyond V1 or critical abort point is to be recorded as an IRM.

Consequential event - Other

Consequential events not specifically covered elsewhere.

Guidelines:

If an occurrence is coded as Consequential event - Other, then a brief description of the actual event is recorded in the accompanying text box.

This includes:

- overweight landing
- fly-by inspections