

CIVIL AVIATION GUIDANCE MATERIAL – 8503

MANDATORY OCCURRENCE REPORTING – AIRWORTHINESS ASPECT

MOR – AIRWORTHINESS ASPECT

CIVIL AVIATION AUTHORITY OF MALAYSIA



Introduction

This Civil Aviation Guidance Material 8503 (CAGM – 8503) is issued by the Civil Aviation Authority of Malaysia (CAAM) to provide guidance for Mandatory Occurrence Reporting – Airworthiness Aspect, pursuant to Civil Aviation Directives 1900 (CAD 1900 – Safety Reporting System), Civil Aviation Directives 6 Part 1 (CAD 6 Part 1 – Commercial Air Transport), Civil Aviation Directives 6 Part 2 (CAD Part 2 – General Aviation), Civil Aviation Directives 6 Part 3 (CAD 6 Part 3 – Helicopter) and Civil Aviation Directives 8 (CAD 8 – Airworthiness of Aircraft).

Organisations may use these guidelines to demonstrate compliance with the provisions of the relevant CAD's issued. Notwithstanding Regulation 204 and Regulation 205 of the Malaysian Civil Aviation Regulations 2016 (MCAR 2016), when the CAGMs issued by the CAAM are used, the related requirements of the CAD's are considered as met, and further demonstration may not be required.

(Captain Chester Voo Chee Soon) Chief Executive Officer Civil Aviation Authority of Malaysia



Civil Aviation Guidance Material Components and Editorial practices

This Civil Aviation Guidance Material is made up of the following components and are defined as follows:

Standards: Usually preceded by words such as *"shall"* or *"must"*, are any specification for physical characteristics, configuration, performance, personnel or procedure, where uniform application is necessary for the safety or regularity of air navigation and to which Operators must conform. In the event of impossibility of compliance, notification to the CAAM is compulsory.

Recommended Practices: Usually preceded by the words such as "*should*" or "*may*", are any specification for physical characteristics, configuration, performance, personnel or procedure, where the uniform application is desirable in the interest of safety, regularity or efficiency of air navigation, and to which Operators will endeavour to conform.

Appendices: Material grouped separately for convenience but forms part of the Standards and Recommended Practices stipulated by the CAAM.

Definitions: Terms used in the Standards and Recommended Practices which are not selfexplanatory in that they do not have accepted dictionary meanings. A definition does not have an independent status but is an essential part of each Standard and Recommended Practice in which the term is used, since a change in the meaning of the term would affect the specification.

Tables and Figures: These add to or illustrate a Standard or Recommended Practice and which are referred to therein, form part of the associated Standard or Recommended Practice and have the same status.

Notes: Included in the text, where appropriate, Notes give factual information or references bearing on the Standards or Recommended Practices in question but not constituting part of the Standards or Recommended Practices;

Attachments: Material supplementary to the Standards and Recommended Practices or included as a guide to their application.

It is to be noted that some Standards in this Civil Aviation Guidance Material incorporates, by reference, other specifications having the status of Recommended Practices. In such cases, the text of the Recommended Practice becomes part of the Standard.

The units of measurement used in this document are in accordance with the International System of Units (SI) as specified in CAD 5. Where CAD 5 permits the use of non-SI alternative units, these are shown in parentheses following the basic units. Where two sets of units are quoted it must not be assumed that the pairs of values are equal and interchangeable. It may, however, be inferred that an equivalent level of safety is achieved when either set of units is used exclusively.

Any reference to a portion of this document, which is identified by a number and/or title, includes all subdivisions of that portion.

Throughout this Civil Aviation Guidance Material, the use of the male gender should be understood to include male and female persons.



Record of Revisions

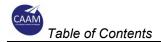
Revisions to this CAGM shall be made by authorised personnel only. After inserting the revision, enter the required data in the revision sheet below. The *'Initials'* has to be signed off by the personnel responsible for the change.

Rev No.	Revision Date	Revision Details	Initials



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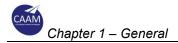
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Chapter 1 – General

1 General

- 1.1 As part of the reporting process, it is essential for organisations to provide high quality and complete data & information to facilitate analysis on the occurrences.
- 1.2 Prior to submitting the required reports to CAAM, organisations should, based on information collected, analyse occurrences that could have an impact on safety, in order to identify safety hazards and take appropriate and timely safety actions.
- 1.3 This CAGM only addresses occurrences related to technical conditions, maintenance and repair of aircraft.



2 Reporting time

- 2.1 The period of 48 hours is normally understood to start from when the occurrence took place or from the time when the reporter determined that there was, or could have been, a potentially hazardous or unsafe condition to the aircraft, its occupants or any other person.
- 2.2 Within the overall limit of 48 hours for the submission of a report, the degree of urgency should be determined by the level of hazard judged to have resulted from the occurrence:
 - a) Where an occurrence is judged to have resulted in an immediate and particularly significant hazard, the CAAM expects to be notified immediately, either by calling or texting the respective organisation's Primary Maintenance Inspector (PMI) followed by an email to the PMI and copied to the Director of Airworthiness of whatever details available at the time. This initial notification should then be followed up by a report email to <u>mor.airworthiness@caam.gov.my</u> within 48 hours. Supplementary information (if any) can be provided after the 48 hours.
 - b) Where the occurrence is judged to have resulted in a less immediate and less significant hazard, report submission may be delayed up to the maximum of 48 hours in order to provide more details or more reliable information.



3 Means of Reporting

- 3.1 Reports can be made and submitted through form CAAM/AW/8503-01 provided in the CAAM website. Every significant information in the form should be filled in. However, the amount of information in the report should commensurate with the severity of the occurrence.
- 3.2 For any occurrence involving a system or component, which is monitored or protected by a warning and/ or protection system (for example: fire detection/ extinguishing) the occurrence report should always state whether such system(s) functioned properly in the Problem Description column of the report.
- 3.3 Preliminary analysis report (to be submitted within 30 days from the date of occurrence) can be submitted through form CAAM/AW/8503-02 provided in the CAAM website.

Note.– If the risk assessment resulted in the Safety Risk Index being in the green range, then there will be no requirement for the Final Analysis Report. If the Safety Risk Index lies in the amber range, then the Final Analysis Report will only be required if there are further evidence and/or corrective action to be presented.

3.4 Final analysis report (to be submitted within 3 months from the date of occurrence) can be submitted through form CAAM/AW/8503-03 provided in the CAAM website if the final analysis results identify an actual or potential aviation safety risk.

Note.– Any additional information, evidence and/or documents that supports or provides clarity to the Preliminary Analysis or the Final Analysis reports should be attached together with the report respectively. All reports should be submitted through email to <u>mor.airworthiness@caam.gov.my</u>.



4 Risk Assessment

- 4.1 Assessing severity and probability. Organisations should perform a risk assessment by using the probability and severity risk matrix for each of the occurrence.
- 4.2 CAAM realizes that the level of detail and complexity of tables and matrices used should be adapted to the particular needs and complexities of each organisation. Organisations may also have its own qualitative and quantitative criteria of risk assessment. However, for the purpose of MOR risk assessment, CAAM insist on standardising the scales, method of risk calculation, criteria for accepting risk and colour coding as stipulated below.
- 4.3 Safety risk probability.
- 4.3.1 Safety risk probability is the likelihood that a safety consequence or outcome will occur. Table 1 presents a typical safety risk probability classification table. It includes five categories to denote the probability related to an unsafe event or condition, the description of each category, and an assignment of a value to each category. This matrix uses qualitative terms and quantitative value are assigned to provide a more accurate assessment.

Likelihood	Meaning	Value
Frequent	Likely to occur many times (has occurred frequently)	5
Occasional	Likely to occur sometimes (has occurred infrequently)	4
Remote	Unlikely to occur, but possible (has occurred rarely)	3
Improbable	Very unlikely to occur (not known to have occurred)	2
Extremely improbable	Almost inconceivable that the event will occur	1

Table 1

- 4.4 Safety risk severity.
- 4.4.1 Safety risk severity is defined as the extent of harm that might reasonably be expected to occur as a consequence or outcome of the identified hazard. The severity assessment should consider all possible consequences related to a hazard, taking into account the worst foreseeable situation. Table 2 presents a typical safety risk severity table. It includes five categories to denote the level of severity, the description of each category, and the assignment of a value to each category.

Severity	Meaning	Value
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Catastrophic	 Aircraft / equipment destroyed Multiple deaths 	A
Hazardous	 A large reduction in safety margins, physical distress or a workload such that operational personnel cannot be relied upon to perform their tasks accurately or completely Serious injury Major equipment damage 	В
Major	 A significant reduction in safety margins, a reduction in the ability of operational personnel to cope with adverse operating conditions as a result of an increase in workload or as a result of conditions impairing their efficiency Serious incident Injury to persons 	С
Minor	 Nuisance Operating limitations Use of emergency procedures Minor incident 	D
Negligible	Few consequences	E

Tabl	e	2
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4.5 Safety risk tolerability.

4.5.1 The safety risk index rating is created by combining the results of the probability and severity scores. It will be an alphanumerical designator. The respective severity/probability combinations are presented in the safety risk assessment matrix in Table 3. The safety risk assessment matrix is used to determine safety risk tolerability. Consider, for example, a situation where the safety risk probability has been assessed as Occasional (4), and the safety risk severity has been assessed as Hazardous (B), resulting in a safety risk index of (4B). Chapter 4 – Risk Assessment

Severity				
Catastrophic A	Hazardous B	Major C	Minor D	Negligible E
5A	5B	5C	5D	5E
4A	4B	4C	4D	4E
3A	3B	3C	3D	3E
2A	2B	2C	2D	2E
1A	1B	1C	1D	1E
	A 5A 4A 3A 2A	A B 5A 5B 4A 4B 3A 3B 2A 2B	Catastrophic AHazardous BMajor C5A5B5C4A4B4C3A3B3C2A2B2C	Catastrophic AHazardous BMajor CMinor D5A5B5C5D4A4B4C4D3A3B3C3D2A2B2C2D

- 4.6 Safety risk matrix.
- 4.6.1 The safety risk index should then be assessed against the safety risk tolerability table that describes in a narrative form the tolerability criteria for the particular occurrence. Table 4 presents the safety risk tolerability table. Organisations should perform the recommended action as stipulated in the table.

Safety Risk Index Range	Safety Risk Description	Recommended Action
5A, 5B, 5C, 4A, 4B, 3A	INTOLERABLE	Take immediate action to mitigate the risk or stop the activity. Perform priority safety risk mitigation to ensure additional or enhanced preventative controls are in place to bring down the safety risk index to tolerable.
5D, 5E, 4C, 4D, 4E, 3B, 3C, 3D, 2A, 2B, 2C, 1A	TOLERABLE	Can be tolerated based on the safety risk mitigation. It may require management decision to accept the risk.
3E, 2D, 2E, 1B, 1C, 1D, 1E	ACCEPTABLE	Acceptable as is. No further safety risk mitigation required.

Table 4



Chapter 5 – Reporting Between Organizations

5 Reporting Between Organisations

- 5.1 The 'Organisation responsible for the design' is a general term, which can be any one or a combination of the following organisations
 - a) Holder of Type Certificate (TC) of an Aircraft, Engine or Propeller;
 - b) Holder of a Supplemental Type Certificate (STC) or Modification Approval on an Aircraft, Engine or Propeller; or
 - c) Holder of an Aeronautical Product Approval, e.g. Technical Standard Order Authorisation (TSOA), Parts Manufacturing Approval (PMA).
- 5.2 If it can be determined that the occurrence has an impact on or is related to an aircraft component which is covered by a separate design approval (TC, STC, TSOA or PMA), then the holders of such approval/authorisation should be informed. If an occurrence happens on a component which is covered by a TC, STC, TSOA or PMA (e.g. during maintenance), then only that TC, STC, TSOA or PMA holder needs to be informed.
- 5.3 The form and timescale for reports to be exchanged between organisations is left for individual organisations to determine taking into consideration its effect on the preliminary and final analysis that will be submitted to CAAM. CAAM emphasise the importance of relationships to exist between the organisations to ensure that there is an exchange of information relating to occurrences.
- 5.4 Paragraph 6 of this CAGM provides guidance as to what should be reported by an organisation to the CAAM. The list of criteria provided may be used as guidance for establishing which occurrences shall be reported to which organisation. For example, certain operational occurrences may not need to be reported by the CAMO to the design or production organisation.

Chapter 6 – Reportable Occurrences

6 Reportable Occurrences

- 6.1 **General.** There are different reporting requirements for CAMO, AMO, DOA and POA. Moreover, there are not only requirements for reporting to the CAAM, but also for reporting to other (private) entities. The criteria for all these different reporting lines are not the same. For example, the CAAM will not receive the same kind of reports from a design organisation as from a CAMO. This is a reflection of the different perspectives of the organisations based on their activities.
- 6.2 **Continuing Airworthiness and Maintenance.** The list of examples of reportable occurrences offered below under paragraph 6.7 of this CAGM is established from the perspective of primary sources of occurrence information in the operational area (CAMO and maintenance organisations) to provide guidance for those persons developing criteria for individual organisations on what they need to report to the CAAM. The list is neither definitive nor exhaustive and judgement by the reporter of the degree of hazard or potential hazard involved is essential.
- 6.3 **Design.** The list of examples will not be used by design organisations directly for the purpose of determining when a report has to be made to the CAAM, but it can serve as guidance for the establishment of the system for collecting data. After receipt of reports from the primary sources of information, design personnel will normally perform some kind of analysis to determine whether an occurrence has resulted or may result in an unsafe condition and a report to the CAAM should be made.
- 6.4 **Production.** The list of examples is not applicable to the reporting obligation of production organisations. Their primary concern is to inform the design organisation of deviations. Only in cases where an analysis in conjunction with that design organisation shows that the deviation could lead to an unsafe condition, should a report be made to the CAAM (see also paragraph 6.3 of this CAGM).
- 6.5 **Customised list.** Each CAMO and maintenance organisation should develop a customised list adapted to its aircraft, operation or product. The list of reportable occurrences applicable to an organisation should be published within the organisation's expositions/ handbooks/ manuals.
- 6.6 **Internal reporting.** The perception of safety is central to occurrence reporting. It is for each organisation to determine what is safe and what is unsafe and to develop its reporting system on that basis. The organisation should establish an internal reporting system whereby reports are centrally collected and reviewed to establish which reports meet the criteria for occurrence reporting to the CAAM and other organisations, as required.

6.7 List of examples of reportable occurrences.

Appendix 1 of this CAGM is a generic list of reportable occurrences. Not all examples are applicable to each reporting organisation. Therefore, each organisation should define and agree with the CAAM a specific list of reportable occurrences or a list of

Chapter 6 – Reportable Occurrences

more generic criteria, tailored to its activity and scope of work (see also paragraph 6.5 of this CAGM). In establishing that customised list, the organisation should take into account the following considerations:

- a) Reportable occurrences are those where the safety of operation was or could have been endangered or which could have led to an unsafe condition. If in the view of the reporter an occurrence did not hazard the safety of the operation but if repeated in different but likely circumstances would create a hazard, then a report should be made. What is judged to be reportable on one class of product, part or appliance may not be so on another and the absence or presence of a single factor, human or technical, can transform an occurrence into a serious incident or accident.
- b) Specific operational approvals, e.g. RVSM, ETOPS, RNAV, or a design or maintenance programme, may have specific reporting requirements for failures or malfunctions associated with that approval or programme.

A lot of the qualifying adjectives like 'significant' have been deleted from the list. Instead, it is expected that all examples are qualified by the reporter using the general criteria that are applicable in his field, and specified in the requirement (e.g. for CAMO: 'hazards or could have hazarded the operation').

7 Appendices

7.1 Appendix 1 – Generic List of Reportable Occurrences

1 AIRCRAFT TECHNICAL

1.1 Structural

- a) Not all structural failures need to be reported. Engineering judgement is required to decide whether a failure is serious enough to be reported. The following examples can be taken into consideration:
 - Damage to a Principal Structural Element that has not been qualified as damage tolerant (life limited element). Principal Structural Elements are those which contribute significantly to carrying flight, ground, and pressurization loads, and whose failure could result in a catastrophic failure of the aircraft.
 - 2) Defect or damage exceeding admissible damages to a Principal Structural Element that has been qualified as damage tolerant;
 - Damage to or defect exceeding allowed tolerances of a structural element which failure could reduce the structural stiffness to such an extent that the required flutter, divergence or control reversal margins are no longer achieved;
 - 4) Damage to or defect of a structural element, which could result in the liberation of items of mass that may injure occupants of the aircraft;
 - 5) Damage to or defect of a structural element, which could jeopardise proper operation of systems. See paragraph 1.2 below; and
 - 6) Loss of any part of the aircraft structure in flight.

1.2 Systems

- a) The following generic criteria applicable to all systems are proposed:
 - 1) Loss, significant malfunction or defect of any system, subsystem or set of equipment when standard operating procedures, drills etc. could not be satisfactorily accomplished.
 - 2) Inability of the crew to control the system, e.g.:
 - i) Un-commanded actions;
 - ii) incorrect and/or incomplete response, including limitation of movement or stiffness;
 - iii) runaway; and
 - iv) mechanical disconnection or failure;
 - 3) Failure or malfunction of the exclusive function(s) of the system (one system could integrate several functions).
 - 4) Interference within or between systems.

- 5) Failure or malfunction of the protection device or emergency system associated with the system.
- 6) Loss of redundancy of the system.
- 7) Any occurrence resulting from unforeseen behavior of a system.
- 8) For aircraft types with single main systems, subsystems or sets of equipment: Loss, significant malfunction or defect in any main system, subsystem or set of equipment.
- 9) For aircraft types with multiple independent main systems, subsystems or sets of equipment: The loss, significant malfunction or defect of more than one main system, subsystem or set of equipment.
- 10) Operation of any primary warning system associated with aircraft systems or equipment unless the crew conclusively established that the indication was false provided that the false warning did not result in difficulty or hazard arising from the crew response to the warning.
- 11) Leakage of hydraulic fluids, fuel, oil or other fluids which resulted in a fire hazard or possible hazardous contamination of aircraft structure, systems or equipment, or risk to occupants.
- 12) Malfunction or defect of any indication system when this results in the possibility of misleading indications to the crew.
- 13) Any failure, malfunction or defect if it occurs at a critical phase of flight and relevant to the operation of that system.
- 14) Occurrences of significant shortfall of the actual performances compared to the approved performance which resulted in a hazardous situation (taking into account the accuracy of the performance calculation method) including braking action, fuel consumption etc., and
- 15) Asymmetry of flight controls; e.g. flaps, slats, spoilers etc.
- b) Appendix 2 of this CAGM gives a list of examples of reportable occurrences resulting from the application of these generic criteria to specific systems.

1.3 Propulsion (including Engines, Propellers and Rotor Systems) and APUs

- a) Flameout, shutdown or malfunction of any engine;
- b) Overspeed or inability to control the speed of any high-speed rotating component (for example: Auxiliary power unit, air starter, air cycle machine, air turbine motor, propeller or rotor);
- c) Failure or malfunction of any part of an engine or powerplant resulting in any one or more of the following:
 - 1) non containment of components/debris;
 - 2) uncontrolled internal or external fire, or hot gas breakout;

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- 3) thrust in a different direction from that demanded by the pilot;
- 4) thrust reversing system failing to operate or operating inadvertently;
- 5) inability to control power, thrust or rpm;
- 6) failure of the engine mount structure;
- 7) partial or complete loss of a major part of the powerplant;
- 8) Dense visible fumes or concentrations of toxic products sufficient to incapacitate crew or passengers;
- 9) inability, by use of normal procedures, to shut down an engine; and
- 10) inability to restart a serviceable engine;
- d) An un-commanded thrust/ power loss, change or oscillation which is classified as a loss of thrust or power control (LOTC):
 - 1) for a single-engine aircraft;
 - 2) where it is considered excessive for the application;
 - 3) where this could affect more than one engine in a multi-engine aircraft, particularly in the case of a twin-engine aircraft; or
 - 4) for a multi-engine aircraft where the same, or similar, engine type is used in an application where the event would be considered hazardous or critical;
- e) Any defect in a life control parts causing retirement before completion of its full life;
- f) Defects of common origin which could cause an in-flight shut down rate so high that there is the possibility of more than one engine being shut down on the same flight;
- g) An engine limiter or control device failing to operate when required or operating inadvertently;
- h) Exceedance of engine parameters;
- i) FOD resulting in damage.

Propellers and transmission

- a) Failure or malfunction of any part of a propeller or powerplant resulting in any one or more of the following:
 - 1) an overspeed of the propeller;
 - 2) the development of excessive drag;
 - 3) a thrust in the opposite direction to that commanded by the pilot;
 - 4) a release of the propeller or any major portion of the propeller;

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- 5) a failure that results in excessive unbalance;
- 6) the unintended movement of the propeller blades below the established minimum in-flight low-pitch position;
- 7) an inability to feather the propeller;
- 8) an inability to command a change in propeller pitch;
- 9) an un-commanded change in pitch;
- 10) an uncontrollable torque or speed fluctuation; and
- 11) The release of low energy parts;

Rotors and transmission

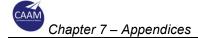
- a) Damage or defect of main rotor gearbox/attachment which could lead to in-flight separation of the rotor assembly, and/or malfunctions of the rotor control;
- b) Damage to tail rotor, transmission and equivalent systems;

<u>APUs</u>

- a) Shut down or failure when the APU is required to be available by operational requirements, e.g. ETOPS, MEL;
- b) Inability to shut down the APU;
- c) Overspeed; and
- d) Inability to start the APU when needed for operational reasons.

1.4 Suspected Unapproved Parts (SUP)

- a) Unapproved part is a part or material intended for installation on a type certificated product/aircraft, which has neither been manufactured according to approved procedures, nor conforms to an approved type design; or it fails to conform to declared specifications or accepted industry standards (i.e. standard parts).
- b) Unapproved parts include, but are not limited to:
 - 1) Parts specified in the illustrated parts catalogues (IPC) of a type certificated aircraft, but which have been manufactured, reclaimed or reworked and then marked by an unauthorised source and provided with documents which indicate falsely that the part(s) are genuine and conform to the approved type design, or meet a particular industry standard and are offered for use as conforming with an aircraft manufacturer's authorised IPC.
 - 2) Parts shipped directly to users by, manufacturers, suppliers, or distributors who do not themselves hold appropriate production approvals for the parts, and have not been authorised to make direct shipments to users or stockists, by the type certificate holder, who alone has production approval, e.g. production overruns.



- 3) Parts which have not been maintained, overhauled or repaired in accordance with the requirements of approved airworthiness data and/or statutory requirements, or that have been maintained, overhauled or repaired by persons not authorised to perform and certify these functions.
- c) The user shall refer to "CAAM Unapproved Part Notification" for any information regarding SUP. Additionally, the user should also cross-refer with the state of design's national aviation authority website for additional information on the Suspected Unapproved Part.
- d) At any time, a part is deemed to be suspected, the SUP and any accompanying documentation should be quarantined immediately and held until CAAM finalized the investigation and satisfied that the evidence is no longer required or until the authenticity of the part has been established.

1.5 Human Factors

- a) Any incident where any feature or inadequacy of the aircraft design could have led to an error of use that could contribute to a hazardous or catastrophic effect.
- b) Any actions of individuals or teams which impacts the safe conduct of continuing airworthiness & maintenance of the aircraft, or where their ability to safely carry out duties might be hindered. This can include (but are not limited to) events related to experience or training, situational awareness, perception, task performance etc."

1.6 Other Occurrences

- a) Any incident where any feature or inadequacy of the aircraft design could have led to an error of use that could contribute to a hazardous or catastrophic effect.
- b) An occurrence not normally considered as reportable (for example, furnishing and cabin equipment, water systems), where the circumstances resulted in endangering of the aircraft or its occupants.
- c) A fire, explosion, smoke or toxic or noxious fumes.
- d) Any other event which could hazard the aircraft, or affect the safety of the occupants of the aircraft, or people or property in the vicinity of the aircraft or on the ground.
- e) Failure or defect of passenger address system resulting in loss or inaudible passenger address system.
- f) Loss of pilot's seat control during flight.

2 AIRCRAFT MAINTENANCE AND REPAIR

- 2.1 Incorrect assembly of parts or components of the aircraft found during an inspection or test procedure not intended for that specific purpose.
- 2.2 Hot bleed air leak resulting in structural damage.
- 2.3 Any defect in a life-controlled-part causing retirement before completion of its full life.

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- 2.4 Any damage or deterioration (i.e. fractures, cracks, corrosion, delamination, disbonding etc.) resulting from any cause (such as flutter, loss of stiffness or structural failure) to:
 - a) primary structure or a principal structural element (as defined in the manufacturers' Repair Manual) where such damage or deterioration exceeds allowable limits specified in the Repair Manual and requires a repair or complete or partial replacement of the element;
 - b) secondary structure which consequently has or may have endangered the aircraft; or
 - c) the engine, propeller or rotorcraft rotor system.
- 2.5 Any failure, malfunction or defect of any system or equipment, or damage or deterioration found as a result of compliance with an Airworthiness Directive or other mandatory instruction issued by a Regulatory Authority, when:
 - a) it is detected for the first time by the reporting organisation implementing compliance;
 - b) on any subsequent compliance where it exceeds the permissible limits quoted in the instruction and/or published repair/rectification procedures are not available; or
- 2.6 Failure of any emergency system or equipment, including all exit doors and lighting, to perform satisfactorily, including when being used for maintenance or test purposes.
- 2.7 Non-compliance or significant errors in compliance with required maintenance procedures.
- 2.8 Products, parts, appliances and materials of unknown or suspect origin.
- 2.9 Misleading, incorrect or insufficient maintenance data or procedures that could lead to maintenance errors.
- 2.10 Failure, malfunction or defect of ground equipment used for test or checking of aircraft systems and equipment when the required routine inspection and test procedures did not clearly identify the problem when this results in a hazardous situation.

7.2 Appendix 2 – Reportable Occurrences to Specific Systems

1 The following subparagraphs give examples of reportable occurrences resulting from the application of the generic criteria to specific systems listed in paragraph 1.2 of the Appendix 1 of this CAGM.

1.1 Air conditioning/ ventilation

- a) complete loss of avionics cooling,
- b) depressurisation.

1.2 Auto-flight system

- a) failure of the auto-flight system to achieve the intended operation while engaged,
- b) significant reported crew difficulty to control the aircraft linked to auto-flight system,
- c) functioning,
- d) failure of any auto-flight system disconnect device,
- e) Un-commanded auto-flight mode change.

1.3 Communications

- a) failure or defect of passenger address system resulting in loss or inaudible passenger address,
- b) total loss of communication in flight.

1.4 Electrical system

- a) loss of one electrical system distribution system (AC or DC),
- b) total loss or loss or more than one electrical generation system,
- c) failure of the back-up (emergency) electrical generating system.

1.5 Cockpit/ Cabin/ Cargo

- a) pilot seat control loss during flight,
- b) failure of any emergency system or equipment, including emergency evacuation signaling system, all exit doors, emergency lighting, etc.,
- c) loss of retention capability of the cargo loading system.

1.6 Fire protection system

- a) fire warnings, except those immediately confirmed as false,
- b) undetected failure or defect of fire/ smoke detection/ protection system, which could lead to loss or reduced fire detection/protection,
- c) absence of warning in case of actual fire or smoke.

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1.7 Flight controls

- a) Asymmetry of flaps, slats, spoilers etc.,
- b) limitation of movement, stiffness or poor or delayed response in the operation of primary flight control systems or their associated tab and lock systems,
- c) flight control surface run away,
- d) flight control surface vibration felt by the crew,
- e) mechanical flight control disconnection or failure,
- f) significant interference with normal control of the aircraft or degradation of flying qualities.

1.8 Fuel system

- a) fuel quantity indicating system malfunction resulting in total loss or erroneous indicated fuel quantity on board,
- b) leakage of fuel which resulted in major loss, fire hazard, significant contamination,
- c) malfunction or defects of the fuel jettisoning system which resulted in inadvertent loss of significant quantity, fire hazard, hazardous contamination of aircraft equipment or inability to jettison fuel,
- d) fuel system malfunctions or defects which had a significant effect on fuel supply and/or distribution,
- e) inability to transfer or use total quantity of usable fuel.

1.9 Hydraulics

- a) loss of one hydraulic system (ETOPS only),
- b) failure of the isolation system to operate,
- c) loss of more than one hydraulic circuit,
- d) failure of the back-up hydraulic system,
- e) inadvertent Ram Air Turbine extension.

1.10 Ice detection/ protection system

- a) undetected loss or reduced performance of the anti-ice/ de-ice system,
- b) loss of more than one of the probe heating systems,
- c) inability to obtain symmetrical wing de-icing,
- d) abnormal ice accumulation leading to significant effects on performance or handling qualities,
- e) crew vision significantly affected.

Chapter 7 – Appendices

1.11 Indicating/ warning/ recording systems

- a) malfunction or defect of any indicating system when the possibility of significant misleading indications to the crew could result in an inappropriate crew action on an essential system,
- b) loss of a red warning function on a system,
- c) for glass cockpits: loss or malfunction of more than one display unit or computer involved in the display/ warning function.

1.12 Landing gear system/ brakes/ tires

- a) brake fire,
- b) significant loss of braking action,
- c) unsymmetrical braking leading to significant path deviation,
- d) failure of the L/G free fall extension system (including during scheduled tests),
- e) unwanted gear or gear doors extension/retraction,
- f) multiple tires burst.

1.13 Navigation systems (including precision approaches system) and air data systems

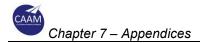
- a) total loss or multiple navigation equipment failures,
- b) total failure or multiple air data system equipment failures,
- c) significant misleading indication,
- d) Significant navigation errors attributed to incorrect data or a database coding error,
- e) Unexpected deviations in lateral or vertical path not caused by pilot input,
- f) Problems with ground navigational facilities leading to significant navigation errors not associated with transitions from inertial navigation mode to radio navigation mode.

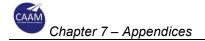
1.14 Oxygen

- a) for pressurised aircraft: loss of oxygen supply in the cockpit,
- b) loss of oxygen supply to a significant number of passengers (more than 10%), including when found during maintenance or training or test purposes.

1.15 Bleed air system

- a) hot bleed air leak resulting in fire warning or structural damage,
- b) loss of all bleed air systems,
- c) failure of bleed air leak detection system.





7.3 Appendix 3 – ATA Code Table

1 Appendix 3 provides a breakdown of specific systems related to the occurrence according to the ATA Chapter. The list can be used as a guidance in developing Maintenance Organisation's and CAMO's customised list of reportable occurrences (see para 6.5). It is highly advisable that organisation fill in the MOR Form CAAMAW8503-01 with the related ATA and Sub ATA Chapter to facilitate indication and monitoring of trends to specific system or component.

ATA/ TITLE

11 PLACARDS AND MARKINGS

1100 PLACARDS AND MARKINGS

12 SERVICING

1210 FUEL SERVICING 1220 OIL SERVICING 1230 HYDRAULIC FLUID SERVICING 1240 COOLANT SERVICING

14 HARDWARE

1400 MISCELLANEOUS HARDWARE 1410 HOSES AND TUBES 1420 ELECTRICAL CONNECTORS 1430 FASTENERS 1497 MISCELLANEOUS WIRING

18 HELICOPTER VIBRATION

1800 HELICOPTER VIB/NOISE ANALYSIS 1810 HELICOPTER VIBRATION ANALYSIS 1820 HELICOPTER NOISE ANALYSIS 1897 HELICOPTER VIBRATION SYSTEM WIRING

21 AIR CONDITIONING

2100 AIR CONDITIONING SYSTEM 2110 CABIN COMPRESSOR SYSTEM 2120 AIR DISTRIBUTION SYSTEM 2121 AIR DISTRIBUTION FAN 2130 CABIN PRESSURE CONTROL SYSTEM 2131 CABIN PRESSURE CONTROLLER 2132 CABIN PRESSURE INDICATOR 2133 PRESSURE REGUL/OUTFLOW VALVE 2134 CABIN PRESSURE SENSOR 2140 HEATING SYSTEM 2150 CABIN COOLING SYSTEM 2160 CABIN TEMPERATURE CONTROL SYSTEM 2161 CABIN TEMPERATURE CONTROLLER 2162 CABIN TEMPERATURE INDICATOR 2163 CABIN TEMPERATURE SENSOR 2170 HUMIDITY CONTROL SYSTEM 2197 AIR CONDITIONING SYSTEM WIRING

22 AUTO FLIGHT

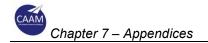
2200 AUTO FLIGHT SYSTEM 2210 AUTOPILOT SYSTEM 2211 AUTOPILOT COMPUTER 2212 ALTITUDE CONTROLLER 2213 FLIGHT CONTROLLER 2214 AUTOPILOT TRIM INDICATOR 2215 AUTOPILOT MAIN SERVO 2216 AUTOPILOT TRIM SERVO 2220 SPEED-ATTITUDE CORRECT. SYSTEM 2230 AUTO THROTTLE SYSTEM 2250 AERODYNAMIC LOAD ALLEVIATING 2297 AUTOFLIGHT SYSTEM WIRING

23 COMMUNICATIONS

2300 COMMUNICATIONS SYSTEM 2310 HF COMMUNICATION SYSTEM 2311 UHF COMMUNICATION SYSTEM 2312 VHF COMMUNICATION SYSTEM 2320 DATA TRANSMISSION AUTO CALL 2330 ENTERTAINMENT SYSTEM 2340 INTERPHONE/PASSENGER PA SYSTEM 2350 AUDIO INTEGRATING SYSTEM 2360 STATIC DISCHARGE SYSTEM 2370 AUDIO/VIDEO MONITORING 2397 COMMUNICATION SYSTEM WIRING

24 ELECTRICAL POWER

2400 ELECTRICAL POWER SYSTEM 2410 ALTERNATOR-GENERATOR DRIVE 2420 AC GENERATION SYSTEM 2421 AC GENERATOR-ALTERNATOR 2422 AC INVERTER 2423 PHASE ADAPTER 2424 AC REGULATOR 2425 AC INDICATING SYSTEM 2430 DC GENERATING SYSTEM 2431 BATTERY OVERHEAT WARN. SYSTEM 2432 BATTERY/CHARGER SYSTEM 2433 DC RECTIFIER/CONVERTER 2434 DC GENERATOR-ALTERNATOR 2435 STARTER-GENERATOR 2436 DC REGULATOR 2437 DC INDICATING SYSTEM 2440 EXTERNAL POWER SYSTEM 2450 AC POWER DISTRIBUTION SYSTEM 2460 DC POWER/DISTRIBUTION SYSTEM 2497 ELECTRICAL POWER SYSTEM WIRING



25 EQUIPMENT/FURNISHINGS

2500 CABIN EQUIPMENT/FURNISHINGS 2510 FLIGHT COMPARTMENT EQUIPMENT 2520 PASSENGER COMPARTMENT EQUIPMENT 2530 BUFFET/GALLEYS 2540 LAVATORIES 2550 CARGO COMPARTMENTS 2551 AGRICULTURAL SPRAY SYSTEM 2560 EMERGENCY EQUIPMENT 2561 LIFE JACKET 2562 EMERGENCY LOCATOR BEACON 2563 PARACHUTE 2564 LIFE RAFT 2565 ESCAPE SLIDE 2570 ACCESSORY COMPARTMENT 2571 BATTERY BOX STRUCTURE 2572 ELECTRONIC SHELF SECTION 2597 EQUIP/FURNISHING SYSTEM WIRING

26 FIRE PROTECTION

2600 FIRE PROTECTION SYSTEM 2610 DETECTION SYSTEM 2611 SMOKE DETECTION 2612 FIRE DETECTION 2613 OVERHEAT DETECTION 2620 EXTINGUISHING SYSTEM 2621 FIRE BOTTLE, FIXED 2622 FIRE BOTTLE, PORTABLE 2697 FIRE PROTECTION SYSTEM WIRING

27 FLIGHT CONTROLS

2700 FLIGHT CONTROL SYSTEM 2701 CONTROL COLUMN SECTION 2710 AILERON CONTROL SYSTEM 2711 AILERON TAB CONTROL SYSTEM 2720 RUDDER CONTROL SYSTEM 2721 RUDDER TAB CONTROL SYSTEM 2722 RUDDER ACTUATOR 2730 ELEVATOR CONTROL SYSTEM 2731 ELEVATOR TAB CONTROL SYSTEM 2740 STABILIZER CONTROL SYSTEM 2741 STABILIZER POSITION INDICATING 2742 STABILIZER ACTUATOR 2750 TE FLAP CONTROL SYSTEM 2751 TE FLAP POSITION IND. SYSTEM 2752 TE FLAP ACTUATOR 2760 DRAG CONTROL SYSTEM 2761 DRAG CONTROL ACTUATOR 2770 GUST LOCK/DAMPER SYSTEM 2780 LE SLAT CONTROL SYSTEM 2781 LE SLAT POSITION IND. SYSTEM 2782 | F SLAT ACTUATOR 2797 FLIGHT CONTROL SYSTEM WIRING

28 FUEL

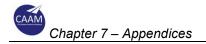
2800 AIRCRAFT FUEL SYSTEM 2810 FUEL STORAGE 2820 ACFT FUEL DISTRIB. SYSTEM 2821 ACFT FUEL FILTER/STRAINER 2822 FUEL BOOST PUMP 2823 FUEL SELECTOR/SHUT-OFF VALVE 2824 FUEL TRANSFER VALVE 2830 FUEL DUMP SYSTEM 2840 ACFT FUEL INDICATING SYSTEM 2841 FUEL QUANTITY INDICATOR 2842 FUEL QUANTITY SENSOR 2843 FUEL TEMPERATURE INDICATOR 2844 FUEL PRESSURE INDICATOR 2897 FUEL SYSTEM WIRING

29 HYDRAULIC POWER

2900 HYDRAULIC POWER SYSTEM 2910 HYDRAULIC SYSTEM, MAIN 2911 HYDRAULIC POWER ACCUMULATOR, MAIN 2912 HYDRAULIC FILTER, MAIN 2913 HYDRAULIC PUMP, (ELECT/ENG), MAIN 2914 HYDRAULIC HANDPUMP, MAIN 2915 HYDRAULIC PRESSURE RELIEF VLV. MAIN 2916 HYDRAULIC RESERVOIR, MAIN 2917 HYDRAULIC PRESSURE REGULATOR, MAIN 2920 HYDRAULIC SYSTEM, AUXILIARY 2921 HYDRAULIC ACCUMULATOR, AUXILIARY 2922 HYDRAULIC FILTER, AUXILIARY 2923 HYDRAULIC PUMP, AUXILIARY 2925 HYDRAULIC PRESSURE RELIEF, AUXILIARY 2926 HYDRAULIC RESERVOIR, AUXILIARY 2927 HYDRAULIC PRESSURE REGULATOR, AUX. 2930 HYDRAULIC INDICATING SYSTEM 2931 HYDRAULIC PRESSURE INDICATOR 2932 HYDRAULIC PRESSURE SENSOR 2933 HYDRAULIC QUANTITY INDICATOR 2934 HYDRAULIC QUANTITY SENSOR 2997 HYDRAULIC POWER SYSTEM WIRING

30 ICE AND RAIN PROTECTION

3000 ICE/RAIN PROTECTION SYSTEM 3010 AIRFOIL ANTI/DE-ICE SYSTEM 3020 AIR INTAKE ANTI/DE-ICE SYSTEM 3030 PITOT/STATIC ANTI-ICE SYSTEM 3040 WINDSHIELD/DOOR RAIN/ICE REMOVAL 3050 ANTENNA/RADOME ANTI-ICE/DE-ICE SYSTEM 3060 PROP/ROTOR ANTI-ICE/DE-ICE SYSTEM 3070 WATER LINE ANTI-ICE SYSTEM 3080 ICE DETECTION 3097 ICE/RAIN PROTECTION SYSTEM WIRING



31 INSTRUMENTS

3100 INDICATING/RECORDING SYSTEM
3110 INSTRUMENT PANEL
3120 INDEPENDENT INSTRUMENTS (CLOCK, ETC.)
3130 DATA RECORDERS (FLT/MAINT)
3140 CENTRAL COMPUTERS (EICAS)
3150 CENTRAL WARNING
3160 CENTRAL DISPLAY
3170 AUTOMATIC DATA
3197 INSTRUMENT SYSTEM WIRING

32 LANDING GEAR

3200 LANDING GEAR SYSTEM 3201 LANDING GEAR/WHEEL FAIRING 3210 MAIN LANDING GEAR 3211 MAIN LANDING GEAR ATTACH SECTION 3212 EMERGENCY FLOTATION SECTION 3213 MAIN LANDING GEAR STRUT/AXLE/TRUCK 3220 NOSE/TAIL LANDING GEAR 3221 NOSE/TAIL LANDING GEAR ATTACH SECTION 3222 NOSE/TAIL LANDING GEAR STRUT/AXLE 3230 LANDING GEAR RETRACT/EXTEND SYSTEM 3231 LANDING GEAR DOOR RETRACT SECTION 3232 LANDING GEAR DOOR ACTUATOR 3233 LANDING GEAR ACTUATOR 3234 LANDING GEAR SELECTOR 3240 LANDING GEAR BRAKE SYSTEM 3241 BRAKE ANTI-SKID SECTION 3242 BRAKE 3243 MASTER CYLINDER/BRAKE VALVE 3244 TIRE 3245 TIRE TUBE 3246 WHEEL/SKI/FLOAT 3250 LANDING GEAR STEERING SYSTEM 3251 STEERING UNIT 3252 SHIMMY DAMPER 3260 LANDING GEAR POSITION AND WARNING 3270 AUXILIARY GEAR (TAIL SKID) 3297 LANDING GEAR SYSTEM WIRING

33 LIGHTS

3300 LIGHTING SYSTEM 3310 FLIGHT COMPARTMENT LIGHTING 3320 PASSENGER COMPARTMENT LIGHTING 3330 CARGO COMPARTMENT LIGHTING 3340 EXTERIOR LIGHTING 3350 EMERGENCY LIGHTING 3397 LIGHT SYSTEM WIRING

34 NAVIGATION

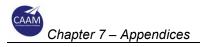
3400 NAVIGATION SYSTEM 3410 FLIGHT ENVIRONMENT DATA 3411 PITOT/STATIC SYSTEM 3412 OUTSIDE AIR TEMP. IND./SENSOR 3413 RATE OF CLIMB INDICATOR 3414 AIRSPEED/MACH INDICATOR 3415 HIGH SPEED WARNING 3416 ALTIMETER, BAROMETRIC/ENCODER 3417 AIR DATA COMPUTER 3418 STALL WARNING SYSTEM 3420 ATTITUDE AND DIRECTION DATA SYSTEM 3421 ATTITUDE GYRO AND IND. SYSTEM 3422 DIRECTIONAL GYRO AND IND. SYSTEM 3423 MAGNETIC COMPASS 3424 TURN AND BANK/RATE OF TURN INDICATOR 3425 INTEGRATED FLT. DIRECTOR SYSTEM 3430 LANDING AND TAXI AIDS 3431 LOCALIZER/VOR SYSTEM 3432 GLIDE SLOPE SYSTEM 3433 MICROWAVE LANDING SYSTEM 3434 MARKER BEACON SYSTEM 3435 HEADS UP DISPLAY SYSTEM 3436 WIND SHEAR DETECTION SYSTEM 3440 INDEPENDENT POS. DETERMINING SYSTEM 3441 INERTIAL GUIDANCE SYSTEM 3442 WEATHER RADAR SYSTEM 3443 DOPPLER SYSTEM 3444 GROUND PROXIMITY SYSTEM 3445 AIR COLLISION AVOIDANCE SYSTEM (TCAS) 3446 NON RADAR WEATHER SYSTEM 3450 DEPENDENT POSITION DETERMINING SYS 3451 DME/TACAN SYSTEM 3452 ATC TRANSPONDER SYSTEM 3453 LORAN SYSTEM 3454 VOR SYSTEM 3455 ADF SYSTEM 3456 OMEGA NAVIGATION SYSTEM 3457 GLOBAL POSITIONING SYSTEM 3460 FLT MANAGE. COMPUTING HARDWARE SYS 3461 FLT MANAGE. COMPUTING SOFTWARE SYS 3497 NAVIGATION SYSTEM WIRING

35 OXYGEN

3500 OXYGEN SYSTEM 3510 CREW OXYGEN SYSTEM 3520 PASSENGER OXYGEN SYSTEM 3530 PORTABLE OXYGEN SYSTEM 3597 OXYGEN SYSTEM WIRING

36 PNEUMATIC

3600 PNEUMATIC SYSTEM 3610 PNEUMATIC DISTRIBUTION SYSTEM 3620 PNEUMATIC INDICATING SYSTEM 3697 PNEUMATIC SYSTEM WIRING



37 VACUUM

3700 VACUUM SYSTEM 3710 VACUUM DISTRIBUTION SYSTEM 3720 VACUUM INDICATING SYSTEM 3797 VACUUM SYSTEM WIRING

38 WATER/WASTE

3800 WATER AND WASTE SYSTEM 3810 POTABLE WATER SYSTEM 3820 WASH WATER SYSTEM 3830 WASTE DISPOSAL SYSTEM 3840 AIR SUPPLY (WATER PRESS. SYSTEM) 3897 WATER/WASTE SYSTEM WIRING

45 CENTRAL MAINT. SYSTEM

4500 CENTRAL MAINT. COMPUTER 4597 CENTRAL MAINT. SYSTEM WIRING

49 AIRBORNE AUXILIARY POWER

4900 AIRBORNE APU SYSTEM 4910 APU COWLING/CONTAINMENT 4920 APU CORE ENGINE 4930 APU ENGINE FUEL AND CONTROL 4940 APU START/IGNITION SYSTEM 4950 APU BLEED AIR SYSTEM 4960 APU CONTROLS 4970 APU INDICATING SYSTEM 4980 APU EXHAUST SYSTEM 4990 APU OIL SYSTEM 4997 APU SYSTEM WIRING

51 STANDARD PRACTICES/STRUCTURES

5100 STANDARD PRACTICES/STRUCTURES 5101 AIRCRAFT STRUCTURES 5102 BALLOON REPORTS

52 DOORS

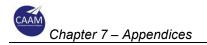
5200 DOORS 5210 PASSENGER/CREW DOORS 5220 EMERGENCY EXITS 5230 CARGO/BAGGAGE DOORS 5240 SERVICE DOORS 5241 GALLEY DOORS 5242 E/E COMPARTMENT DOORS 5243 HYDRAULIC COMPARTMENT DOORS 5244 ACCESSORY COMPARTMENT DOORS 5245 AIR CONDITIONING COMPART, DOORS 5246 FLUID SERVICE DOORS 5247 APU DOORS 5248 TAIL CONE DOORS 5250 FIXED INNER DOORS **5260 ENTRANCE STAIRS** 5270 DOOR WARNING SYSTEM 5280 LANDING GEAR DOORS 5297 DOOR SYSTEM WIRING

53 FUSELAGE

5300 FUSELAGE STRUCTURE (GENERAL) 5301 AERIAL TOW EQUIPMENT 5302 ROTORCRAFT TAIL BOOM 5310 FUSELAGE MAIN, STRUCTURE 5311 FUSELAGE MAIN, FRAME 5312 FUSELAGE MAIN, BULKHEAD 5313 FUSELAGE MAIN, LONGERON/STRINGER 5314 FUSELAGE MAIN, KEEL 5315 FUSELAGE MAIN, FLOOR BEAM 5320 FUSELAGE MISCELLANEOUS STRUCTURE 5321 FUSELAGE FLOOR PANEL 5322 FUSELAGE INTERNAL MOUNT STRUCTURE 5323 FUSELAGE INTERNAL STAIRS 5324 FUSELAGE FIXED PARTITIONS 5330 FUSELAGE MAIN, PLATE/SKIN 5340 FUSELAGE MAIN. ATTACH FITTINGS 5341 FUSELAGE, WING ATTACH FITTINGS 5342 FUSELAGE, STABILIZER ATTACH FITTINGS 5343 LANDING GEAR ATTACH FITTINGS 5344 FUSELAGE DOOR HINGES 5345 FUSELAGE EQUIPMENT ATTACH FITTINGS 5346 POWERPLANT ATTACH FITTINGS 5347 SEAT/CARGO ATTACH FITTINGS 5350 AERODYNAMIC FAIRINGS 5397 FUSELAGE WIRING

54 NACELLES/PYLONS

5400 NACELLE/PYLON STRUCTURE 5410 NACELLE/PYLON, MAIN FRAME 5411 NACELLE/PYLON, FRAME/SPAR/RIB 5412 NACELLE/PYLON, BULKHEAD/FIREWALL 5413 NACELLE/PYLON, LONGERON/STRINGER 5414 NACELLE/PYLON, PLATE SKIN 5415 NACELLE/PYLON, ATTACH FITTINGS 5420 NACELLE/PYLON MISCELLANEOUS STRUCT. 5497 NACELLE/PYLON SYSTEM WIRING



55 STABILIZERS

5500 EMPENNAGE STRUCTURE 5510 HORIZONTAL STABILIZER STRUCTURE 5511 HORIZONTAL STABILIZER, SPAR/RIB 5512 HORIZONTAL STABILIZER, PLATE/SKIN 5513 HORIZONTAL STABILIZER, TAB STRUCTURE 5514 HORIZ STAB MISCELLANEOUS STRUCTURE 5520 ELEVATOR STRUCTURE 5521 ELEVATOR, SPAR/RIB STRUCTURE 5522 ELEVATOR, PLATES/SKIN STRUCTURE 5523 ELEVATOR, TAB STRUCTURE 5524 ELEVATOR MISCELLANEOUS STRUCTURE 5530 VERTICAL STABILIZER STRUCTURE 5531 VERTICAL STABILIZER, SPAR/RIB STRUCT. 5532 VERTICAL STABILIZER, PLATES/SKIN 5533 VENTRAL STRUCTURE 5534 VERT. STAB. MISCELLANEOUS STRUCTURE 5540 RUDDER STRUCTURE 5541 RUDDER, SPAR/RIB 5542 RUDDER, PLATE/SKIN 5543 RUDDER, TAB STRUCTURE 5544 RUDDER MISCELLANEOUS STRUCTURE 5550 EMPENNAGE FLT. CONT., ATTACH FITTING 5551 HORIZONTAL STABILIZER, ATTACH FITTING 5552 ELEVATOR/TAB, ATTACH FITTINGS 5553 VERT. STAB., ATTACH FITTINGS 5554 RUDDER/TAB, ATTACH FITTINGS 5597 STABILIZER SYSTEM WIRING

56 WINDOWS

5600 WINDOW/WINDSHIELD SYSTEM 5610 FLIGHT COMPARTMENT WINDOWS 5620 PASSENGER COMPARTMENT WINDOWS 5630 DOOR WINDOWS 5640 INSPECTION WINDOWS 5697 WINDOW SYSTEM WIRING

57 WINGS

5700 WING STRUCTURE 5710 WING, MAIN FRAME STRUCTURE 5711 WING SPAR 5712 WING, RIB/BULKHEAD 5713 WING, LONGERON/STRINGER 5714 WING, CENTER BOX 5720 WING MISCELLANEOUS STRUCTURE 5730 WING, PLATES/SKINS 5740 WING, ATTACH FITTINGS 5741 WING, FUSELAGE ATTACH FITTINGS 5742 WING, NAC/PYLON ATTACH FITTINGS 5743 WING, LANDING GEAR ATTACH FITTINGS 5744 WING, CONT. SURFACE ATTACH FITTINGS 5750 WING, CONTROL SURFACES 5751 AILERONS 5752 AILERON TAB STRUCTURE 5753 TRAILING EDGE FLAPS 5754 LEADING EDGE DEVICES 5755 SPOILERS **5797 WING SYSTEM WIRING**

61 PROPELLERS/PROPULSORS

6100 PROPELLER SYSTEM 6110 PROPELLER ASSEMBLY 6111 PROPELLER BLADE SECTION 6112 PROPELLER DE-ICE BOOT SECTION 6113 PROPELLER SPINNER SECTION 6114 PROPELLER HUB SECTION 6120 PROPELLER CONTROLLING SYSTEM 6121 PROPELLER SYNCHRONIZER SECTION 6122 PROPELLER GOVERNOR 6123 PROPELLER FEATHERING/REVERSING 6130 PROPELLER BRAKING 6140 PROPELLER INDICATING SYSTEM 6197 PROPELLER/PROPULSORS SYSTEM WIRING

62 MAIN ROTOR

6200 MAIN ROTOR SYSTEM 6210 MAIN ROTOR BLADES 6220 MAIN ROTOR HEAD 6230 MAIN ROTOR MAST/SWASHPLATE 6240 MAIN ROTOR INDICATING SYSTEM 6297 MAIN ROTOR SYSTEM WIRING

63 MAIN ROTOR DRIVE

6300 MAIN ROTOR DRIVE SYSTEM 6310 ENGINE/TRANSMISSION COUPLING 6320 MAIN ROTOR GEARBOX 6321 MAIN ROTOR BRAKE 6322 ROTORCRAFT COOLING FAN SYSTEM 6330 MAIN ROTOR TRANSMISSION MOUNT 6340 ROTOR DRIVE INDICATING SYSTEM 6397 MAIN ROTOR DRIVE SYSTEM WIRING

64 TAIL ROTOR

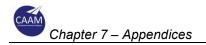
6400 TAIL ROTOR SYSTEM 6410 TAIL ROTOR BLADES 6420 TAIL ROTOR HEAD 6440 TAIL ROTOR INDICATING SYSTEM 6497 TAIL ROTOR SYSTEM WIRING

65 TAIL ROTOR DRIVE

6500 TAIL ROTOR DRIVE SYSTEM 6510 TAIL ROTOR DRIVE SHAFT 6520 TAIL ROTOR GEARBOX 6540 TAIL ROTOR DRIVE INDICATING SYSTEM 6597 TAIL ROTOR DRIVE SYSTEM WIRING

67 ROTORS FLIGHT CONTROL

6700 ROTORCRAFT FLIGHT CONTROL
6710 MAIN ROTOR CONTROL
6711 TILT ROTOR FLIGHT CONTROL
6720 TAIL ROTOR CONTROL SYSTEM
6730 ROTORCRAFT SERVO SYSTEM
6797 ROTORS FLIGHT CONTROL SYSTEM WIRING



71 POWERPLANT

7100 POWERPLANT SYSTEM 7110 ENGINE COWLING SYSTEM 7111 ENGINE COWL FLAPS 7112 ENGINE AIR BAFFLE SECTION 7120 ENGINE MOUNT SECTION 7130 ENGINE FIRESEALS 7160 ENGINE AIR INTAKE SYSTEM 7170 ENGINE DRAINS 7197 POWERPLANT SYSTEM WIRING

72 TURBINE/TURBOPROP ENGINE

7200 ENGINE (TURBINE/TURBOPROP) 7210 TURBINE ENGINE REDUCTION GEAR 7220 TURBINE ENGINE AIR INLET SECTION 7230 TURBINE ENGINE COMPRESSOR SECTION 7240 TURBINE ENGINE COMBUSTION SECTION 7250 TURBINE SECTION 7260 TURBINE ENGINE ACCESSORY DRIVE 7261 TURBINE ENGINE OIL SYSTEM 7270 TURBINE ENGINE BYPASS SECTION 7297 TURBINE ENGINE SYSTEM WIRING

73 ENGINE FUEL AND CONTROL

7300 ENGINE FUEL AND CONTROL 7310 ENGINE FUEL DISTRIBUTION 7311 ENGINE FUEL/OIL COOLER 7312 FUEL HEATER 7313 FUEL INJECTOR NOZZLE 7314 ENGINE FUEL PUMP 7320 FUEL CONTROLLING SYSTEM 7321 FUEL CONTROL/TURBINE ENGINES 7322 FUEL CONTROL/RECEIPROCATING ENGINES 7323 TURBINE GOVERNOR 7324 FUEL DIVIDER 7330 ENGINE FUEL INDICATING SYSTEM 7331 FUEL FLOW INDICATING 7332 FUEL PRESSURE INDICATING 7333 FUEL FLOW SENSOR 7334 FUEL PRESSURE SENSOR 7397 ENGINE FUEL SYSTEM WIRING

74 IGNITION

7400 IGNITION SYSTEM 7410 IGNITION POWER SUPPLY 7411 LOW TENSION COIL 7412 EXCITER 7413 INDUCTION VIBRATOR 7414 MAGNETO/DISTRIBUTOR 7420 IGNITION HARNESS (DISTRIBUTION) 7421 SPARK PLUG/IGNITER 7430 IGNITION/STARTER SWITCHING 7497 IGNITION SYSTEM WIRING

<u>75 AIR</u>

7500 ENGINE BLEED AIR SYSTEM 7510 ENGINE ANTI-ICING SYSTEM 7520 ENGINE COOLING SYSTEM 7530 COMPRESSOR BLEED CONTROL 7531 COMPRESSOR BLEED GOVERNOR 7532 COMPRESSOR BLEED VALVE 7540 BLEED AIR INDICATING SYSTEM 7597 ENGINE BLEED AIR SYSTEM WIRING

76 ENGINE CONTROLS

7600 ENGINE CONTROLS 7601 ENGINE SYNCHRONIZING 7602 MIXTURE CONTROL 7603 POWER LEVER 7620 ENGINE EMERGENCY SHUTDOWN SYSTEM 7697 ENGINE CONTROL SYSTEM WIRING

77 ENGINE INDICATING

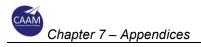
7700 ENGINE INDICATING SYSTEM 7710 POWER INDICATING SYSTEM 7711 ENGINE PRESSURE RATIO (EPR) 7712 ENGINE BMEP/TORQUE INDICATING 7713 MANIFOLD PRESSURE (MP) INDICATING 7714 ENGINE RPM INDICATING SYSTEM 7720 ENGINE TEMP. INDICATING SYSTEM 7721 CYLINDER HEAD TEMP (CHT) INDICATING 7722 ENG. EGT/TIT INDICATING SYSTEM 7730 ENGINE IGNITION ANALYZER SYSTEM 7731 ENGINE IGNITION ANALYZER 7732 ENGINE VIBRATION ANALYZER 7740 ENGINE INTEGRATED INSTRUMENT SYSTEM 7797 ENGINE INDICATING SYSTEM WIRING

78 ENGINE EXHAUST

7800 ENGINE EXHAUST SYSTEM 7810 ENGINE COLLECTOR/TAILPIPE/NOZZLE 7820 ENGINE NOISE SUPPRESSOR 7830 THRUST REVERSER 7897 ENGINE EXHAUST SYSTEM WIRING

79 ENGINE OIL

7900 ENGINE OIL SYSTEM (AIRFRAME) 7910 ENGINE OIL STORAGE (AIRFRAME) 7920 ENGINE OIL DISTRIBUTION (AIRFRAME) 7921 ENGINE OIL COOLER 7922 ENGINE OIL TEMP. REGULATOR 7923 ENGINE OIL SHUTOFF VALVE 7930 ENGINE OIL SHUTOFF VALVE 7931 ENGINE OIL NDICATING SYSTEM 7931 ENGINE OIL PRESSURE 7932 ENGINE OIL QUANTITY 7933 ENGINE OIL TEMPERATURE 7997 ENGINE OIL SYSTEM WIRING



80 STARTING

8000 ENGINE STARTING SYSTEM 8010 ENGINE CRANKING 8011 ENGINE STARTER 8012 ENGINE START VALVES/CONTROLS 8097 ENGINE STARTING SYSTEM WIRING

81 TURBOCHARGING

8100 EXHAUST TURBINE SYSTEM (RECIP) 8110 POWER RECOVERY TURBINE (RECIP) 8120 EXHAUST TURBOCHARGER 8197 TURBOCHARGING SYSTEM WIRING

82 WATER INJECTION

8200 WATER INJECTION SYSTEM 8297 WATER INJECTION SYSTEM WIRING

83 ACCESSORY GEARBOXES

8300 ACCESSORY GEARBOXES 8397 ACCESSORY GEARBOX SYSTEM WIRING

85 RECIPROCATING ENGINE

8500 ENGINE (RECIPROCATING) 8510 RECIPROCATING ENGINE FRONT SECTION 8520 RECIPROCATING ENGINE POWER SECTION 8530 RECIPROCATING ENGINE CYLINDER SECTION 8540 RECIPROCATING ENGINE REAR SECTION 8550 RECIPROCATING ENGINE OIL SYSTEM 8560 RECIPROCATING ENGINE SUPERCHARGER 8570 RECIPROCATING ENGINE LIQUID COOLING 8597 RECIPROCATING ENGINE SYSTEM WIRING